Surname copy

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Ching
Ellis
Kilsgaard
Guhan
Selfridge
Johnson

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

APR 19 1956

Mr. George A. Frohlick, President
Skyline Engineering Company, Inc.
4785 East Evans Avenue
Denver 22, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Mr. Frohlick:

Your application for aid in an exploration project and other information available to us in Washington concerning your above-named 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 all our information, although noting some uranium mineralization on your property, indicates to us that the probability of disclosing significant ore reserves is not sufficiently promising to justify Government participation. We regret to advise you that, under these circumstances, your application for exploration assistance is denied.

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

Sincerely yours,

C. O. Mittendorf

Administrator

MChing/gla
4-16-56
cc to: Admr.'s Reading File
Operating Committee
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.C.G.

700

Ching

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

DOCKET COPY

April 16, 1956

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-3775

Commodity: Uranium

Applicant: Skyline Engineering Company, Inc., a Colorado corporation
4785 E. Evans
Denver, Colorado

Property: 23 unpatented lode mining claims, Arrowhead Nos. 1-22 and No. 24, located in secs. 2, 11, and 12, T. 4 S., R. 82 W., 6th P.M., Eagle County, Colorado. Applicant is the owner.

Date of application: April 11, 1955

Amount of application: $10,663.00

Work Proposed:

72 hrs. bulldozing roads and stripping	$ 826.00
Drifting on mineralized outcrop on Claim No. 1	1,613.00
2,000 ft. test holes (20 holes) @ $0.75/ft.	1,500.00
Supervision and Consultants	1,450.00
Buildings and installations	1,514.00
Miscellaneous	910.00
Contingencies	2,850.00
Total	$10,663.00
Government participation @ 75%	$ 7,997.25

Above program tentatively revised on November 17, 1955, to consist of a single line of drill holes along the cliff spaced 200 feet apart and costing about $2,000.00.

Field Team Report - E. N. Harshman, USGS - March 28, 1956.

Based on data made available on March 14, 1956, in a draft report by the AEC.

The potential ore horizon on the Arrowhead claims is the Shinarump conglomerate. It is 20 to 30 feet thick at the south edge of the property but rapidly thins from south to north and almost pinches out along the north side of the property.

The only known deposit of uranium ore on the property was a small pod on the Arrowhead No. 1 claim, found in a sandstone bed in the basal part of the Shinarump conglomerate. It consisted of carnotite impregnated sandstone associated with carbonized trash. It contained 3.5 tons of ore assaying 0.33 percent U_3O_8.

The AEC completed a rotary non-core drilling project on this and the adjacent property to the east, on September 14, 1955. It consisted of 29 holes on the Arrowhead claims and 5 holes on the H. Warren claims, totaling 3,047 feet. The holes paralleled the exposed Shinarump-Chinle contact along the southern edge of the Arrowhead group and also tested the west central area of the property. The entire thickness of the Shinarump conglomerate was tested and several holes were drilled approximately 100 feet into the underlying Maroon formation. Only very slight anomalous radioactivity was recorded in some of the shaly lenses of the Maroon formation; the maximum eU_3O_8 was 0.008 percent. No visible uranium minerals were found. No carbon trash was found nor was there the slightest indication of the presence of a Shinarump channel.

The Applicant drilled a number of close-spaced holes immediately north of the mineralized outcrop but this work failed to disclose mineralization or favorable indications.

Results of the drilling on the H. Warren claims were negative.

It is concluded that the AEC work has adequately explored the favorable part of the subject property. It is recommended that the application be denied without a field examination. The Denver Exploration Branch of the AEC concurs with this recommendation.

Commodity Group comments:

U. S. Geological Survey - N. E. Nelson - April 12, 1956.

Mining of a $3\frac{1}{2}$-ton ore body and drilling by the Applicant and the AEC seem to have shown that the ore potential of the property is very small if existent. Concurs with the recommendation of denial of the Field Team.

U. S. Bureau of Mines - James Paone - April 13, 1956.

Discussed the Memorandum Report by E. N. Harshman with the AEC representative. Concurs with the Field Team recommendation of denial.

Rare and Miscellaneous Metals Division - Michael Ching - April 16, 1956.

The subject application was received a year ago. It was learned shortly thereafter that the AEC was planning to start a drilling program on the subject and adjacent H. Warren property about July 1, 1955. Therefore, the Applicant was notified that the application would be held in abeyance until completion of the AEC program. Results of such program are contained in E. N.Harshman's memorandum, dated March 28, and received in Washington April 2, 1956. These results indicate that a DMEA exploration program on the property is not warranted.

Conclusions and Recommendations:

The potential of the subject property has been established as quite limited by rather extensive preliminary AEC and private drilling. It is recommended that the application be denied without a field examination.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

4-16-56

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

RECEIVED
APR 13 1956

April 13, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: James Paone, Bureau of Mines Alternate Member
Uranium Commodity Committee

Subject: Geologic Report, DMEA Docket 3775, Skyline Engineering Company, Inc., Eagle County, Colorado

I have reviewed the report, Skyline Engineering Company, Inc., DMEA Docket 3775, dated March 29 and received in this office April 5. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The AEC has adequately explored the most favorable part of the subject claims. The results of the drilling indicate that the Shinarump conglomerate in the area drilled is unfavorable for the occurrence of significant uranium ore deposits.

The Field Team recommends that the application be denied without a field examination. We concur in the recommendation.

The report is being forwarded to the Chief, Division of Minerals, in accordance with the routing slip attached thereto.

James Paone

James Paone

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

RECEIVED
APR 1 3 1956

April 13, 1956

Memorandum

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The Field Team recommends that the application be denied without a field examination. We concur in the recommendation.

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James Paone

4-13-56

IN REPLY REFER TO:

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

RECEIVED
APR 13 1956

April 12, 1956

Re: DMEA 3775
Skyline Engineering Co., Inc.
Arrowhead claims
Eagle Co., Colo.
$10,663 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

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

Subject: Review of Field Team (Geologist) report

The applicant first applied for assistance in drilling in April 1955. Action on the application was deferred pending the findings of drilling on the referenced and adjoining properties by the A. E. C.

In November 1955 the applicant revised his proposed work program. The subject office report by the geologist of the Field Team reviews the situation and recommends denial of the revised application.

Mining of a 3½ ton ore body and drilling by the applicant and the AEC seem to have shown that the ore potential of the property is very small if existent.

I concur with the recommendation of denial of the Field Team.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

RECEIVED
APR 13 1956

April 12, 1956

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Mining of a 3½ ton ore body and drilling by the applicant and the AEC seem to have shown that the ore potential of the property is very small if existent.

I concur with the recommendation of denial of the Field Team.

N. E. Nelson

N. E. Nelson

cc: John E. Crawford, Rm. 3641
J. O. Hosted, Rm. 3210 GSA
Director's reading file
(4212) GSA
DMEA (3)
Branch reading file (4212)
Docket File
Chron. file

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

March 29, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Geologic Report, Docket DMEA 3775 (Uranium), Skyline Engineering Company, Inc., (Arrowhead claims), Eagle County, Colorado

Enclosed are the original and three copies of a geologic report by E. N. Harshman, U. S. Geological Survey, in which denial of the subject application is recommended. There will be no Bureau of Mines Report.

The AEC drilling program has adequately explored the Shinarump ore horizon on the most favorable part of the claims, and no ore or favorable ground was discovered by the work.

We concur with the conclusions in the geologic report and recommend that the application be denied without a field examination.

DMEA Field Team, Region III

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

DMEA
Date Rec'd.
MAR 29 1956
BUREAU OF MINES
Denver, Colorado

March 28, 1956

Memorandum

TRANSMITTED
MAR 29 1956

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: DMEA Docket 3775 (Uranium) Skyline Engineering Company, (Arrowhead claims) Eagle County, Colorado

Enclosed are the original and nine copies of a geologic report by E. N. Harshman, U. S. Geological Survey, in which denial of the subject application for exploration assistance is recommended.

In the original application the Skyline Engineering Company proposed to explore the Arrowhead claim group by a program of drilling and drifting at an estimated total cost of $10,663. After the AEC completed their exploration in the area, the applicant, by letter of November 17, 1955, revised the proposed program to a single line of shallow holes along the southern edge of the claim group at an estimated cost of $2,000.

The AEC program has adequately explored the Shinarump ore horizon on the most favorable part of the claims by 3,047 feet of rotary non-core drilling. No ore or favorable ground was discovered by this work; the highest radioactivity found by probing the holes was 0.008 percent eU_3O_8.

Although the applicant has found one small lens of carnotite impregnated sandstone containing 3-1/2 tons of ore with 0.33 percent U_3O_8, it is concluded that the AEC work has shown the area to be unfavorable for the occurrence of significant uranium ore bodies.

We concur with the conclusions in the geologic report and recommend that the application for exploration assistance, DMEA Docket 3775, be denied without a field examination.

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

John F. Shaw
Supervising Mining Engineer

E. N. Harshman
Member, Field Team

Enclosures (10)
ENHarshman:arh

DMEA
MAR 29 1956
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED
MAR 29 1956

DMEA 3775

Skyline Engineering Company, Inc.

Arrowhead Group

Eagle County, Colorado

Uranium

Memorandum Report

by

E. N. Harshman
Geological Survey

March 28, 1956

REVIEWED BY
DMEA OPERATING COMMITTEE
4-6-56
(date)

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Geology	3
Ore deposits	5
Completed Exploration	5
Conclusions and Recommendations	6

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2. Geologic sirface map, Arrowhead claims area, Skyline Engineering Company, Eagle County, Colorado	Last page
3. Map of Skyline Engineering Company - Arrowhead claims, Eagle County, Colorado, showing location of holes drilled by the A.E.C..	Last page

DMEA 3775

SKYLINE ENGINEERING COMPANY, INC.
ARROWHEAD GROUP
EAGLE COUNTY, COLORADO

APR

INTRODUCTION

On April 29, 1955, the subject application for exploration assistance was referred to the Executive Officer, Region III Field Team, for investigation, a field examination, if warranted, and recommendations.

