DMEA FORM 6 REFERENCE SLIP
REV. 12-56 DEFENSE MINERALS EXPLORATION ADMINISTRATION

TO:	INITIALS	DATE
1. Code 130		
2. 110		
3. 225		
4.		
5.		
FROM: Code 500		7/9

FOR: Check items for action desired

____ Action ____ Reply for signature of _____
____ Approval ____ Investigate
____ Comment ____ Recommendations ____ Surname
____ Conference ____ Rewrite ____ Signature
____ Instructions x Your information ____ File

REMARKS:

Closed Docket DMEA-3955 attached for information. To be returned to M&F and charge- outcard deleted.

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

M25803

400

Docket
Martin
Blanford
Mathews

JAN 26 1956

Mr. Luke Williams
Crystal City Mining Company
East 808 Sprague Avenue
Spokane, Washington

Re: Docket No. DMEA 3955, Tungsten
Crystal Mine
Lincoln County, Washington

Dear Mr. Williams:

In accordance with your telephone request to the office of the Executive Officer, DMEA Field Team, Region I, Northwest District, in Spokane, Washington, we are returning herewith one copy of Mr. Roy Leigh's report on the Crystal mine, Lincoln County, Washington, which accompanied your application for exploration aid, Docket No. DMEA 3955.

Sincerely yours,

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

Enclosure

cc: Docket
Code 400
Adm. Read. File
T. Kiilsgaard, USGS
R. W. Holliday, USBM
FT, Reg. I-Spokane

LScott 1/26/55

R.G.L.

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

RECEIVED
JAN 16 1956

January 12, 1956

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

Re: Docket No. DMEA-3955 (Tungsten)
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington
(Denied November 4, 1955)

Dear Mr. Selfridge:

Mr. Luke Williams requested by telephone that a copy of Mr. Roy Leigh's report on the Crystal property be returned to him. Three copies of this accompanied Mr. Williams' application, which was transmitted to Washington with our letter of August 19, 1955.

Sincerely yours,

Verne C. Fryklund Jr.

Verne C. Fryklund, Jr.
for: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region I, NW Dist.

cc: USBM (2)

DOCKET
SURNAME

Martin
Selfridge
J E Johnson

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

NOV - 4 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 3955 - Tungsten
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington

Dear Mr. Weissenborn:

This will acknowledge receipt of your letter of October 25, 1955, with attached memorandum, dated October 20, from Verne C. Fryklund.

Mr. Fryklund must have been puzzled, as he mentions, about the meaning of the words "granite mineralization," in our letter of October 13 to you. However, his conjecture was accurate enough, and he provided the information needed here. We could probably have expressed our request more clearly by saying "granite or mineral indications."

One item in your letter of October 25 also calls for comment. Our letter was not intended to be understood as concurring with the memorandum of October 5, 1955, enclosed therewith, which stated: "The DMEA offers a means of obtaining geological information, which in the absence of a comprehensive Bureau drilling program, can be obtained in no other way."

We operate under DMEA Order 1-Amended which does not list any such factor in Section 6 among the criteria that will be considered in passing upon applications. There the important factor is: "The geological probability of making a significant discovery."

We agree with you, however, that the obtaining of geological information may sometimes be a preliminary part of an exploration project, especially one that is very close to the borderline between prospecting and exploration. Obviously, any of our projects will also

P.G.G.

provide geological information as a necessary result of the surface or underground exposures made accessible or the cores recovered by the work completed. Under the circumstances, we have denied the application, as you will note from the enclosed copies of our letter of today to Crystal City Mining Company.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

Enclosure

APPROVED:

/s/ Robert W. Gaskins (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

WSMartin/fcc / 11/3/55
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. I - NW DIST.
Messrs. Holliday, USBM
Kiilsgaard, USGS

DOCKET
Surname:
Holt
Martin
Geehan
Ridgeard
Selfridge

NOV - 4 1955

Crystal City Mining Company
East 808 Sprague Avenue
Spokane, Washington

Re: Docket No. DMEA 3955 - Tungsten
Crystal Mine
Lincoln County, Washington

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above-referenced property have been reviewed.

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

Careful study of our information, although noting a small amount of tungsten mineralization on the Crystal mine property, indicates to us that the probability of disclosing minable tungsten ore reserves by your proposed program is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

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

Sincerely yours,

ACTING Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Kiilsgaard, USGS
W. McInnis, USBM
FT, Reg. I-Spokane

SPHolt/ls
9/29/55

R.C.S.

IN REPLY REFER TO:

Docket

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

November 2, 1955

Re: DMEA 3955
Crystal City Mining Co.
Crystal Mine
Lincoln Co., Wash.
Tungsten

Memorandum

WSM

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

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

Subject: Review of Supplemental report by V. C. Fryklund, Jr.

With one exception, I concur with the deductions and conclusions of the examining geologist. I am not convinced that the whole tactite zone is underlain at shallow depth by granite.

There are two places in the skarn zone where the granite breaks through to the surface. The largest outcrop is 200 feet from a shaft, perhaps 400 feet deep, which seems not to have encountered granite. The shaft is only 110 feet from the margin of the skarn zone. A section through the outcrop and the shaft suggests the granite of that outcrop may have a nearly sheer (dikelike?) wall 400 feet high on the east side. The data furnished do not give evidence as to the subsurface shape of the granite tongue in the large open cut, but it too may have a dikelike shape.

N. E. Nelson

N. E. Nelson

Copy retained 400

RECEIVED
NOV - 3 1955

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

Docket

RECEIVED
OCT 28 1955

October 25, 1955

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

WSAY

Re: Docket No. DMEA-3955 (tungsten)
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington

Dear Mr. Selfridge:

Enclosed is a memorandum from Mr. Verne C. Fryklund, Jr., concerning questions raised in your letter of October 13, 1955.

We must admit that Fryklund's original examination report was brief -- perhaps too brief if taken by itself. Read in conjunction with the report by the applicant's geologist we felt it contained all the necessary information. Fryklund's contribution essentially was to confirm the low grade and scattered occurrence of the scheelite-bearing tactite. We had thought that his report, although brief, had accomplished this, and we were in agreement with his recommendation for denial. We would have been most happy to have made a favorable recommendation but in the face of the low assays of the scheelite-bearing material we could make no other than a negative recommendation. We note that the Ferro-Alloys Division concurs in this recommendation.

We are glad to have a statement that DMEA project can and should be used to obtain geological information. We have long supported this philosophy and we can offer our current contract with Idaho Metallurgical Industries as an example of one designed to obtain geological information. We also think that a review of the record will show that this Region has not hesitated to recommend a fair number of "long shot" proposals, some of which have been successful and some of which have not. In the present instance we simply do not believe that either the sampling or the available geologic information give any reasonable indication of enough tungsten to justify drilling by the DMEA or any other Government agency.

Reviewed by
DMEA OPERATING COMMITTEE
11-2-55
(date)

Our present opinion is that we can find much more favorable projects than this to explore, and unless the Operator brings in evidence to the contrary we see no reason to alter this opinion.

By Field Team, Region I, NW District

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

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

Enclosure

cc: USBM (2)
Fryklund

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

RECEIVED
OCT 28 1955

October 20, 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: Verne C. Fryklund, Jr., Geologist, U. S. Geological Survey

Subject: Docket No. DMEA-3955 (tungsten), Crystal City Mining Company, Re: Questions asked in Operating Committee letter of October 13, 1955, about the Crystal Prospect, Lincoln County, Washington.

This memorandum will answer the questions raised in the October 13 letter from the Operating Committee and will reply to the comments of the Commodity men.

I must confess to a certain amount of surprise about some of the questions as the application was, from the point of view of geology, one of the most complete and self-contained of any of the applications received in this region. Mr. Roy Leigh, Anaconda geologist, had been retained by the applicant to map and sample the property. Except for having missed the small outcroping of granite in the foot of the largest cut, a significant geologic fact, I completely agree with Mr. Leigh's geology. Now to answer the questions.

The applicant and Mr. Leigh have lamped the entire property. Visible scheelite occurs at the localities shown on the map -- and according to the applicant, nowhere else. I did evening lamping, but as the applicant and his geologist could find no more scheelite, I did not feel impelled to recheck barren areas.

The applicant, and Mr. Leigh, considered that only the rock exposed in the large cut was worth sampling, which, from the point of view of economics, was quite proper. As a matter of course, six channel samples were taken across the large cut, and for completeness, I cut two channel samples across material that the applicant did not feel was worth sampling.

I am puzzled about "granite mineralization", but I assume it refers to occurrences of granite. Mr. Leigh's 40-scale map of the silver vein underground workings shows no granite. (A completely

Reviewed by
DMEA OPERATING COMMITTEE
11-2-55

colored copy of this map was submitted in the application; the geology is also shown on the map I submitted showing the sample data.)

One-hundred-scale sections showing the surface exposures of granite are attached. Connections of the exposures can be redrawn to taste. If I had not discovered an additional outcrop of granite at the foot of the largest cut, I would have concluded that there was a reasonable and minable depth to granite along the mineralized zone away from the dike exposures, even though granite does lie at a higher elevation than the area sampled. Mr. Leigh did miss a tongue, apophysis, etc., of granite that was, where seen, on the order of 2 feet wide. This was at the base of the cut. I presume what I saw was attached to a larger mass of granite not far below the exposure.

The query as to tonnage of material assaying better than 0.2 percent WO_3 may most easily be answered by considering the available assays and carefully examining the 40-scale geologic map. Neither Mr. Leigh nor I accept the applicant's assay of 0.64 percent WO_3 across 20.3 feet because we have had experience with Washington Testing Laboratory assays. On the very west side of the trench, and directly over the exposure of granite, Mr. Leigh cut a 5-foot sample assaying 0.30 percent WO_3. The assayed zone is cut off below by granite, and I would hesitate to make a tonnage estimate along strike. The remainder of this cut, using Leigh's assays, is composed of 5.6 feet assaying 0.00 WO_3 and 9 feet assaying 0.16 percent WO_3.

Eliminating my Sample No. 506 (0.02 percent WO_3), the cut (Samples No. 507, 508, 509, 510, and 511) assays 0.167 percent WO_3 over 19.8 feet. The rock represented by Sample No. 509 (4.2 feet, assaying 0.02) and that represented by Sample No. 510 (6.0 feet, assaying 0.15 percent WO_3) would have to be mined in order to reach rock represented by Sample No. 511. Please note that the dip of these sampled beds (probably true bedding) is 65°-70° W., and that the dike also dips under the tactite about 65°-70° W. Rock represented by Samples No. 506, 509, and 510 would have to be stripped to reach the rock that assays about 0.20 percent WO_3. (I certainly hope no one is suggesting selective underground mining as an approach.) If the dike did not produce the tactite, but is post-mineral in age as is probable, there can be only a very small down-dip volume of scheelite-bearing tactite before the dike cuts the tactite, or before granite is reached. As shown on the maps the dike cuts the scheelite-bearing zone to the south.

Sample No. 512 assayed 0.18 percent WO_3, and there is no point in including this assay in tonnage estimates either. Sample No. 513 assays 0.26 percent WO_3 over a 5-foot width. On the basis of geology the area between the large cut and Sample No. 513 is largely occupied by an andesite dike. As Mr. Nelson points out, there is alignment of the cuts but there is apparently no continuity of tactite

between two of the cuts. There is also dike rock less than 10 feet south of Sample No. 513.

Let us say there is perhaps a block 5 feet wide by 20 feet long, and say 20 feet deep. Using a tonnage factor of 12 cubic feet per ton there are 167 tons in this block that might assay 0.26 percent WO_3. This is the only block that can be calculated with a grade higher than 0.20 percent WO_3 -- something I still think is a small tonnage.

As noted by Mr. Nelson, the tonnage of tactite is considerable -- instead of "tactite" I should have said "scheelite-bearing tactite". The restriction, as far as I could tell, of tactite to areas adjacent to the andesite dike is interesting. There is no tactite around the large exposure of granite east of the bulldozing (see applicant's map) and such a relation is not an uncommon situation at other tactite deposits I have seen, but the position of the andesite is still, I think, intriguing. It would be interesting to go into the problem, but any tactite I ever saw had a structural and lithologic control and not at all necessarily localized at the igneous contact; I doubt if this deposit is greatly different. An outcroping of granite at the base of the largest scheelite-bearing area is a concrete fact; I fail to see what "the combined width of dolomite, altered and unaltered" has to do with either proving or disproving the presence of near-surface granite. I might add that the dolomite, as I said in my previous memorandum, has been recrystallized so that it has a fine-grained sugary texture, perhaps the tactite merely reflects the original composition of some of the dolomite beds. As I said in my earlier memorandum, while an interesting problem the precise origin of the tactite is immaterial. The WO_3 grade is too low and the occurrence of scheelite-bearing rock is too scattered to warrant any further work. Just the sort of information we needed

I find myself in complete agreement with Mr. Holliday's first and second paragraphs.

To anticipate further questions, the applicant is now well aware that rock of this grade and apparent volume is not commercial ore. He has been encouraged to continue his prospecting, I am well aware of the strategic importance of tungsten, to the northward (the dolomite is overlain by basalt to the south). Mr. Williams visited me again the week of October 10, 1955, bringing in samples from north of the property. Unfortunately, the fluorescing material seemed to be hyalite and calcite.

Attachments (2)

Distribution:
DMEA (orig. & 3)
USBM (2)
USGS (SRO)
Docket
Fryklund

DOCKET

400

Surname:
Martin
Selfridge
Fitzhugh

OCT 13 1955

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

Re: Docket No. DMEA 3955 - Tungsten
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington

Dear Mr. Weissenborn:

Enclosed are two copies each of memoranda dated August 25 and September 16, 1955, from N. E. Nelson, U. S. Geological Survey, and dated October 5, 1955, from R. W. Holliday, U. S. Bureau of Mines, all relating to the subject application. The last-named memorandum suggests that the project be undertaken to obtain geological information which in the absence of a comprehensive Bureau of Mines' drilling program can be obtained in no other way.

As you are familiar, DMEA Order-1 Amended lists the factors which will be considered and weighed in passing upon applications. In that list is "The geologic probability of making a significant discovery." Our Iron and Ferro-Alloys Division had concluded from a study of the application and of the memorandum of September 6, 1955, to you from Mr. Vernon G. Fryklund, Jr., U. S. Geological Survey, that the deposit did not warrant Government assistance for further exploration.

On several occasions in our discussions with you we have emphasized that a brief report covering the essential features of the field examination, if received promptly, is more useful for the DMEA program than a more comprehensive report if that takes a considerably longer time to prepare. In this instance, however, we regret that we must request further information which may necessitate a second field examination.

P.C.