As a preliminary step in processing this application, discussions were held with representatives of the Denver Exploration Branch of the AEC. It was learned that the AEC was in the process of advertising for bids on drilling the subject property and the H. Warren claims to the east.

In a memorandum of May 18, 1955, it was recommended that action on the Skyline Engineering Company application be deferred until the results of the AEC work were known. On June 6, 1955, the Administrator notified the applicant of the proposed delay.

On November 17, 1955, the applicant notified DMEA that the AEC drilling had been completed and, based on that work, he revised his original exploration to include a line of holes 50 feet deep and spaced on 200-foot centers. The line is to extend from an outcrop on the Arrowhead No. 1 claim southeasterly along a prominent ridge toward a "hot" AEC hole drilled on the Lucky Strike claim, which adjoins the applicant's property on the east. The cost of this proposed exploration is estimated, by the applicant, to be about $2,000.

On December 2, 1955, the application was again referred to the field for action. Upon contacting the AEC regarding the results of their program, it was learned that a report on what is known as the Piney No. 1 exploration project was in preparation, and a rough draft of the report would be made available to DMEA when completed. The draft was made available for DMEA use on March 14, 1956, and the following discussions and recommendations are based entirely on data in that report or in the application.

LOCATION AND ACCESSIBILITY

The Skyline Engineering Company property consists of 23 claims located 6-1/2 miles northeast of Wolcott, Colorado (fig. 1) in secs. 11 and 12, T. 4 S., R. 82 W., 6th P. M. During the summer months the claims are accessible from Wolcott over local dirt roads. The claims are at an altitude of about 10,700 feet in a transition zone between the Gore Range to the east and the Central Colorado Basin to the south and west.

DRAINAGE, CLIMATE, AND VEGETATION

The area is drained by June and Berry Creeks which flow southwesterly to the Eagle River.

Annual precipitation is about 30 inches, much of it in the form of winter snow.

The claims are covered with a moderate to heavy growth of spruce, lodge-pole pine, and cedar.

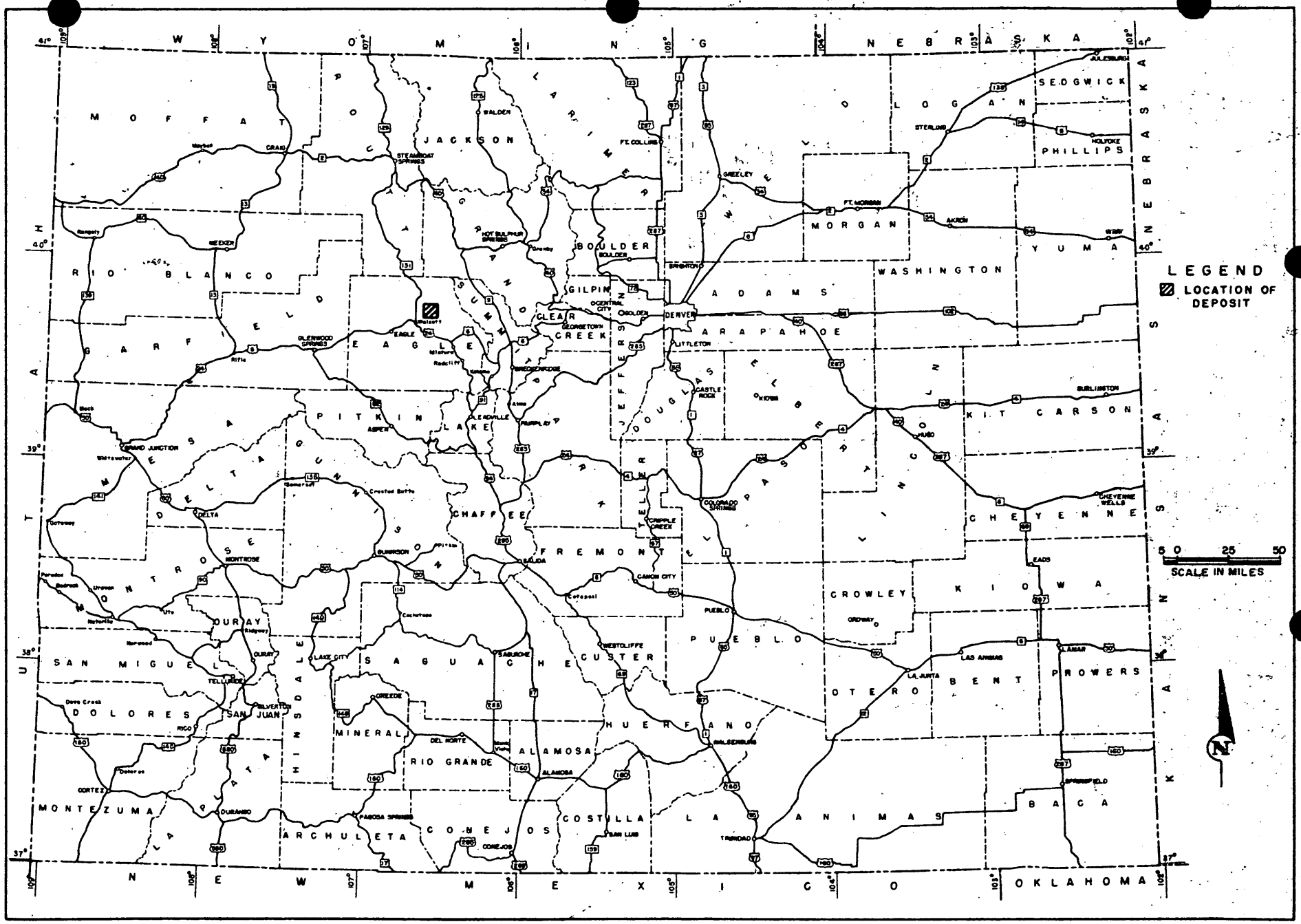

FIGURE 1. - LOCATION MAP, SKYLINE ENGINEERING COMPANY - ARROWHEAD CLAIMS, EAGLE COUNTY, COLORADO - DMEA 3775

MINING AND MILLING FACILITIES

None.

GEOLOGY

Rocks in the Wolcott area range from Carboniferous to Cretaceous in age and consist of the Maroon formation, Shinarump conglomerate, Chinle formation, Entrada sandstone, Morrison formation, Dakota sandstone, Benton shale, Niobrara formation, and Pierre shale. In the claim area only the Maroon formation, the Shinarump conglomerate, and the Chinle formation are present.

The Maroon formation, of Pennsylvanian?-Permian age, is exposed in a steep bluff along the south border of the claims (fig. 2). It is a coarse arkose and non-fossiliferous arkosic sandstone or sandy shale, characteristically deep red. The formation may be as much as 4,000 feet thick, but only the upper few hundred feet are exposed in the claim area. A persistent limestone bed is present about 50 feet below the top of the Maroon formation. A prominent disconformity is present between the Maroon and the overlying Triassic rocks.

The Triassic rocks in the area are similar to those mapped to the north and east as Shinarump and Chinle; for the purpose of this report these terms will be used to describe the two formations overlying the Maroon formation.

The Shinarump conglomerate, as exposed on the claims, is a lenticular, poorly sorted detrital, stream bed deposit, generally light pink to white. The sediments consist of medium- to coarse-grained

sands interbedded with coarse-grained, conglomeratic, quartzose sandstone. Silicious cement predominates. Deposition appears to have been by streams flowing from east to west with much reworking and redistribution of the material. The Shinarump weathers to mounds of soft clayey sandstone and generally exposures are poor.

The Chinle formation conformably overlies the Shinarump conglomerate and consists of about 125 feet of reddish-brown, limey shale, siltstone and limestone conglomerate in 1- to 3-foot thick beds. Solution cavities are abundant, and lenticular beds of conglomerate occur at intervals throughout the entire thickness of the formation.

There is considerable folding and faulting in the general area, and north of the claims the sedimentary rocks are buried under Tertiary lava flows. The Arrowhead claim group is on the southern flank of a symmetrical, northeast-trending syncline.

The potential ore horizon on the Arrowhead claims, and the horizon explored by the AEC Piney No. 1 project, is the Shinarump conglomerate. On the claims the Shinarump conglomerate is a blanket-like deposit dipping from 16 to 20 degrees north. It is 20 to 30 feet thick at the south edge of the claim group, but it rapidly thins from south to north and has almost pinched out along the north side of the claim group. Drilling indicated the presence of a persistent basal conglomerate bed, the thickness of which varied greatly from hole to hole. The conglomerate is overlain by thin shale beds. Radioactivity in the basal conglomerate is low.

Ore deposits

The only known deposit of uranium ore on the property was the small pod originally discovered on the Arrowhead No. 1 claim and subsequently mined by the applicant. This pod was found in a sandstone bed in the basal part of the Shinarump conglomerate. It consisted of carnotite impregnated sandstone associated with carbonized trash. The pod, as mined, contained 3-1/2 tons of ore assaying 0.33 percent U_3O_8. No carnotite or carbon trash remains in the outcrop.