Apparently we need geologic sections, including any available structural evidence, to supplement the plan map already received. We should also have more information on the amount of lamping of exposures by night that preceded the Field Team's sampling. It would also be desirable to have some estimate of the tonnage grading better than 0.2 percent WO_3 that might be developed per foot of depth. Please also comment on any evidence about the granite mineralization revealed by examination of the dumps at shaft collar and adit portal and near the cuts.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Enclosures

cc:

APPROVED:

/s/ Robert W. Geehan

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

cc: Docket
Adm. Read. File
Code 400
Oper. Committee
Thor Kiilsgaard, USGS
R. W. Holliday, USBM
FT, Region I-Spokane

WSMartin/ls
10/11/55

DOCKET
Surname: Holt
Martin

400

October 5, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $20,108
Docket No. DMEA 3955 - Tungsten
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington

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

(1) The applicant, Crystal City Mining Company, East 808 Sprague Avenue, Spokane, Washington, requested exploration assistance in the amount of $20,108 for 1,500 feet of diamond drilling in five holes from the surface of the Crystal mine.

(2) The applicant controls, by ownership of 23 acres and option to purchase 27½ acres, a tract of land containing 50½ acres in the SW¼ of Sec. 21, T. 28 N., R. 37 E., W. M., in Lincoln County, Washington.

(3) The proposed program is to excavate surface trenches with a bulldozer and to drill 1,500 feet in 5 inclined diamond drill holes from surface stations on the Crystal mine property.

(4) In the area explored by the Crystal mine sparse tungsten mineralization occurs both in surface cuts and underground workings, but there is little indication that minable bodies of tungsten ore will be discovered by work under the applicant's proposed program.

(5) The Field Team concludes that there is little probability of making a significant discovery and recommends denial. The Commodity Division of the Bureau of Mines disagrees with this recommendation. The Commodity Division of the Geological Survey, while disagreeing with the statement of the Field Team geologist that the tonnage of tactite is small, concurs in the denial recommendation of the Field Team because of the marginal grade of the material.

Chief, Iron and Ferro-Alloys Division

cc: Docket ✓
Adm. Read. File
Code 400
Oper. Committee

SPHolt/ls 9/29/55

Docket

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

October 5, 1955

Copy retained 400

Memorandum

To: Chief, Iron and Ferroalloys Division - DMEA
Through: Acting Chief, Branch of Ferrous Metals & Ferroalloys

From: Commodity Specialist

Subject: Docket No. DMEA 3955 - Tungsten
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington
Denial of application for exploration aid.

A shortage of ore reserves is one of the serious problems of the tungsten industry. The DMEA offers a means of obtaining geological information, which in the absence of a comprehensive Bureau drilling program, can be obtained in no other way.

It is my opinion that where there is a reasonable indication of the existence of tungsten ore, the exploration can be carried out now more economically than during some future emergency.

I do not concur in the denial recommendation.

R. W. Holliday

R. W. Holliday

Docket

IN REPLY REFER TO:

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

RECEIVED
SEP 19 1955

September 16, 1955

Re: DMEA 3955
Crystal City Mining Co.
Crystal Mine
Lincoln County, Washington
Tungsten

Copy retained 400

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 applicant asked for assistance in exploring a tactite zone in sugary dolomite in which are three cuts showing scheelite. The cuts are alongside or near a wide (20-25 feet) andesite dike. The general area is probably underlain by granite and two relatively small outcrops of granite occur within the skarn zone. The width of the skarn zone varies but it appears to be no less than 80 feet wide in the area mapped. The dolomite, within which is the skarn zone, is mapped for a width of 400 feet and a length of 1,100 feet. The total length and width are not given.

Samples cut in the faces of two fairly aligned open cuts, 80 feet apart, show:--

Cut #1 - 6.3' at 0.18% WO_3
Cut #2 - 19.8' at 0.15% WO_3
Cut #3 - 5.0' at 0.26% WO_3

Cut #3 is in alignment with #1 and #2 and is 310 feet from #2.

I do not agree with the statement of the geologist that the tonnage of tactite is small. As interpreted by him, the tactite zone is underlain by granite at an undetermined but over-all shallow depth. The combined width of dolomite, altered and unaltered, does not, in my opinion, support the statement. If it is known that the granite in the two outcrops in the skarn zone (the one in the big cut is called a tongue) thickens very rapidly going downward, the shallow depth of the tactite inference is well taken, but of such four way enlargement there may be no proof.

I agree that there is little or no reason to expect improvement in general grade with depth.

Because of the marginal grade of the material, I concur with the denial recommendation of the Field Team.

N. E. Nelson

N. E. Nelson

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

RECEIVED
SEP 12 1955

September 8, 1955

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

Re: Docket No. DMEA-3955 (tungsten)
Crystal City Mining Company
Crystal Mine
Lincoln County, Washington

Dear Mr. Selfridge:

Enclosed are four copies of a memorandum by Verne C. Fryklund, Jr., Geological Survey, recommending denial of the Crystal City Mining Company application.

Available geologic evidence indicates that granite directly underlies the tactite rock and thus there can be only a small tonnage of the tactite. WO_3 assays averaged about 0.2 percent, and as granite occurs at the base of the largest face that was sampled, there is no hope that there will be any improvement in grade at depth.

We recommend that the application be denied.

By Field Team, Region I, NW District

Wing G. Agnew, Acting Exec. Officer
U. S. Bureau of Mines

Verne C. Fryklund, Jr., Acting Member
U. S. Geological Survey

Enclosures

cc: USBM (2)
USGS (SRO)
Fryklund
Kellum

Reviewed by
DMEA OPERATING COMMITTEE
9-16-55
(date)

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

Reviewed by
DMEA OPERATING COMMITTEE
9-16-55
(date)

RECEIVED
SEP 12 1955

September 6, 1955

Memorandum

To: DMEA Field Team, Region I, Northwest District

From: Verne C. Fryklund, Jr., Geologist, Geological Survey

Subject: Field examination, Docket No. DMEA-3955 (tungsten)
Crystal City Mining Company, Crystal Tungsten Prospect,
Lincoln County, Washington

I visited the property August 17, 1955 with Donald F. Kellum, Geologist, Geological Survey. The property is just off State Highway No. 22 in sec. 21, T. 28 N., R. 36 E., Lincoln County, Washington.

The application contained an excellent report on the property by Roy Leigh, geologist, Anaconda Mining Company, and the examination was spent in checking Mr. Leigh's geology and cutting check samples.

I have no disagreement with Mr. Leigh's geology, and the assays of samples we cut (see accompanying map) check very closely with Mr. Leigh's assays but not with the applicant's own samples.

Scheelite occurs in lime-silicate rock--tactite--adjacent to and overlying a granite intrusive. What may be dolomite has been recrystallized so that it has a fine-grained sugary texture. The dolomite and lime-silicate rock are cut by an andesite dike and it is by no means clear to me whether the dike or the granite formed the tactite.

While this question may be of some scientific interest, it seems clear that granite immediately underlies the dolomite and tactite and that in the explored area there is only a small tonnage of tactite. There is a granite tongue near the base of the largest cut that was sampled; this tongue had been overlooked, but it seems to be further evidence that the tactite is not thick. This fact is rather important as it shows that there can be no "improvement in size and grade of the possible ore body with depth."

As shown by the assays, the WO_3 grade is about 0.2 percent. This fact, combined with the probably small tonnage of tactite, indicates that the deposit does not warrant further exploration.

Enclosure

Distribution: DMEA (4) USBM (2) USGS (SRO) Docket Fryklund

IN REPLY REFER TO:

Docket

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

August 25, 1955

Copy retained 400

Re: DMEA 3955
Crystal City Mining Co.
New Crystal Mine
Lincoln Co., Wash.
$20,108 - Tungsten

Memorandum

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

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

Subject: Review of application.

The application asks for assistance in exploring an irregular scheelite-bearing skarn zone, the work to consist of 1,500 feet of diamond drilling, 140 hours of bulldozing and trench work.

The site of the proposed exploration is near an old lead-silver-zinc vein in dolomite which was explored many years ago by a shaft perhaps 400 feet deep and several hundred feet of level workings. The skarn zone is developed in the dolomite along andesite dikes which have trends roughly parallel to the strike of the dolomite. Granite is believed to underlay the dolomite and skarn zone at an unknown but probably not great depth. As presently known the skarn zone is up to 200 feet wide and 1,000 feet long.

An open cut shows about 20 feet of 0.15% WO_3 (Leigh report) in a face about 20 feet high. Scheelite has been lamped in 3 other places but no sampling is recorded.

Some 'fan' drilling may be justified. An examination of the work recently done is recommended.

N. E. Nelson

N. E. Nelson

See Nelson's memo of Sept 16, 1955
Shaft may be more like 181 feet deep
than 400

August 24, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region I & NW

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 I & NW.

DMEA-3955 Crystal City Mining Co.

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

August 24, 1955
Subject: DMEA-3955
Re: Exploration Assistance

Crystal City Mining Co.
E. 808 Sprague Ave.
Spokane, Washington

Gentlemen:

The receipt of your application dated August 5, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3955 and referred to the Iron & Ferro-Alloys Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

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

August 18, 1955

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

Dear Mr. Selfridge:

Re: Application for Exploration
Assistance (Tungsten)
Crystal City Mining Company
Lincoln County, Washington

Enclosed are the original and two copies of an application received from Mr. Luke Williams, Sr., president of the Crystal City Mining Company, E. 808 Sprague Avenue, Spokane, Washington.

The applicant has been requested to furnish copies of a purchase contract and proper Owner's Consent to Lien.

An examination was made August 17, 1955, and the report will be forwarded soon. The costs proposed by the applicant are excessive and subject to considerable revision.

already examined

Sincerely yours,

Verne C. Fryklund, Jr.

Verne C. Fryklund, Jr.
for: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region I, NW Dist.

RECEIVED
AUG 24 1955

Enclosures

cc: USBM (2)
Kellum

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

~~[illegible]~~
So. 157 Howard Street
Spokane 4, Washington

August 18, 1955

Mr. Luke Williams, Jr., President
Crystal City Mining Company
E. 808 Sprague Avenue
Spokane, Washington

Dear Mr. Williams:

Enclosed are seven copies of a Consent to Lien form. These should be signed by the owner of the 27 acres you are purchasing. Six signed copies should be returned to us.

If the purchase agreement has been corrected, you could return it at the same time.

Sincerely yours,

Verne C. Fryklund, Jr.
for: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region I, Dist.

Enclosures

cc: DMEA (2)
USBM (2)
Kellum

RECEIVED
AUG 24 1955

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
AUG 24 1955

RECEIVED
AUG 8 1955
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. 3955
Metal or Mineral Tungsten
Date Received 8-24-55
Estimated Cost No Amount
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: Crystal City Mining Co., E. 808 Sprague Ave., Spokane, Washington. President: Luke Williams, Sr. - Greenacres, Wash.; Vice President: Luke Williams, Jr., W. 2407 Liberty Ave., Spokane, Wash.; Secretary: Peggie M. Barnhill, W. 1704 Riverside Ave., Spokane, Wash. (Incorporated in Washington State)

(*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 See attached sheet for full legal description.

(*b*) State any mine name by which the property is known. Formerly known "New Crystal Mining Co."

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Owner of 23 acres deeded property, and purchaser under contract for 27 acres, as outlined on annex sheet.

(*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 Balance owing on 27 acres in amount of $7,700.00. See annex sheet for details.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. NONE

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. See annex sheet.

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

(*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. See annex sheet.

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

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

16—66551-1

Report of 8-4-55 by Roy E. Leigh, which accompanied this appl'n, returned to applicant in Jan. 1956 at his request.

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

(*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. Refer to annex sheet.

(*c*) The work will start within 30 days and be completed within 4 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. See annex sheet.

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: See annex.

(*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.). See annex sheet.

(*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. See annex sheet.

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

(*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. See annex sheet.

(*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. See annex sheet.

(*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. See annex.

(*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. See annex sheet.

(*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)? See annex sheet.

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

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

Explain in detail on acompanying paper. See annex sheet.

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 August 5, 1955

CRYSTAL CITY MINING COMPANY
(Applicant)

By Luke Williams Sr.
Luke Williams, Sr. - President

Peggie M. Barnhill
Peggie M. Barnhill, - Secretary

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

Posted 1899
Wireless on
Thread right

Mr Williams
is getting a
plot of the
[illegible] [illegible]
when ready to
[illegible] call
RI 2149 or
WA 1183 ask for
Mr Andrew Williams.

August 5, 1955

Accompanying references to application MF-103 for CRYSTAL CITY MINING COMPANY attached hereto.

Section 3, "Applicant's property rights"

Beginning at a point on the West line of Section Twenty-one (21), Township Twenty-eight (28) North, Range Thirty-six (36) E.W.M., 492.7 feet south of northwest corner of the southwest quarter (SW-1/4) of said Section Twenty-one (21), thence south along the section line 835.93 feet, thence East along the South line of the Northwest Quarter of the Southwest Quarter of said Section 21, 808.89 feet to the North right of way line of Secondary State Highway No. 22, thence Northeasterly along said North right of way line of said Secondary State Highway No. 22 to the East line of the Northwest Quarter of the Southwest Quarter of said section 21, thence North along the East line of said Northwest Quarter of the Southwest Quarter of said Section 21, 1,066.99 feet to the Northeast corner thereof, thence West along the East and West center line of said section twenty-one, 879.0 feet, thence South forty-four degrees and thirty-six minutes West 692.04 feet to the point of beginning, excepting therefrom the land in the amount of seven (7) acres more or less described in the Deed as recorded in Book of Deeds No. 102, pages 546-547, also excepting therefrom the land in the amount of two (2) acres more or less as described in the Deed as recorded in Book of Deeds, No. 103, page 111, containing 27.6 acres more or less.

The adjoining 14 acres more of less of deeded ground, commencing on the Southwest Corner of the Northwest Quarter of the Southwest Quarter of Section 21, Township 28 north, Range 36 east running East 808.80 feet along the north line of the Southwest Quarter of the Southwest Quarter to the West right of way of State Highway No. 22, thence Southwesterly along the west right of way to the Southwest Section corner of Section 21, thence North to point of beginning.

Note: The above portion of property constituting 27-1/2 acres is under a purchase contract with a balance owing in the amount of $7,700.00. The remaining mentioned property, comprising 7 acres, 2 acres and the 14 acres, totaling 23 acres more or less, is clear of debt and deeded property.

August 5, 1955

Accompanying references to application MF-103 for CRYSTAL CITY MINING COMPANY attached hereto.

Section 4, "Physical description", (a)

The old workings on the property consist of 175 foot adit with a 170 foot drift on the vein structure which is open for examination. A shaft, which opens to the surface, is filled with water to the adit level. There are reported to be 403-1/2 feet of drifts and cross cuts on a second level 100 feet below the adit level, plus 32 feet of drifts on an intermediate level. An 80-foot raise opens to the surface from the adit level.