COMPLETED EXPLORATION

The AEC Piney No. 1 exploration project started on July 27, 1955, and was completed on September 14, 1955. It consisted of 3,047 feet of rotary non-core holes drilled on the Arrowhead claims and the adjacent H. Warren property. The locations of the holes drilled on the applicant's Arrowhead claims are shown on figure 3. All holes were sampled at 1-foot intervals and were surveyed with a scintillation-type probe. All completed holes were drilled deep enough to explore the entire thickness of the Shinarump conglomerate and several of them were drilled approximately 100 feet into the underlying Maroon formation. Very slight radioactivity anomalies were recorded in some of the shaly lenses of the Maroon formation; the maximum eU_3O_8 was 0.008 percent. The radiometric analysis of the radioactive areas showed that they were too low to warrant chemical assay. No visible uranium minerals were found.

No carbon trash was found in any of the holes drilled by the AEC, nor was there the slightest indication of the presence of a Shinarump channel.

The applicant has drilled a number of close-spaced holes immediately north of the outcrop containing the small ore lens. This work failed to disclose additional ore, mineralized sandstone, or carbon trash.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that exploration by the AEC has adequately explored the most favorable part of the Skyline Engineering Company's Arrowhead claim group. The results of the drilling indicate that the Shinarump conglomerate in the area drilled is unfavorable for the occurrence of significant uranium ore deposits. The one ore deposit discovered, and subsequently mined by the applicant, is small, and the search for similar pods on the applicant's claims by drilling methods is impractical.

Contrary to the applicant's belief that one "hot hole" was drilled on the H. Warren claims to the east of the Arrowhead group, the highest eU_3O_8 found by probing the five holes drilled on that property was 0.008 percent.

It is recommended that the application of the Skyline Engineering Company, DMEA Docket 3775, for Government assistance to explore for uranium on the Arrowhead group of claims be denied without a field examination.

Representatives of the Denver Exploration Branch of the AEC have reviewed this report and concur with the recommendations made on the basis of their work in the area.

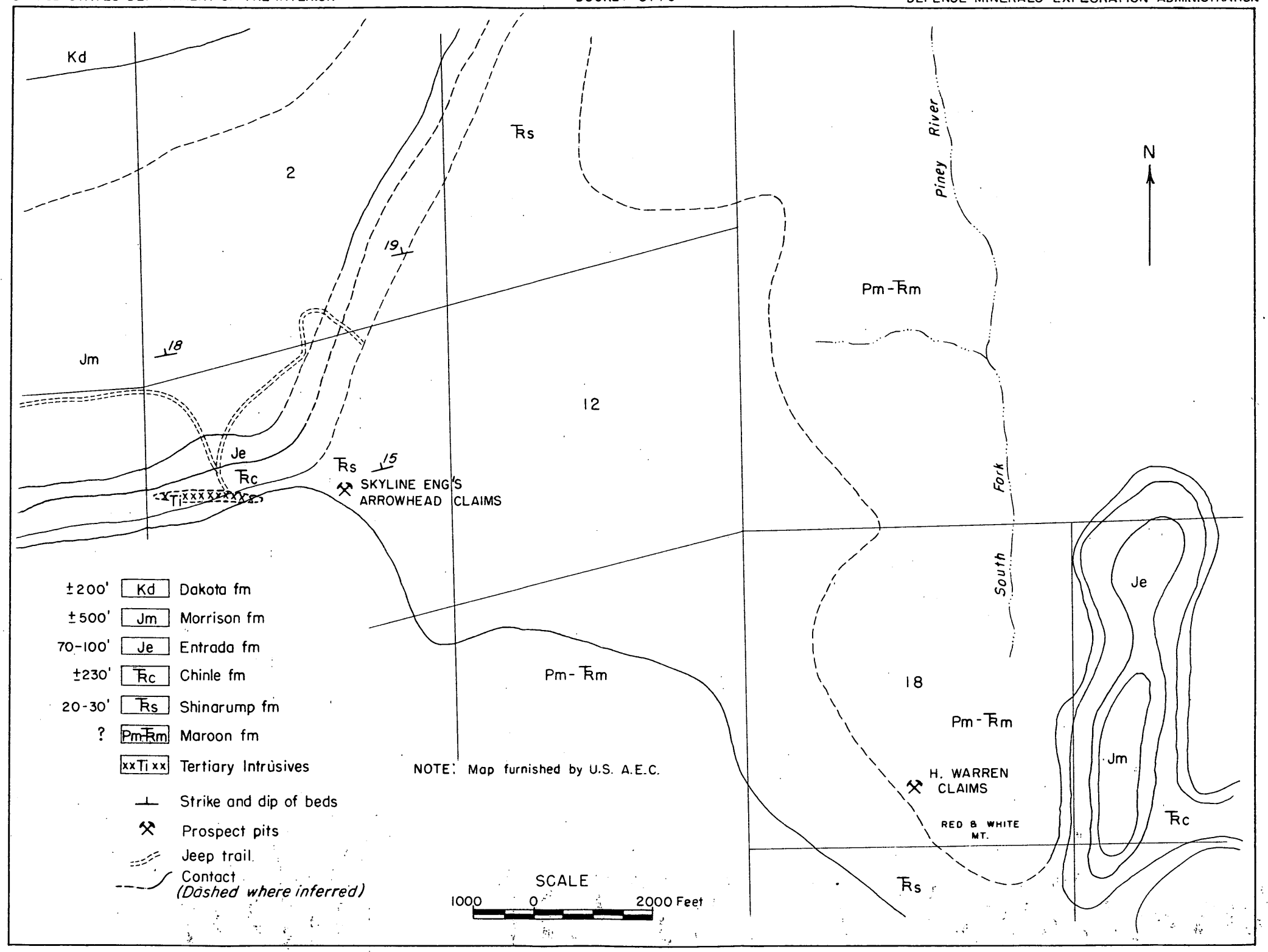

FIGURE 2. – GEOLOGIC SURFACE MAP, ARROWHEAD CLAIMS AREA, SKYLINE ENGINEERING COMPANY
EAGLE COUNTY, COLORADO

4/3/56 gla

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

March 29, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Geologic Report, Docket DMEA 3775 (Uranium), Skyline Engineering Company, Inc., (Arrowhead claims), Eagle County, Colorado

Enclosed are the original and three copies of a geologic report by E. N. Harshman, U. S. Geological Survey, in which denial of the subject application is recommended. There will be no Bureau of Mines Report.

The AEC drilling program has adequately explored the Shinarump ore horizon on the most favorable part of the claims, and no ore or favorable ground was discovered by the work.

We concur with the conclusions in the geologic report and recommend that the application be denied without a field examination.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

IN REPLY REFER TO:

DMEA
Date Rec'd.
MAR 29 1956
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

March 28, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

TRANSMITTED
MAR 29 1956

Subject: DMEA Docket 3775 (Uranium) Skyline Engineering Company, (Arrowhead claims) Eagle County, Colorado

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The AEC program has adequately explored the Shinarump ore horizon on the most favorable part of the claims by 3,047 feet of rotary non-core drilling. No ore or favorable ground was discovered by this work; the highest radioactivity found by probing the holes was 0.008 percent eU_3O_8.

Although the applicant has found one small lens of carnotite impregnated sandstone containing 3-1/2 tons of ore with 0.33 percent U_3O_8, it is concluded that the AEC work has shown the area to be unfavorable for the occurrence of significant uranium ore bodies.

We concur with the conclusions in the geologic report and recommend that the application for exploration assistance, DMEA Docket 3775, be denied without a field examination.

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

John F. Shaw
John F. Shaw
Supervising Mining Engineer

E. N. Harshman
E. N. Harshman
Member, Field Team

Enclosures (10)
ENHarshman:arh

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED

MAR 29 1956

DMEA 3775

Skyline Engineering Company, Inc.

Arrowhead Group

Eagle County, Colorado

Uranium

Memorandum Report

by

E. N. Harshman
Geological Survey

March 28, 1956

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

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ILLUSTRATIONS

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2. Geologic sirface map, Arrowhead claims area, Skyline Engineering Company, Eagle County, Colorado	Last page
3. Map of Skyline Engineering Company - Arrowhead claims, Eagle County, Colorado, showing location of holes drilled by the A.E.C.	Last page

DMEA 3775

SKYLINE ENGINEERING COMPANY, INC.
ARROWHEAD GROUP
EAGLE COUNTY, COLORADO

INTRODUCTION

On April 29, 1955, the subject application for exploration assistance was referred to the Executive Officer, Region III Field Team, for investigation, a field examination, if warranted, and recommendations.

As a preliminary step in processing this application, discussions were held with representatives of the Denver Exploration Branch of the AEC. It was learned that the AEC was in the process of advertising for bids on drilling the subject property and the H. Warren claims to the east.

In a memorandum of May 18, 1955, it was recommended that action on the Skyline Engineering Company application be deferred until the results of the AEC work were known. On June 6, 1955, the Administrator notified the applicant of the proposed delay.

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DRAINAGE, CLIMATE, AND VEGETATION

The area is drained by June and Berry Creeks which flow southwesterly to the Eagle River.

Annual precipitation is about 30 inches, much of it in the form of winter snow.

The claims are covered with a moderate to heavy growth of spruce, lodge-pole pine, and cedar.