Recent exploration work has consisted of cutting in new roads to the areas being worked and some trenches, (see attached maps.) Current operations which have been carried on for the past four months are all accessible by automobile to the almost immediate vicinity of operation.

Section 4, (b)

Past production on this property began in the 1890's and continued until about 1915. At this time the existing underground workings, etc. were developed as outlined in the attached report taken from the "Mines Handbook" of 1916, 1918, and 1922. Also attached is a report on the mine written by John C. Hammond on September 28, 1915, and a report of August 4, 1955 by Roy E. Leigh.

Ore reserves on the property are unknown with the exception of the statements given in the Mines Handbook, which estimated 48,000 tons of ore blocked out and the two existing dumps on the surface which are estimated to have 1,000 tons. An assay was made on one dump running $22.00 per ton in silver and lead.

The aforementioned development was based on silver and lead in the early days and most of these workings are under water at the present time and of no particular interest in this application.

Section 4, (c)

The property which we have been working and wish to further explore consists of disseminated scheelite in a 90-foot skain bed which is cut by a 25-foot andestic dike. The country rock is a blue-grey to white dolomite intruded by granite. One-to-four-foot lenticular lead-zinc bedded replacement in dolomite. Length, width and tenor of tungsten ore may increase with depth as granite contact is approached. (see enclosed maps and reports).

Section 4, (d)

There is a new oiled surface road commencing at Davenport, Washington running north directly to the location of the property. The property has ample roads on it with easy accessibility to any part of it. The property is located about one-half mile south of the Spokane River at the point where it flows into the Columbia. It has been suggested that in the future if a mill were to be installed that it be located on the river which would be only approximately one mile to haul from the mine. To ship ore without a mill it would be necessary to haul it by truck to Davenport, Washington, approximately twenty-five miles. There is a small store and gas station in the city of Miles which joins the mine property for food supplies, but lodging facilities would have to be built for the help working the mine.

Section 4, (e)

At the present time we are working two miners under the supervision of Luke C. Williams and a geologist's recommendation. More help for further development would not be any problem. The only water on the property consists of the water in the old mine shaft which is being taken out by a 2-inch pipe and not recommended for domestic purposes. For the necessary exploration work a domestic well would not be necessary since water is available within about 300 yards of the workings. An easement has been given to the R.E.A. to cross this property with a new high power line system which will probably be installed next year. Present power in the vicinity is about 300 yards from the property, consisting of 220 volt service. The existing equipment on the property is of no value other than an 8-foot by 16-foot concrete slab which has recently been poured for a compressor house. The bulldozing and drilling equipment that has been used for current operations has all been done on a contract basis.

Section 5, (b)

It is recommended that we have 5 diamond drill holes totaling about 1,500 feet in length drilled at an angle of 45 degrees in a southeasterly direction to test the extension and depth of the scheelite that has been exposed in the surface trenches. In addition to this some additional bulldozing and trench work should be done on the surface. It is recommended that the diamond drilling consist of 4 - 300-foot holes to begin with and if a good showing is picked up on the DDH#4 as indicated on the map, that the 5th hole be placed between hole #3 and #4. If this 5th hole proves good it might then be well to drill a 6th hole slightly northeast of hole #2. (see enclosed maps.)

Section 5, (d)

Luke Williams, Sr. has been familiar with this property and different mining operations for the past thirty years. He was an officer and director of the LINCOLN MINING & MILLING COMPANY which resumed operations on this property in 1927 through 1929.

The directors of the present operation are well established in business and completely able to carry out the necessary responsible procedures as required in this operation. Luke Williams, Sr. will be the main person to supervise the operations on the property, along with the help of a reputable geologist when deemed necessary.

Section 6, (a) Independent Contracts

1500-ft. diamond drilling constituting 5 - 300-ft., 45 degree holes @ $4.50 p/ft.	$ 6,750.00
140 hrs. of bulldozing @ $7.50 p/hr.	1,050.00
Accounting and bookkeeping charges @ $50 p/mo, 4 mos.	200.00
Total	$ 8,000.00

Section 6, (b) Labor, Supervision, Consultants

1 powder man and 2 miners @ $15.00 p/day for 4 mos. or 84 working days each	3,780.00
President's salary @ $400.00 p/mo. for supervision of all work to be performed on premises, 4 mos.	1,600.00
Geological consultants, 20 days @ $50.00 p/day	1,000.00
Total	$ 6,380.00

Section 6, (c) Operating Materials & Supplies

15 cases of dynamite @ $11.00 p/case	165.00
Powder caps and fuse	60.00
Drill steel for jackhammer work	90.00
Gasoline and oil for compressor - 400 gals. gas @28¢	112.00
Oil and grease	30.00
Groceries for labor @ $120.00 p/mo., 4 mos.	480.00
100 gals. heating oil @ 16¢ p/gal.	16.00
Total	$ 953.00

Section 6, (d) Operating Equipment

2 - rubber-tired wheelbarrows @ $55.00 ea.	$ 110.00
4 - shovels @ $5.00 ea.	20.00
4 - picks @ $4.00 ea.	16.00
1 - Used Chicago Pneumatic stationary compressor, available for purchase	540.00
1 - Used stationary caterpillar engine	200.00
1 - Air receiver tank and necessary fittings	160.00
1 - Used jackhammer	120.00
400-ft. of air hose for jackhammer @ 40¢ p/ft.	160.00
400-ft. of 1-1/2" galvanized air pipe @ 30¢ p/ft.	120.00
Total	$ 1,446.00

Section 6, (e) Rehabilitation & Repair

There are no existing building or equipment on the property that is owned by the company that could be used in the exploration work, with the exception of an 8' x 16' concrete slab that has been poured for a proposed compressor and tool house.

Section 6, (f) New Buildings, Improvements, Installations

1 - galvanized metal compressor house and tool shed combination, 8' x 16'	$ 512.00
1 - bunkhouse with 4 beds and necessary utilities, 24' x 36'	2,592.00
1 - powder house for storage	75.00
Total	$ 3,179.00

Section 6, (g) Miscellaneous

Maintenance on compressor and engine, 4 mos (est.)	$ 100.00
Maintenance on buildings and premises (est.)	50.00
Total	$ 150.00

Section 6, (h) Contingencies

About the only possible contingencies not stated herein would be the necessity of additional diamond drilling than mentioned herein which would possibly consist of an additional hole of 300-ft. or an extension on some of the 5 - 300-ft. holes as proposed.

Section 7, (a)

We are prepared to furnish our share of the cost for this proposed project now.

Section 7, (b)

The corporation at this time have funds in the bank totaling in excess of 75% of our share needed in this application. The necessary remaining funds are available at any time and guaranteed personally by Charles M. Williams and Luke Williams, Jr. of this corporation.

Respectfully submitted,

CRYSTAL CITY MINING COMPANY

By Luke Williams, Sr.
President

Report on

NEW CRYSTAL MINING COMPANY
Forty Acres of Patented Ground

September 28, 1915

This property is situated in Section 21, Township 28 North, Range 36 E., W.M., the County of Lincoln, State of Washington, one-half mile east of old Fort Spokane. The nearest railroad point at present is Davenport, Washington, a distance of 25 miles. A new line has been graded from Bluestem to Miles, Washington, within a mile of this property. There are many farms and orchards in the immediate vicinity, produce of all kinds is reasonably cheap.