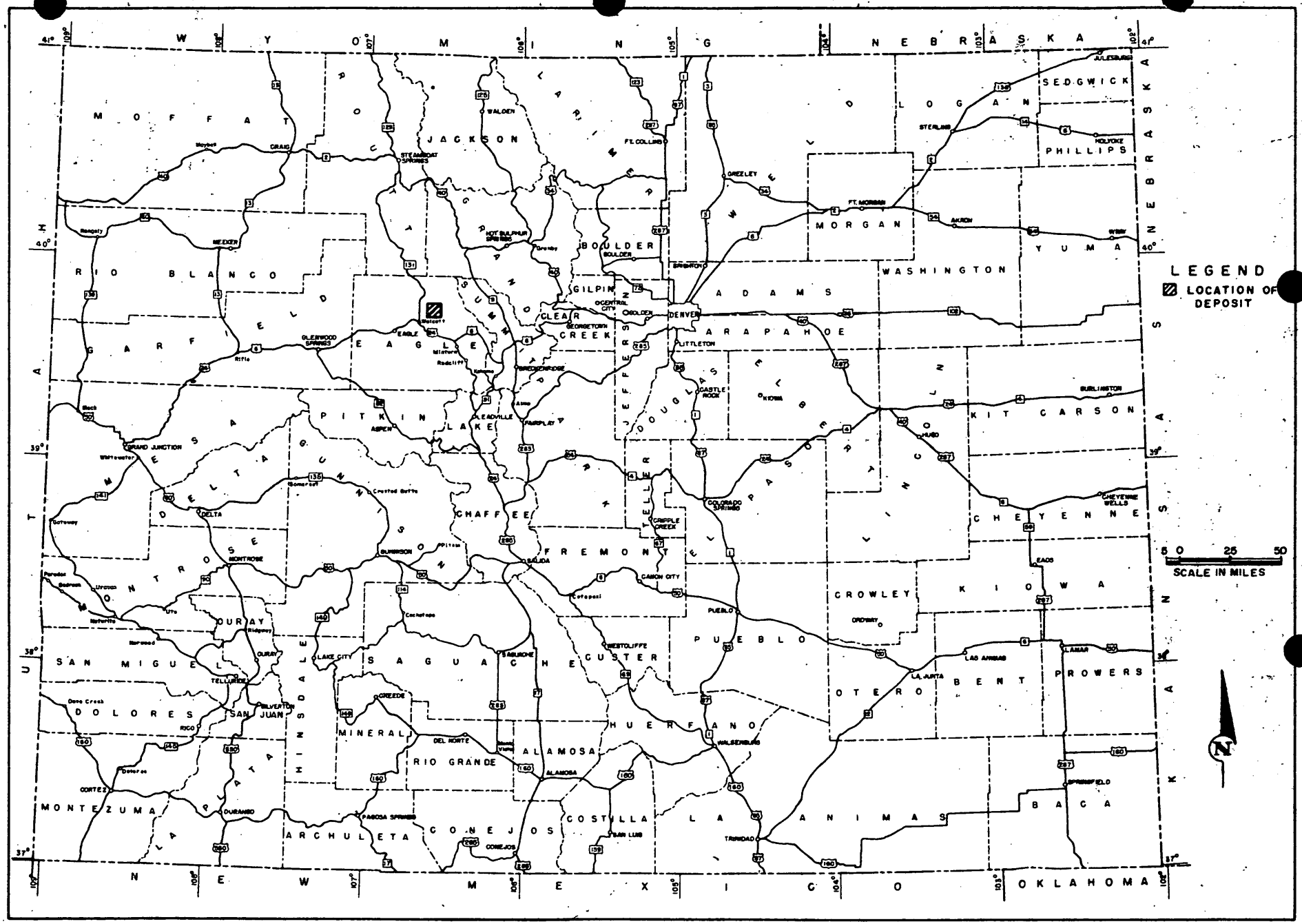

FIGURE 1. - LOCATION MAP, SKYLINE ENGINEERING COMPANY - ARROWHEAD CLAIMS, EAGLE COUNTY, COLORADO - DMEA 3775

MINING AND MILLING FACILITIES

None.

GEOLOGY

Rocks in the Wolcott area range from Carboniferous to Cretaceous in age and consist of the Maroon formation, Shinarump conglomerate, Chinle formation, Entrada sandstone, Morrison formation, Dakota sandstone, Benton shale, Niobrara formation, and Pierre shale. In the claim area only the Maroon formation, the Shinarump conglomerate, and the Chinle formation are present.

The Maroon formation, of Pennsylvanian?-Permian age, is exposed in a steep bluff along the south border of the claims (fig. 2). It is a coarse arkose and non-fossiliferous arkosic sandstone or sandy shale, characteristically deep red. The formation may be as much as 4,000 feet thick, but only the upper few hundred feet are exposed in the claim area. A persistent limestone bed is present about 50 feet below the top of the Maroon formation. A prominent disconformity is present between the Maroon and the overlying Triassic rocks.

The Triassic rocks in the area are similar to those mapped to the north and east as Shinarump and Chinle; for the purpose of this report these terms will be used to describe the two formations overlying the Maroon formation.

The Shinarump conglomerate, as exposed on the claims, is a lenticular, poorly sorted detrital, stream bed deposit, generally light pink to white. The sediments consist of medium- to coarse-grained

sands interbedded with coarse-grained, conglomeratic, quartzose sandstone. Silicious cement predominates. Deposition appears to have been by streams flowing from east to west with much reworking and redistribution of the material. The Shinarump weathers to mounds of soft clayey sandstone and generally exposures are poor.

The Chinle formation conformably overlies the Shinarump conglomerate and consists of about 125 feet of reddish-brown, limey shale, siltstone and limestone conglomerate in 1- to 3-foot thick beds. Solution cavities are abundant, and lenticular beds of conglomerate occur at intervals throughout the entire thickness of the formation.

There is considerable folding and faulting in the general area, and north of the claims the sedimentary rocks are buried under Tertiary lava flows. The Arrowhead claim group is on the southern flank of a symmetrical, northeast-trending synaline.

The potential ore horizon on the Arrowhead claims, and the horizon explored by the AEC Piney No. 1 project, is the Shinarump conglomerate. On the claims the Shinarump conglomerate is a blanket-like deposit dipping from 16 to 20 degrees north. It is 20 to 30 feet thick at the south edge of the claim group, but it rapidly thins from south to north and has almost pinched out along the north side of the claim group. Drilling indicated the presence of a persistent basal conglomerate bed, the thickness of which varied greatly from hole to hole. The conglomerate is overlain by thin shale beds. Radioactivity in the basal conglomerate is low.

Ore deposits

The only known deposit of uranium ore on the property was the small pod originally discovered on the Arrowhead No. 1 claim and subsequently mined by the applicant. This pod was found in a sandstone bed in the basal part of the Shinarump conglomerate. It consisted of carnotite impregnated sandstone associated with carbonized trash. The pod, as mined, contained 3-1/2 tons of ore assaying 0.33 percent U_3O_8. No carnotite or carbon trash remains in the outcrop.

COMPLETED EXPLORATION

The AEC Piney No. 1 exploration project started on July 27, 1955, and was completed on September 14, 1955. It consisted of 3,047 feet of rotary non-core holes drilled on the Arrowhead claims and the adjacent H. Warren property. The locations of the holes drilled on the applicant's Arrowhead claims are shown on figure 3. All holes were sampled at 1-foot intervals and were surveyed with a scintillation-type probe. All completed holes were drilled deep enough to explore the entire thickness of the Shinarump conglomerate and several of them were drilled approximately 100 feet into the underlying Maroon formation. Very slight radioactivity anomalies were recorded in some of the shaly lenses of the Maroon formation; the maximum eU_3O_8 was 0.008 percent. The radiometric analysis of the radioactive areas showed that they were too low to warrant chemical assay. No visible uranium minerals were found.

No carbon trash was found in any of the holes drilled by the AEC, nor was there the slightest indication of the presence of a Shinarump channel.

The applicant has drilled a number of close-spaced holes immediately north of the outcrop containing the small ore lens. This work failed to disclose additional ore, mineralized sandstone, or carbon trash.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that exploration by the AEC has adequately explored the most favorable part of the Skyline Engineering Company's Arrowhead claim group. The results of the drilling indicate that the Shinarump conglomerate in the area drilled is unfavorable for the occurrence of significant uranium ore deposits. The one ore deposit discovered, and subsequently mined by the applicant, is small, and the search for similar pods on the applicant's claims by drilling methods is impractical.

Contrary to the applicant's belief that one "hot hole" was drilled on the H. Warren claims to the east of the Arrowhead group, the highest eU_3O_8 found by probing the five holes drilled on that property was 0.008 percent.

It is recommended that the application of the Skyline Engineering Company, DMEA Docket 3775, for Government assistance to explore for uranium on the Arrowhead group of claims be denied without a field examination.

Representatives of the Denver Exploration Branch of the AEC have reviewed this report and concur with the recommendations made on the basis of their work in the area.

UNITED STATES DEPARTMENT OF THE INTERIOR

EXAMINATION REPORT
DOCKET 3775

PREPARED FOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

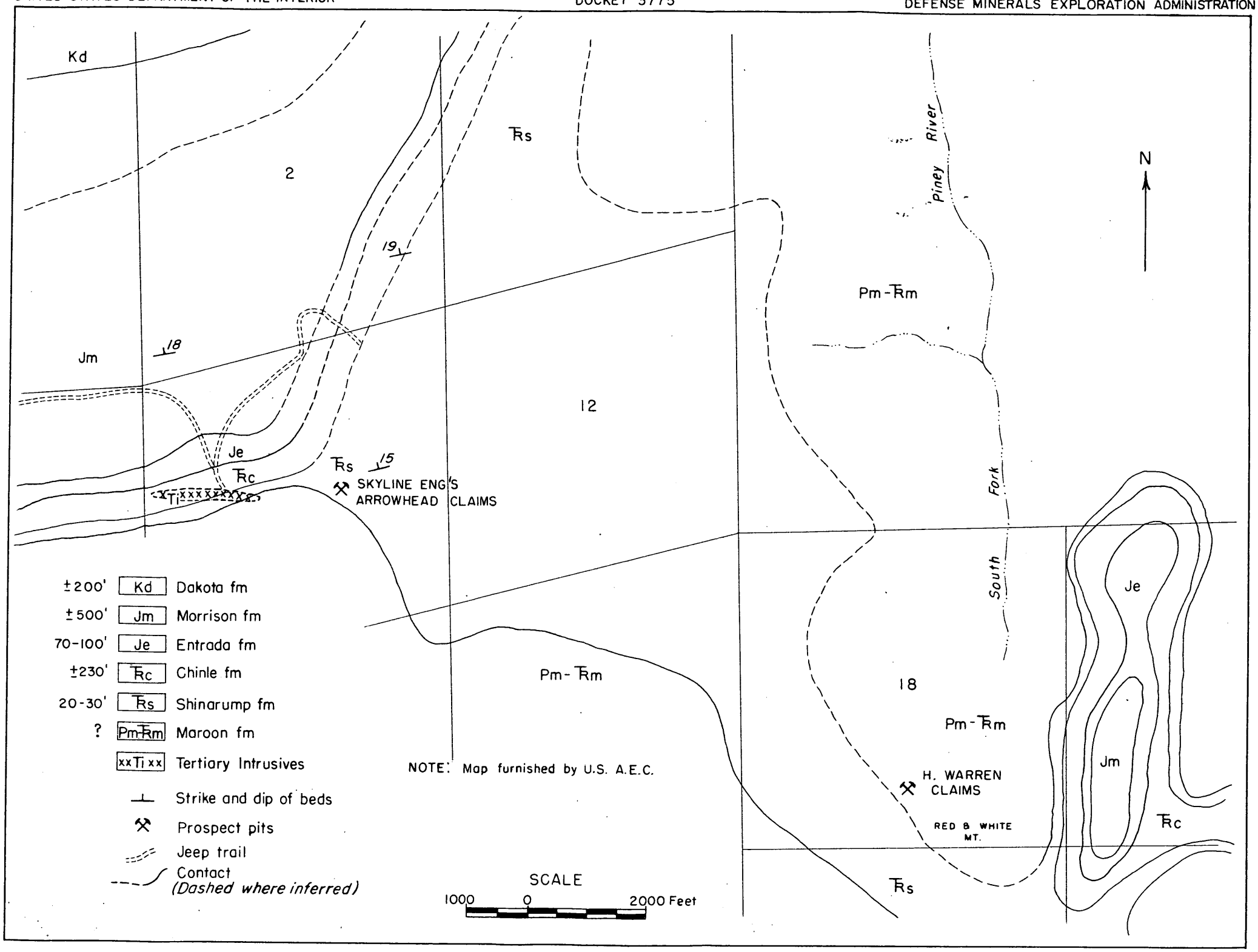

FIGURE 2. – GEOLOGIC SURFACE MAP, ARROWHEAD CLAIMS AREA, SKYLINE ENGINEERING COMPANY
EAGLE COUNTY, COLORADO

3-16-56 [illegible]

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

RECEIVED
MAR 15 1956

March 13, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3775 (Uranium), Skyline Engineering Company, Inc., Arrowhead Group, Eagle County, Colorado

This responds to your letter of March 5, 1956 on the subject docket.

A draft has just been made available showing the results of the Atomic Energy Commission drilling indicating negative results. On that basis, a report will be submitted recommending denial.

The snow in this area is 50 percent above normal this year, and should you recommend a field examination, it could not be made before late June or early July.

W. M. Traver

W. M. Traver

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

RECEIVED
MAR 15 1956

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Denver 2, Colorado

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W. M. TRAVER

W. M. Traver

700

FILE COPY

Surname:
Ching
Selfridge
McKinney

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

MAR - 5 1956

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Skyline Engineering Company, Inc.
Arrowhead Group
Eagle County, Colorado

Dear Mr. Traver:

Will you kindly advise as to the present status of this application. Since our letter to you, dated December 2, 1955, we have had no advice as to the progress being made on a report and recommendation.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (243)

APPROVED:

/s/ Robert W. Geehan (242)
Member, Bureau of Mines

Thor H. Kiilsgaard (243)
Member, Geological Survey

MChing/izm 2-29-56
cc to: Docket
Code 700
Mr. Ching
Admr.'s Reading File
Operating Committee
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

12-12-55 gla

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

RECEIVED
DEC 12 1955

[redacted]
[redacted]

[redacted]

[redacted]

To: J. F. Shaw
E. H. Barshman

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA-3775 (Uranium) Skyline Engineering Company, Inc., Arrowhead Group, Eagle County, Colorado

Enclosed is a copy of a letter from the Chairman of the Operating Committee and a copy of a letter from the applicant, George A. Prohiek, to Frank E. Johnson.

The applicant, in his letter, indicates his willingness to revise his program in view of the results of the AEC drilling.

Will you please obtain the results of the AEC drilling and submit your report and recommendations.

E. H. Barshman

Enclosures

E. H. Barshman

HMC:pw

cc: Sec.Op.Comm. (2)
DMEA-3775
Chron

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

RECEIVED
DEC 12 1955

[redacted]
[redacted]

[redacted]

[redacted]

To: J. F. Shaw
E. N. Harshman

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Project DMEA-3775 (Uranium) Skyline Engineering Company, Inc., Arrowhead Group, Eagle County, Colorado

Enclosed is a copy of a letter from the Chairman of the Operating Committee and a copy of a letter from the applicant, George A. Frohlick, to Frank E. Johnson.

The applicant, in his letter, indicates his willingness to review his program in view of the results of the ABC drilling.

Will you please obtain the results of the ABC drilling and submit your report and recommendations.

E. N. Harshman

Enclosures

E. N. Harshman

HMC:pw

cc: Sec.Op.Comm. (2)
DMEA-3775
Chron

700

FILE COPY
Surname:
Ching
Lip
Leeson
~~Kalegaard~~
Selfridge
JE Jones

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

1955

Mr. George A. Frohlick, President
Skyline Engineering Company, Inc.
4785 East Evans Avenue
Denver, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Mr. Frohlick:

In response to your letter of November 17, 1955, we have again referred your application to the Executive Officer of Region III at Denver, for further review.

The Regional Office will contact you in regard to your project, if additional information is required.

Sincerely yours,

T. T. Mittenderf
(by EEF)
Administrator

MChing/izm
12-1-55
cc to: Admr.'s Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

700

FILE COPY

Surname:
Ching
Selfridge

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

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
7th New Customhouse Building
Denver 2, Colorado

DEC - 2 1955

Re: Docket No. DMEA-3775 (Uranium)
Skyline Engineering Company, Inc.
Arrowhead Group
Eagle County, Colorado

Dear Mr. Traver:

As you know, the subject application has been held in abeyance pending completion of preliminary drilling on the property by the AEC.

The enclosed copies of a letter, dated November 17, 1955, from the Applicant indicates that the AEC drilling on the property has been completed. You will note that the results were not mentioned.

We have been advised by the AEC representative in Washington that the preliminary drilling on this property has probably been completed.

It is suggested that you contact the Denver Office of the AEC with the view of securing the results of the aforementioned drilling. If the results warrant a field examination, please arrange one. In any event, a report and recommendation is requested.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosures

APPROVED:

/s/ Robert W. Geehan
Member, Bureau of Mines

Thor H. Kriisgaard
Member, Geological Survey

MChing/izm 12-1-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Code 700
Mr. Ching
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

11-21-55 sjm

SKYLINE ENGINEERING CO. INC.
4785 East Evans Avenue
Denver, 22, Colo.

RECEIVED
NOV 21 1955

November 17, 1955

Frank E. Johnson
Defense Minerals Exploration Admin.
Department of the Interior
Washington, 25, D. C.

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Sir:

In reply to your letter of Oct. 26, 1955.

After talking with the rest of the stockholders we have come to these conclusions.

Since the A. E. C. has covered the area with wide spaced holes, we must revise our program. We have some ideas now on where not to drill. It appears that our deductions of the direction of the ore body were wrong. We are undecided on how much work to do, but it appears that we should spend in the neighborhood of $2,000.00 on drill holes 50 feet deep and spaced at about 200 feet centers. These holes would start at our outcrop on Arrowhead No. 1 and follow the ridge southeasterly staying near the south boundaries of claims Nos. 2, 3, 5, 6, 7, 8, 9, and 10. This would be in an approximate straight line between our outcrop and the hot hole struck by the A. E. C. on the Lucky Strike claim adjoining us. The A. E. C. did not drill any holes near this proposed line. We think that we may be able to interest someone to wagon drill these holes for us on a footage basis. We would not know what the per foot cost would be until we took bids next spring.

Please advise us on how to revise our program for operation next June.

Very truly yours,

SKYLINE ENGINEERING CO., INC.

By George A. Frohlick
George A. Frohlick
President

GAF:mmf

SKYLINE ENGINEERING CO., INC.
4785 East Evans Avenue
Denver, 22, Colo.

November 17, 1955

RECEIVED
NOV 21 1955

Frank E. Johnson
Defense Minerals Exploration Admin.
Department of the Interior
Washington, 25, D. C.

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

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Very truly yours,

SKYLINE ENGINEERING CO., INC.

By_____
George A. Frohlick
President

GAF:mmf

Surname copy

Ching
Ellis

700

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

OCT 26 1955

Mr. George A. Frohlick, President
Skyline Engineering Company, Inc.
4785 E. Evans Avenue
Denver, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Mr. Frohlick:

Reference is made to our letter of June 6, 1955, regarding your above-docketed application.

At that time we advised you the application would be held in abeyance until completion of some preliminary drilling which the Atomic Energy Commission was preparing to do on your property. We requested that you advise us when this work was completed and the results thereof. Please advise us if the results of this program are now known, and whether you wish to continue with the processing of the subject application.