GENERAL DESCRIPTION OF PROPERTY:

This group of claims embrace an area of 40 acres of patented ground. The improvements consist of blacksmith shop, shaft house, hoisting engine, boiler and pumps, ore care, several hundred feet of track, together with a considerable quantity of drill steel, and tools of various kinds for mining purposes. There is some timber on the claims suitable for fuel, enough water for all present uses is furnished from the mine.

GEOLOGY:

The formation of the district for several miles in any direction is granite, with intervening dikes of porphyry, cutting through the country at frequent intervals. An igneous intrusion occurs in and along the granite paralleling and forming the foot-wall of the mineral zone, and is a seynite or quartzless granite, occuring in a large dike and producing a well-marked contact metamorphism in the crystallized limestone, and also strongly influencing the vein formation within the mineral zone. All the ores of the zone seem to be in parallel fissure veins in which argentiferous galena is associated with large quantities of iron and iron carbonate. The main fissure is marked by a streak of gouge between walls which are slicken-sided and polished. The principal minerals are siliceous crystalline limestone, siderite, galena, zincblend, copper, and iron pyrite, while near the surface, carbonates, iron oxides, manganese oxides occur. The minerals in some of the veins are scattered through the mineralized zone, but generally are arranged in streaks and zones parallel to the master fissure. The foot-wall of the vein is an eruptive dike resting on granite, while that of the hanging wall is granite. This would indicate that the new crystal lode is of the contact type, or it may prove on further development, to be what is termed a fissure contact vein. However, taking into consideration the great width of the vein at the surface, there can be no doubt that it will extend to a great depth. North and south

eruptive dikes are sure to produce gold and other valuable metals at some place along their contact. No reasons are in evidence why such should not be deposited along the contact adjacent to the New Crystal Mill, and a large mineral vein is in evidence at the surface adjacent said eruptic dike.

DEVELOPMENT WORK:

The outcrop of well defined veins is vividly traceable for a distance of 500 feet; sand covers the balance of the entire length of the claims. The strike of the lode is N. 10°E., and the dip 80° S.E. The outcrop of the vein, as well as can be determined, will average from 300 to 500 feet in width. The development work consists: First, a prospect shaft 30 feet deep, showing a vein of concentrating ore several feet wide, and seems to be the outcrop of large zinc, lead and silver ore vein, and must carry fair values. Second, the main shaft is down 181 feet. There is 170nfeet of drifts on the first level, 32-1/2 feet of drift on the intermediate level between the first and second levels, and 403-1/2 feet of drifts on the second level, 100 feet below the first level, making a total of 762 feet, including sump and shaft and drifts. The air shaft is 85 feet north from main shaft, and is about 80 feet down to the first level, where it ends.

1st 170
Int 32½
2nd 403½
606

Shaft 181
Air " 80
Pros. " 30

403½
170
181
754½

ORE IN SIGHT:

There is approximately 1,000 tons of ore extracted and now on the dump, and taking the shafts, drifts and stopes, 11,000 tons, and including the undeveloped ground. Between the main shaft and the prospect shaft, a distance of 360 feet, 36,000 tons. This is a very small approximation and does not take into consideration the large vein resting on the foot-wall. This gives a total of 48,000 tons of ore than can be developed from the surface down to the second level, the foot-wall vein being excluded, as it has no development work, only a good surface showing. Average value of ore, see Assay Certificates, also Surface Maps.

COST OF MINING AND REDUCING ORE:

Owing to the fact that this mine can be worked to a depth of 500 feet by a tunnel, the ore should be extracted at a cost not to exceed one dollar per ton. The method of treating and reducing the ore is as yet to be determined, but with the advent of a railroad, which is now assured in the near future, the cost of treating and reducing the ore should not exceed five dollars per ton. It is my opinion that on further development there will be much ore than can be shipped directly from the mine. In fact, there is much ore in sight now, that by assorting and with cheap transportation could be shipped at a good profit.

Would recommend the following developing cross-cut to granite wall, also to foot wall, where all indications point to big bodies of rich ore.

JOHN C. HAMMOND

August 5, 1955

NEW CRYSTAL MINING COMPANY
(Former Corporate Name)

The following reports are taken from "The Mines Handbook" with respective dates as follows:

1916 Report

"PROPERTY: 2 patented claims, 40 acres, near Miles, an old time producer, shows gold-silver-copper-zinc ore in shoots, said to assay from $15.00 to $50.00 per ton in lead and silver. Ore occurs as contact deposit or in fissure veins from 4' to 7' wide in granite formation. Developed by 1,000' of underground workings. Operations were resumed June, 1915, and management reported planning erection of 50-ton oil burning smelter."

1918 Report

"DEVELOPMENT: by shaft to 181' depth - with 1200' workings, shows a fissure vein 6 feet wide in limestone. Shoots are 28" wide. Ore carries lead, silver and zinc, the latter veins being 75' from the former."

"ORE RESERVES: estimated at 48,000 tons blocked out and 1,000 tons on the dumps.

"EQUIPMENT: includes 35 horse power hoist, compressor, pump, steam plant, etc. A 100-ton mill is contemplated."

1922 Report

"INCORPORATION: in Washington. Capital 1,500,000 shares $1.00 par; assessable; 1,000,000 shares outstanding. Annual meeting May 12.

"PROPERTY: 40 acres patented land, an old time producer, in the deer trail district, near Miles, Lincoln County. Claims show a contact fissure between limestone and granite, that contains an ore mass 400' long, 4' - 8' wide, said to assay from $17.00 to $80.00 per ton.

"DEVELOPMENT: by shaft to 400' depth, with 300' of workings."

MF-203
Revised March 24, 1955

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator _____
Docket No. DMEA- _____
Contract No. Idm-E _____
Contract Date _____

CONSENT TO LIEN

To the United States of America:

Referring to that certain land in the County of Lincoln, State of Washington, described as follows:1/

As outlined in annex attached hereto.

which is the subject of a proposed exploration project contract, hereinafter called the "contract," with the United States of America, hereinafter called the "Government;" in consideration of the contract and as an inducement to the Government to enter into it, the undersigned hereby--

1. Undertakes and agrees that property in which the Government may acquire an interest or equity under the contract may be dismantled, severed from the land, and removed, as may be provided in the contract; and the Government's interest and equity in such property shall be prior and superior to any adverse right or claim of the undersigned;

2. Grants to the Government a lien upon all of the undersigned's right, title, and interest in the land and upon any production of minerals therefrom to secure the payment to the Government of a percentage royalty on production as may be provided for by the contract;2/ and represents and undertakes that there are no claims, liens, or encumbrances upon the undersigned's right, title, or interest in the land prior to that hereby granted to the Government other than the following:3/
property consisting of 27-1/2 acres more or less which is being purchased on a contract with a present balance owing in the amount of $7,700. (See attached annex for legal description of this property.)

3. Undertakes and agrees neither to commit any act nor assert any claim in conflict with the provisions of this Consent to Lien; and to give advance notice of the Government's rights under this Consent to Lien to any subsequent transferee, mortgagee, encumbrancer, or lessee of any of the undersigned's right, title, or interest in the land; and
See annex attached hereto.

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 See annex attached hereto and recorded in book _____ page see annex 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/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

3/ Write "none" if that is the case. Do not leave lines blank.

4. Consents to all amendments and assignments of the contract without notice thereof, and agrees that this Consent to Lien shall extend and apply thereto.

5. Added provision: None

Dated this 3rd day of August, 1955.

Luke Williams, Sr. [Seal]
Luke Williams, Sr. - President

Luke Williams, Jr. [Seal]
Luke Williams, Jr. - Vice President

Peggie M. Barnhill [Seal]
Peggie M. Barnhill, Secretary

I, Luke Williams, Sr. certify that I am the President (Secretary, etc.) of the corporation named herein; that Luke Williams, Sr. who signed this agreement was then President (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

[Corporate Seal]

MF-203
Revised March 24, 1955

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator _____
Docket No. DMEA- _____
Contract No. Idm-E _____
Contract Date _____

CONSENT TO LIEN

To the United States of America:

Referring to that certain land in the County of Lincoln, State of Washington, described as follows:1/

_____

_____

_____

_____,

which is the subject of a proposed exploration project contract, hereinafter called the "contract," with the United States of America, hereinafter called the "Government;" in consideration of the contract and as an inducement to the Government to enter into it, the undersigned hereby--

1. Undertakes and agrees that property in which the Government may acquire an interest or equity under the contract may be dismantled, severed from the land, and removed, as may be provided in the contract; and the Government's interest and equity in such property shall be prior and superior to any adverse right or claim of the undersigned;

2. Grants to the Government a lien upon all of the undersigned's right, title, and interest in the land and upon any production of minerals therefrom to secure the payment to the Government of a percentage royalty on production as may be provided for by the contract;2/ and represents and undertakes that there are no claims, liens, or encumbrances upon the undersigned's right, title, or interest in the land prior to that hereby granted to the Government other than the following:3/

Property consisting of 27-1/2 acres more or less which is being purchased on a contract with a present balance owing in the amount of $7,700.00. (See attached annex for legal description of this property.)

3. Undertakes and agrees neither to commit any act nor assert any claim in conflict with the provisions of this Consent to Lien; and to give advance notice of the Government's rights under this Consent to Lien to any subsequent transferee, mortgagee, encumbrancer, or lessee of any of the undersigned's right, title, or interest in the land; and

See annex attached hereto.

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 See annex, and recorded in book _____ page See annex 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/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

3/ Write "none" if that is the case. Do not leave lines blank.

4. Consents to all amendments and assignments of the contract without notice thereof, and agrees that this Consent to Lien shall extend and apply thereto.

5. Added provision: NONE

Dated this 5th day of August, 1955.

Luke Williams Sr. [Seal]
Luke Williams, Sr. - President

Luke Williams Jr. [Seal]
Luke Williams, Jr. - Vice Pres.

Peggie M. Barnhill [Seal]
Peggie M. Barnhill, Secretary

I, Luke Williams, Sr. certify that I am the President (Secretary, etc.) of the corporation named herein; that _____ who signed this agreement was then President (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

[Corporate Seal]

MF-203
Revised March 24, 1955

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator_____
Docket No. DMEA-_____
Contract No. Idm-E_____
Contract Date_____

CONSENT TO LIEN

To the United States of America:

Referring to that certain land in the County of **Lincoln**, State of **Washington**, described as follows:1/

_____

_____

_____

_____,

which is the subject of a proposed exploration project contract, hereinafter called the "contract," with the United States of America, hereinafter called the "Government;" in consideration of the contract and as an inducement to the Government to enter into it, the undersigned hereby--

1. Undertakes and agrees that property in which the Government may acquire an interest or equity under the contract may be dismantled, severed from the land, and removed, as may be provided in the contract; and the Government's interest and equity in such property shall be prior and superior to any adverse right or claim of the undersigned;

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See annex attached hereto.

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Luke Williams, Sr. - President

Luke Williams Jr. [Seal]
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Peggie M. Barnhill [Seal]
Peggie M. Barnhill, Secretary

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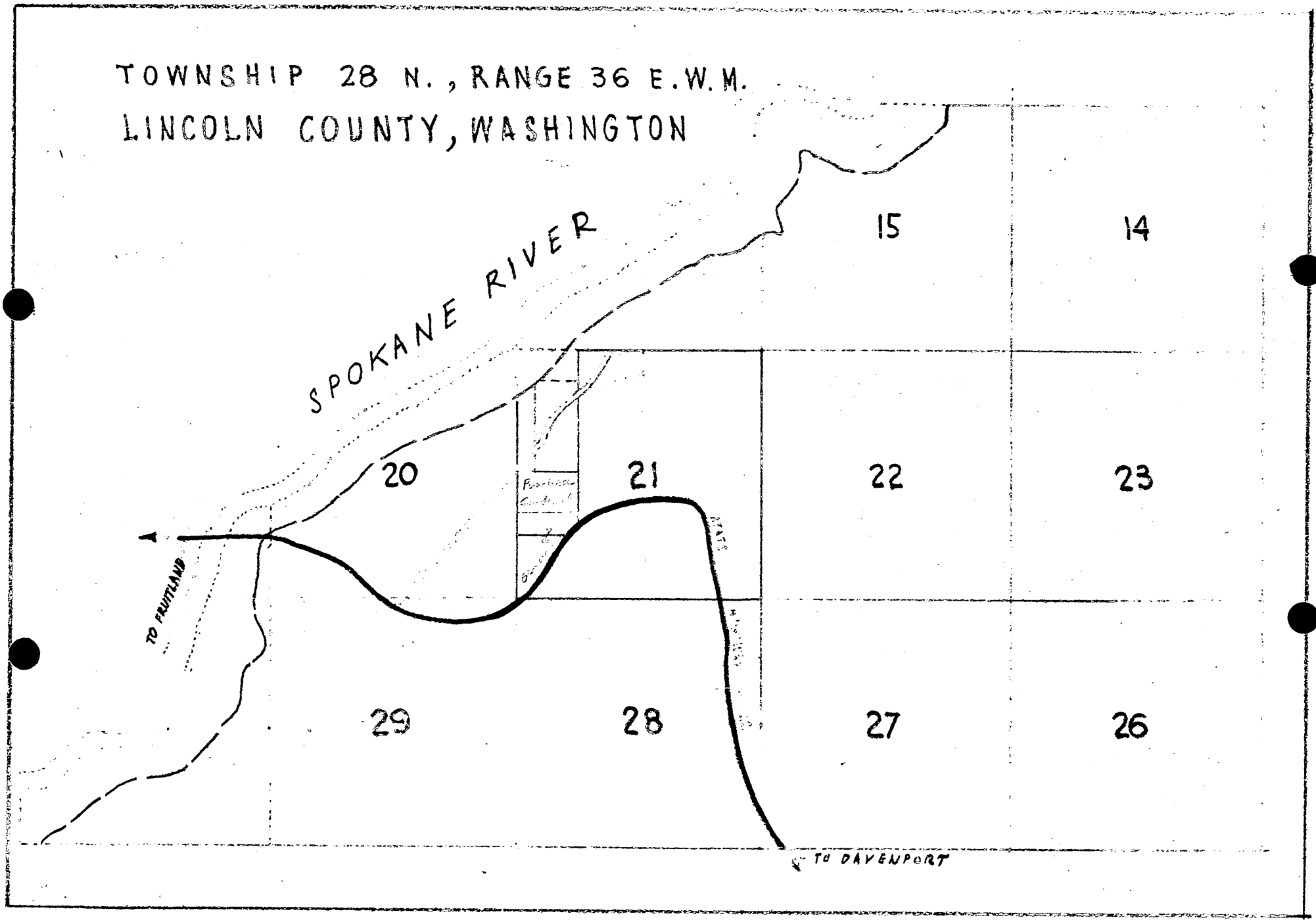
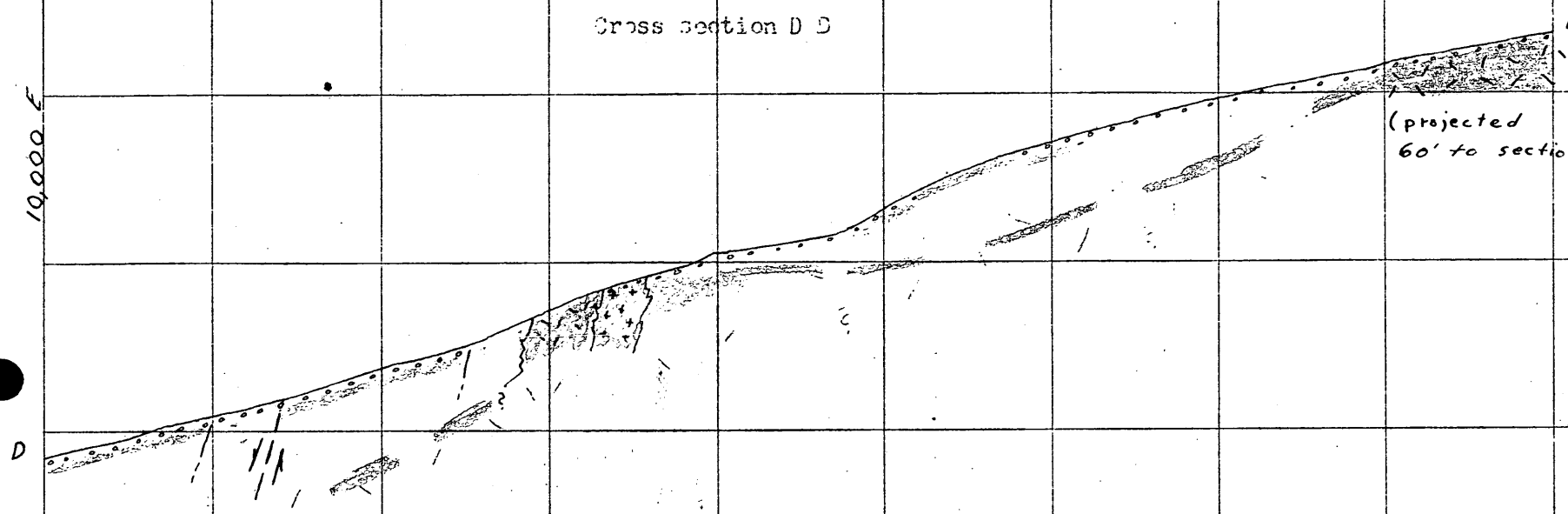
_____
[Corporate Seal]