Sincerely yours,

Frank E. Johnson
by EST
Acting Administrator

MChing/gla
10-26-55
cc to: Admr.'s Reading File
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JCHosted, Rm. 3210, GSA
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.C.S.

6/13/55

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

RECEIVED
JUN 13 1955

June 10, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Subject: Application for assistance, DMEA Docket 3775, Skyline Engineering Co., Inc., Arrowhead group, Eagle County, Colorado

I have reviewed the application for assistance, Skyline Engineering Co., Inc., Arrowhead group, Eagle County, Colorado, DMEA Docket 3775; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We suggest that action on the application of Skyline Engineering Co., Inc., be held in abeyance until the results of Atomic Energy Commission drilling on the property are made known to the DMEA by either the owner or the Government.

The application has been forwarded to the Chief, Division of Minerals, in accordance with the routing slip attached thereto.

John E Crawford
John E. Crawford

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

RECEIVED
JUN 13 1955

June 10, 1955

Memorandum

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

RECEIVED
JUN 13 1955

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John E. Crawford

Surname 700

Ching
Ellis
F.J. Johnson

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

Mr. George A. Frohlick, President
Skyline Engineering Company, Inc.
4785 E. Evans Avenue
Denver, Colorado

JUN - 6 1955

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Mr. Frohlick:

In connection with your subject application the DMEA Field Team has just advised us that the Atomic Energy Commission is preparing to do some preliminary drilling on your property, with the work scheduled to start about July 1, 1955.

The purpose of the AEC project is to determine favorable ore horizons, ore trends, structural control of ore deposition, including possible relationship of ore deposits to faults, and the ore potential of the area.

Since these data may be of great value in preparing any well planned program of exploration on your property we are holding your application in abeyance until completion of the AEC program. If, after the results of this program are known, you wish to continue the exploration work, please so advise us and we shall resume the processing of your application. It is suggested that complete results of the AEC drilling be incorporated with your advice.

Sincerely yours,

C. O. Mittendorf

Administrator

MChing:am
6-3-55
cc to: Admr. Reading File
Docket
Messrs. J. E. Crawford, Rm. 3641
T. H. Kiilsgaard, Rm. 5224
J. O. Hosted, Rm. 3210, GSA
Code 700
Mr. Ching
DMEA Field Team, Region III(2)

R.C.G.

6/7/55 gla

IN REPLY REFER TO:

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

RECEIVED
JUN - 7 1955

June 6, 1955

Re: DMEA-3775
Skyline Engineering
Company, Inc.
Arrowhead Group
Eagle Co., Colo.

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report

The reasons given for denying, without prejudice, or postponing action on the subject application appear to be fair and fit.

I concur with the recommendation.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

RECEIVED
JUN - 7 1955

June 6, 1955

Re: DMEA-3775
Skyline Engineering
Company, Inc.
Arrowhead Group
Eagle Co., Colo.

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report

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N. E. Nelson

N. E. Nelson

NENelson:hlm
C-6/6/55

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641 Interior
J. O. Hosted, 3210 GSA

6-6-55
Pm

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

224 New Customhouse
Denver 2, Colorado

May 23, 1955

Memorandum

To: Chairman of the Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA-3775 (Uranium), Skyline Engineering Co., Inc., Arrowhead group, Eagle County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

We recommend that the application be denied without prejudice until such time as the results of the AEC drilling are known. A new application based on the results of AEC drilling would receive proper consideration.

W. M. Traver

W. M. Traver

Enclosures

E. N. Harshman

E. N. Harshman

Reviewed by
DMEA OPERATING COMMITTEE
6-3-55
(date)

IN REPLY REFER TO:
DMEA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

Date Rec'd. MAY 20 1955
BUREAU OF MINES
Denver, Colorado

May 18, 1955

Defense Minerals Administration
MAY 31 1955

Memorandum

To: Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 3775 (Uranium), Skyline Engineering Company, Inc., Arrowhead group, Eagle County, Colorado

The above subject application for exploration assistance was discussed with representatives of the Denver Exploration Branch of the Atomic Energy Commission. At the time of the discussions it was learned that the AEC had recently advertized for bids on drilling 50 to 100 holes on the subject property and on the H. Warren claims to the southeast. Work on the Piney Drilling Project No. 1 will start about July 1, 1955. Details of the proposed program are not fixed at this time but drilling will probably be done on 500 to 1,000-foot centers possibly in a fence pattern.

The purpose of the AEC project is to determine favorable ore horizons, the ore trends, the structural control of ore deposition, including possible relations of ore deposits to faults, and the ore potential of the area.

Since these data are essential to a well planned program of exploration for ore bodies on the Skyline property, it is recommended that the application either be denied without prejudice or held inactive until completion of the AEC exploration program. If denied without prejudice, the applicant should submit a new application at the completion of the AEC work incorporating the results of that work.

One copy of a map furnished by the AEC and showing the proposed project area is attached.

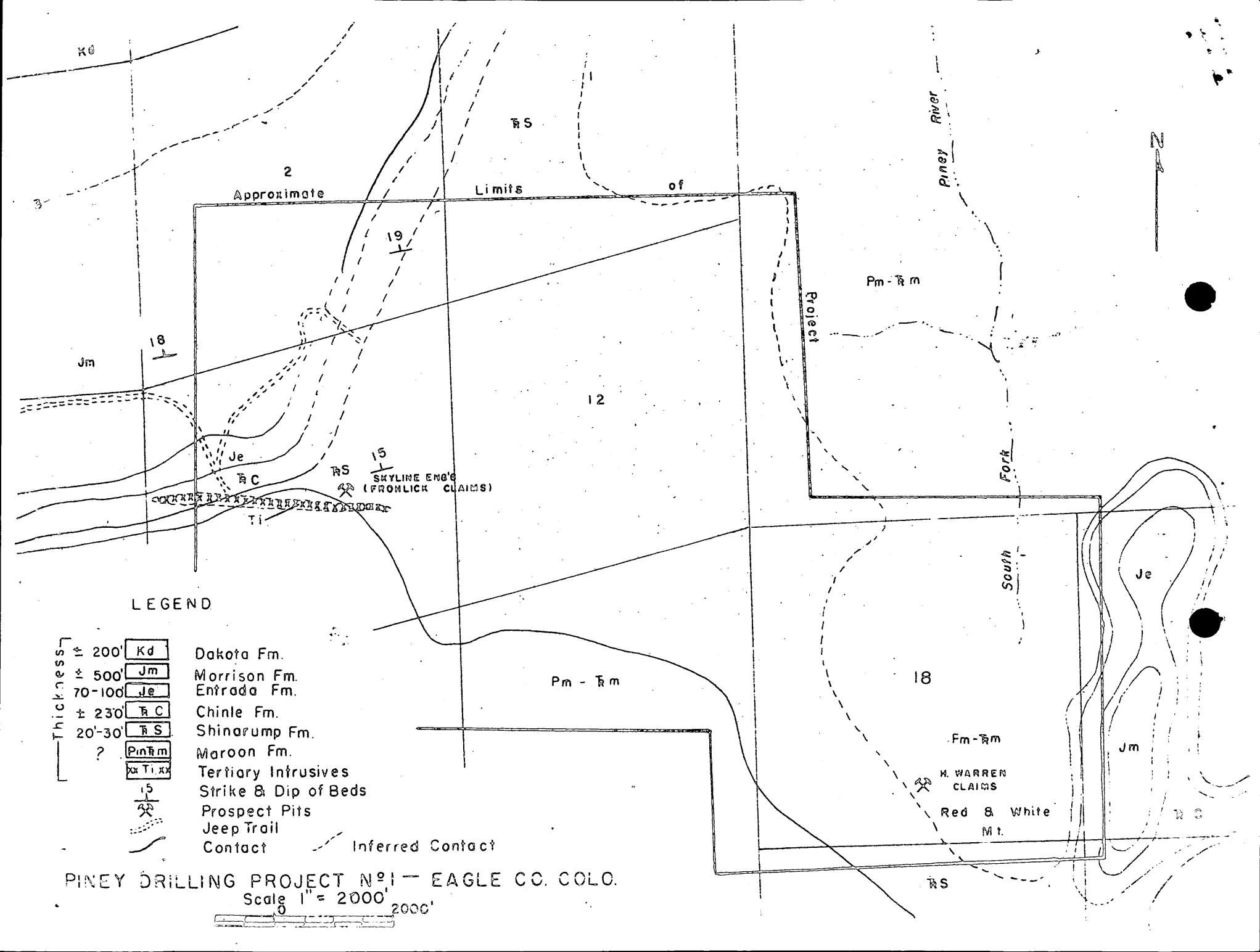
Reviewed by
DMEA OPERATING COMMITTEE
6-3-55
(date)

E. N. Harshman
E. N. Harshman
Member, Field Team

Enclosure (1)

I approve of the above recommendations.

John F. Shaw
John F. Shaw
Supervising Mining Engineer
U. S. Bureau of Mines


Approximate Limits of Project
Piney River
South Fork
N
Kd
Jm
Je
TRC
TRS
Ti
Pm - TRm
Fm - TRm
18
12
2
1
3
19
18
15
SKYLINE ENG'G (FROHLICK CLAIMS)
H. WARREN CLAIMS
Red & White Mt.
LEGEND
Thickness
± 200' Kd Dakota Fm.
± 500' Jm Morrison Fm.
70-100 Je Entrada Fm.
± 230' TRC Chinle Fm.
20'-30' TRS Shinarump Fm.
? PmTRm Maroon Fm.
Ti Tertiary Intrusives
Strike & Dip of Beds
Prospect Pits
Jeep Trail
Contact
Inferred Contact
PINEY DRILLING PROJECT Nº1 — EAGLE CO. COLO.
Scale 1" = 2000'
0
2000'

5/31/55 gla

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

224 New Customhouse
Denver 2, Colorado

May 23, 1955

Memorandum

To: Chairman of the Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA-3775 (Uranium), Skyline Engineering Co., Inc., Arrowhead group, Eagle County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

We recommend that the application be denied without prejudice until such time as the results of the ABC drilling are known. A new application based on the results of ABC drilling would receive proper consideration.