TOWNSHIP 28 N., RANGE 36 E.W.M.
LINCOLN COUNTY, WASHINGTON



Docket No. DMEA 3955

Cross section D D



Explanation:

Cover ...

Andesite dike

Granite

Tactite

Dolomite

Fault, showing direction of movement

Contact

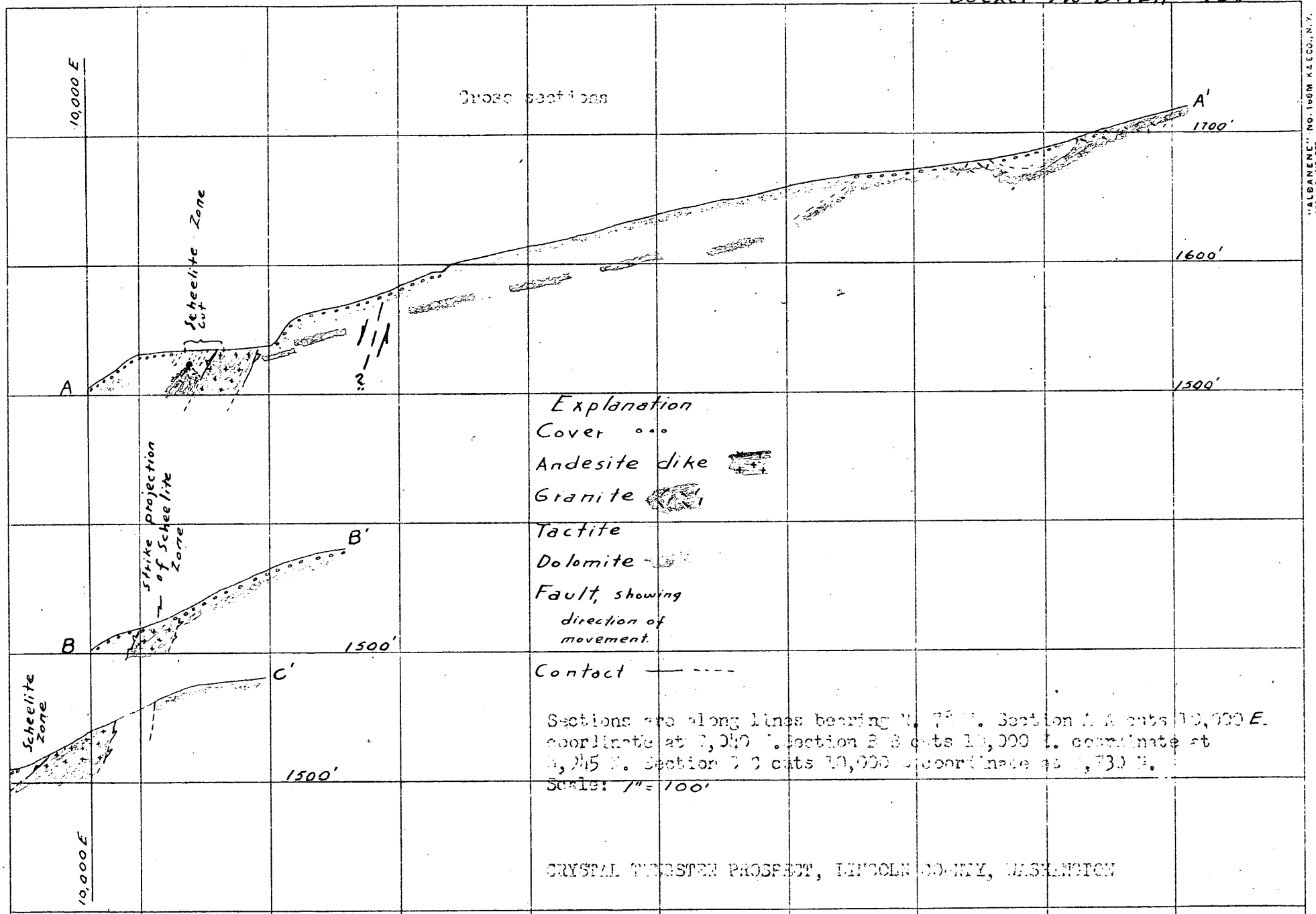
Section is along line bearing N. 78 W. Line cuts 10,000 E. coordinate at 9,285 N. Scale: 1" = 100'

CRYSTAL TUNGSTEN PROSPECT, LINCOLN COUNTY, WASHINGTON

"ALBANENE" NO. 195M K&E CO., N.Y. REG. U.S. PAT. OFF.

RECEIVED
OCT 28 1955

Docket No. DMEA 3955



"ALBANENE" NO. 166M K&E CO., N.Y. REG. U.S. PAT. OFF.

RECEIVED
OCT 28 1955