W. H. Traver

Enclosures

E. N. Harshman
E. N. Harshman

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR

DMEA
Date Rec'd.
MAY 20 1955
BUREAU OF MINES
Denver, Colorado

GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

May 18, 1955

Memorandum

To: Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 3775 (Uranium), Skyline Engineering Company, Inc., Arrowhead group, Eagle County, Colorado

The above subject application for exploration assistance was discussed with representatives of the Denver Exploration Branch of the Atomic Energy Commission. At the time of the discussions it was learned that the AEC had recently advertized for bids on drilling 50 to 100 holes on the subject property and on the H. Warren claims to the southeast. Work on the Piney Drilling Project No. 1 will start about July 1, 1955. Details of the proposed program are not fixed at this time but drilling will probably be done on 500 to 1,000-foot centers possibly in a fence pattern.

The purpose of the AEC project is to determine favorable ore horizons, the ore trends, the structural control of ore deposition, including possible relations of ore deposits to faults, and the ore potential of the area.

Since these data are essential to a well planned program of exploration for ore bodies on the Skyline property, it is recommended that the application either be denied without prejudice or held inactive until completion of the AEC exploration program. If denied without prejudice, the applicant should submit a new application at the completion of the AEC work incorporating the results of that work.

One copy of a map furnished by the AEC and showing the proposed project area is attached.

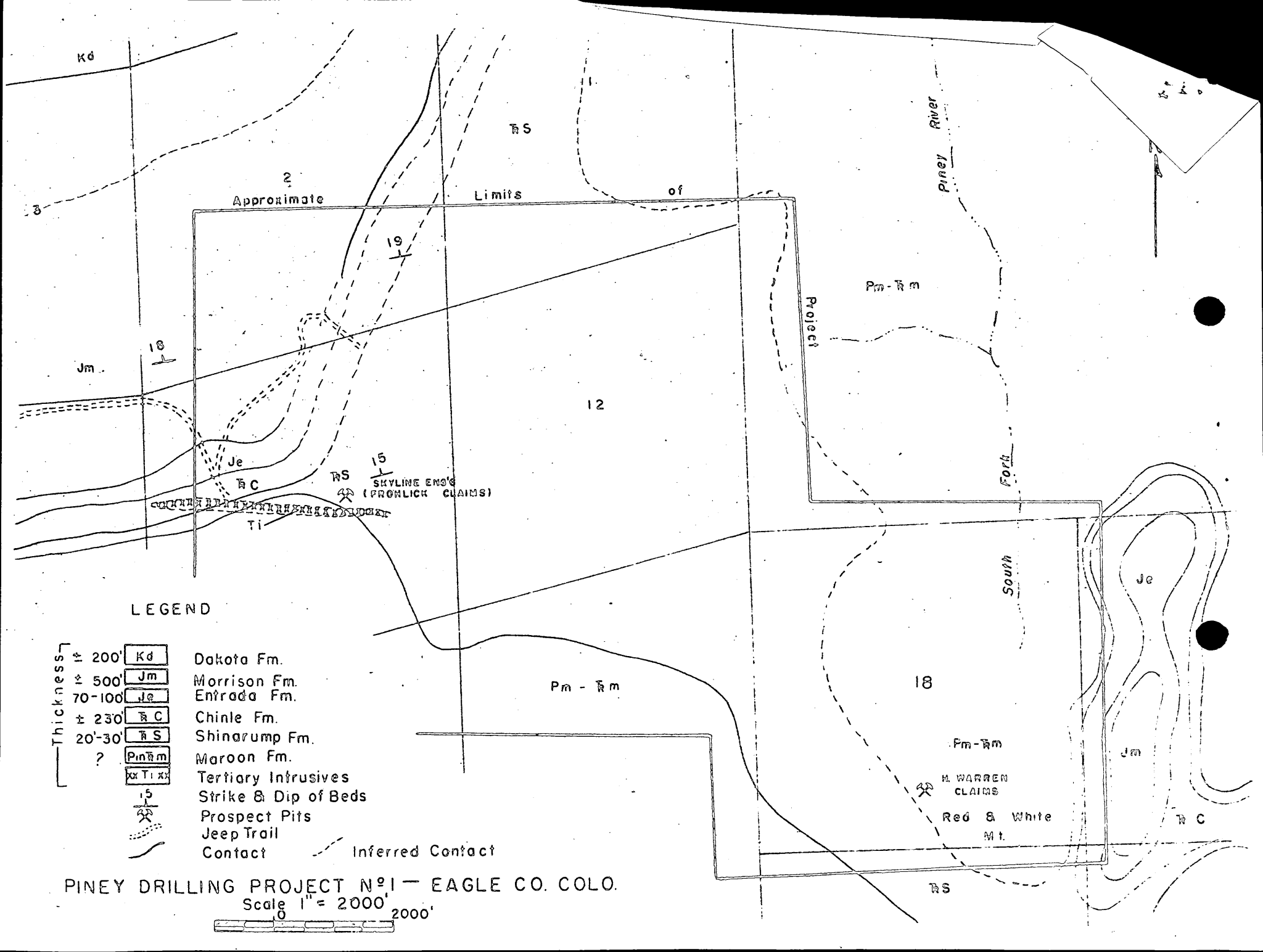
E. N. Harshman

E. N. Harshman
Member, Field Team

Enclosure (1)
I approve of the above recommendations.
ENHarshman:arh

John F. Shaw

John F. Shaw
Supervising Mining Engineer
U. S. Bureau of Mines


Approximate Limits of Project
Piney River
South Fork
Kd
Jm
Je
TRC
TRS
Ti
Pm-TRm
12
18
19
15
SKYLINE ENG'G (FROHLICK CLAIMS)
H. WARREN CLAIMS
Red & White Mt.
LEGEND
Thickness
± 200' Kd Dakota Fm.
± 500' Jm Morrison Fm.
70-100' Je Entrada Fm.
± 230' TRC Chinle Fm.
20'-30' TRS Shinarump Fm.
? PmTRm Maroon Fm.
Ti Tertiary Intrusives
Strike & Dip of Beds
Prospect Pits
Jeep Trail
Contact
Inferred Contact
PINEY DRILLING PROJECT Nº1 — EAGLE CO. COLO.
Scale 1" = 2000'
0
2000'

5/12/55 gla

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 12 1955

224 New Customhouse
Denver 2, Colorado

May 9, 1955

Memorandum

To: J. F. Shaw (w/brochure)
E. N. Harshman

From: Field Team, Region III

Subject: Docket DMEA-3775 (Uranium), Skyline Engineering Company, Inc., (Arrowhead group), Eagle County, Colorado

Enclosed are the subject loan application for $10,663.00, transmittal thereof from the Chairman of the Operating Committee, and memoranda to E. W. Ellis from E. L. Newcomb, USGS, and John E. Crawford, USBM, members of the Uranium Commodity Committee.

According to the Denver Exploration Branch, AEC, the property has considerable merit. After preliminary consultation with Mr. Towle's office a field investigation is required with suitable covering reports. At the time of the examination, the applicant should be requested to submit a more comprehensive map showing the location of features mentioned in the loan application with respect to claim boundaries.

W. M. TRAVER

W. M. Traver

E. N. Harshman

Enclosures

E. N. Harshman

WMT:pw

cc: Subject
Chron
Sec.Op.Comm. (2)
Harshman

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
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W. M. TRAVER

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

WMT:pw

cc: Subject
Chron
Sec.Op.Comm. (2)
Harshman

Surname 700

Ching
Kilsgaard
Gehon
Selfridge
Johnson

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

APR 29 1955

Mr. George A. Frohlick, President
Skyline Engineering Company, Inc.
4785 E. Evans Avenue
Denver, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Arrowhead Group
Eagle County, Colorado

Dear Mr. Frohlick:

The application for assistance in exploring the subject property in Eagle County, Colorado, under the captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred to the Executive Officer of Region III at the following address:

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

The Regional Office will contact you in regard to your project if additional information is required.

Sincerely yours,

C. O. Mittenderf (for)

Administrator

Mr. Ching:am
4-27-55
cc to: Admr. Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III(2)

R.G.4.

Surname 700

Ching
Ellis
Selfridge
Johnson
Matheudon

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

APR 29 1955

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3775 (Uranium)
Skyline Engineering Company, Inc.
Arrowhead Group
Eagle County, Colorado

Dear Mr. Traver:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendation. A copy of the application was forwarded to you on April 15.

Enclosed are two copies each of comments and recommendations dated April 20, 1955, by E. L. Newcomb and John E. Crawford of the Uranium Commodity Committee.

As noted by Mr. Newcomb data submitted by the Applicant is rather incomplete. However, Mr. J. Hosted of the Atomic Energy Commission advised that a preliminary report on the property by Atomic Energy Commission engineers was very favorable, and that considerable information may be available at the Denver office of the Atomic Energy Commission. It is suggested that you contact Mr. C. C. Towle of that office as the first step of your investigation.

Sincerely yours,

George C. Selfridge
by ESF
Chairman, Operating Committee

Enclosures

APPROVED:

/s/ Robert W. Geehan by ESF
Member, Bureau of Mines

Thor H. Kiilsgaard by ESF
Member, Geological Survey

MChing:am
4-27-55
cc to: Admr, Reading File
Operating Committee
Docket
Messrs. J. E. Crawford, Rm. 3641
T. H. Kiilsgaard, Rm. 5224
J. O. Hosted, Rm. 3210, GSA
Code 700
Mr. Ching

RC.

4/21/55 gla

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

DEPARTMENT OF THE INTERIOR
Colorado Minerals Administration
RECEIVED
APR 21 1955

April 20, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: Bureau of Mines Member
Uranium Commodity Committee

Subject: DMEA Docket 3775, Skyline Engineering Company, Inc., Arrowhead group of claims, Eagle County, Colorado

I have reviewed the attached application of Skyline Engineering Company, DMEA Docket 3775, and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We suggest that the application be referred to the Field Team for review and that the Field Team be requested to consult with Mr. C. C. Towle, Atomic Energy Commission, Denver, Colorado.

Atomic Energy Commission personnel made an examination of the property on August 25, 1954. Results of the investigation were very favorable; indications were that drilling should be done, and the area merits further study. Mr. Towle's group may have sufficient information available to make a Field Team examination unnecessary.

John E. Crawford
John E. Crawford

Attachment

4/21/55 gla

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
APR 21 1955

April 20, 1955

Re: DMEA-3775
Skyline Engineering Co., Inc.
(Arrowhead Claims)
Eagle Co., Colorado
$10,663 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of application

The operator has proposed to drill 20 holes and bulldoze 72 hours to develop access roads.

Although the property is reported to have shipped 3.5 tons of ore averaging 0.21 percent U_3O_8 and .15 percent vanadium, there is not sufficient geologic data in the application to evaluate the merit of the proposed work.

The operator states the A.E.C. has examined his property and a report was prepared. I suggest Mr. J. Hosted inquire into the matter of this A.E.C. report. In the meantime I recommend the applicant be requested to submit a more complete geologic map with location of present workings, sample assays, and results of radiometric testing or survey in the proposed exploration area.

E. L. Newcomb
E. L. Newcomb

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED

April 20, 1955

Re: DMEA-3775
Skyline Engineering Co., Inc.
(Arrowhead Claims)
Eagle Co., Colorado
$10,663 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of application

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E. L. Newcomb

Copy to: DMEA (3)

April 15, 1955
Subject: DMEA 3775
Re: Exploration Assistance
Arrowhead Group

Skyline Engineering Company, Inc.
4785 E. Evans Ave.
Denver, Colorado

Gentlemen:

The receipt of your application dated April 11, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 3775 and referred to the Rare and Miscellaneous Metals 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

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

DEPARTMENT OF THE INT
Defense Minerals Administration
RECEIVED
APR 14 1955

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. 3775
Metal or Mineral Uranium
Date Received 4-14-55
Estimated Cost $10,663
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: Skyline Engineering Company, Inc. (A Colorado Corporation)
4785 E. Evans, Denver, Colorado

(*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. (See Schedule 1, Para 1-c)

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not applicable

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 23 unpatented lode mining claims, known as the Arrowhead group, approximately sections 2, 11, and 12, Township 4 South, Range 82 West, Eagle County, Colorado. (See Exhibit B attached)

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

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

(*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. Owner by location

(*e*) If you own the land, describe any liens or encumbrances on it None

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

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 Schedule 1, Para 4-a)

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. None

(*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 Schedule 1, Para 4-c)

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. North of Wolcott and approximately 93 to 103 miles from Rifle, Colorado

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. Would be available in Glenwood Springs, Colorado or Rifle, Colorado

16—66551-1

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

(*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. **(See Schedule 1, Para 5-b)**

(*c*) The work will start within 30 days and be completed within 2 months from the date of an exploration project contract. **(See Schedule 1, Para 5-c)**

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

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: **(Schedule 1)**

(*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)? **Yes**

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated 4-11, 1955

Skyline Engineering Co Inc
(Applicant)

By George G. Frohlich (Pres)

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

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 14 1955

(1-c) Officers:

George Frohlick, President
4785 E. Evans Ave.
Denver, Colorado

B. T. Pull, Vice-President
2000 So. Dahlia
Denver, Colorado

Lloyd E. Hayne, Secretary-Treasurer
2000 So. Dahlia
Denver, Colorado

(4-a) Applicant discovered three outcroppings on the face of a cliff as identified on the plot plan of the claims (Exhibit A). Portions of the cliff face have been broken away and 3-1/2 tons of ore was shipped to mill at Rifle, Colorado with average assays reported of .21% U_3O_8 and .15 % Vanadium. All prospect holes have been dug on the 23 claims by applicant. A road has been bulldozed up to Arrowhead claim #1. The claims have been inspected by an A. E. C. geologist and a report prepared thereon.

The type of deposit is a vein and applicant believes that sufficient ore is present in commercial quantities and grades to warrant further exploration so as to determine the extent of the vein.

(5-b) Plan of Exploration:

Phase #1. Drill 6 test holes - 50 ft. spacings identified as 1, 2, 3, 4, 5, and 6 on Exhibit A.

Phase #2. Drill 6 test holes - 50 ft. spacings identified as 7, 8, 9, 10, 11, and 12 on Exhibit A.

Phase #3. Drill 4 test holes - 100 ft. spacings identified as 13, 14, 15, and 16 on Exhibit A.

Phase #4. Bulldoze road from trail on Claim #20 to lower side of vein exposure on face of cliff on claim #1, as indicated on the map, and strip over burden from face and ledge of cliff and to explore for other outcroppings of ore.

Phase #5. Drive an experimental drift in face of cliff in two places on claim #1, near the carnotite outcrop, in a northerly direction, to determine the continuity and direction of the veins.

Phase #6. Bulldoze trail from claim #1 to copper exposure on claim #24 as identified on Exhibit A and do 8 hours exploratory digging with bulldozer in the copper outcroppings in the shinarump for combinations with uranium ore.

Phase #7. Drill 4 test holes - 200 ft. spacings identified as #17, 18, 19, and 20 on Exhibit A.

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

(5-c) The starting date can be effected by the snow conditions in the area.

(5-d) Mr. George Frohlick, President of applicant, is a general contractor with offices in the city of Denver, Colorado. He has had considerable experience in the use of heavy machinery such as will be needed for the project. He is a graduate of Colorado University, with a degree in Civil Engineering.

Mr. B. T. Pull, Vice-President of applicant, is part owner of a manufacturing company located in Denver, Colorado. He is a graduate of Coe College of Cedar Rapids, Iowa, with a bachelors degree in Chemistry. He has one year post graduate work at University of Heidelberg, Germany and one Year at Dresden University, Germany.

Mr. Lloyd Hayne, Secretary-Treasurer of applicant, is part owner of a manufacturing company located in Denver, Colorado. He is a graduate of Westmar College, LeMars, Iowa. His major was in industrial chemistry. He has one year post graduate work at Colorado University.

Mr. Alfred Frohlick will supervise the work to be done on the claims. He is a general contractor, with offices in the city of Denver, Colorado and is active in the superintendence of this company. He has had experience in mine construction and the use of heavy equipment. He has had approximately one years experience in the field in uranium exploration.

Mr. Addison Fahlberg is a director of applicant. He is a graduate chemical engineer and has had experience in the use of heavy machinery and equipment. He is part owner of a manufacturing company located in the city of Denver, Colorado.

(6-a)	Independent Contracts:	
	20 Test holes - 100' each at $ .75 per foot	$ 1,500.00
(6-b)	Supervision and Consultants:	
	Superintendent - 2 months at $600.00 per month	1,200.00
	Geologist and Assay Services	250.00
	Total 6-b	1,450.00
(6-c and 6-d)	Operating materials, supplies and labor equipment:	
	Roads: Build Road from trail on claim 20 to lower side of vein exposure on face of cliff on claim 1 and strip over-burden from face and ledge of cliff, to explore for other outcroppings of ore.	
	32 hours of bulldozing at $10.50	$ 336.00
	Bulldoze trail from sotck trail on claim 1 to claim 24, requiring 32 hours of bulldozing trail and 8 hours of exploratory digging.	
	40 hours of bulldozing at $10.50	420.00
	Hauling bulldozer to and from site	70.00
		826.00

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

(6-c and 6-d)	Experimental Drift:		
	Dynamite and Caps	$ 165.00	
	Rent (1 Mo.) of compressor, drill, hose and feedleg	253.00	
	Rent (1 Mo.) Bits and Drill Steel	125.00	
	Labor (2 men for 20 days) @ $2.50 per hour	800.00	
	Rent - Mucking Tool	50.00	
	Gas and Oil for Compressor	220.00	$ 1,613.00
	Total 6-c and 6-d		2,439.00
(6-e)	Rehabilitation and Repairs - None.		
(6-f)	New Buildings, Improvements, Installations:		
	Bunkhouse:		
	Lumber	200.00	
	Windows	24.00	
	Labor and Contracting	260.00	
	Roofing	22.00	
	Tar Paper	19.00	
	Doors	30.00	
	Hardware	35.00	590.00
	Furnishings:		
	8 bunks at $18.00	144.00	
	Shelves and Tables	50.00	
	6 Cu. Ft. Gas refrigerator	200.00	
	Gas Stove	100.00	
	Light Plant	357.00	
	Kitchen Utensils	73.00	924.00
	Total 6-f		1,514.00
(6-g)	Miscellaneous		
	Food for 420 meals	210.00	
	Salary for cook for 30 days	300.00	
	Hauling gas and supplies	150.00	
	Insurance and Compensation	250.00	
	Total 6-g		910.00
(6-h)	Contingencies		2,850.00
	TOTAL ESTIMATED COST OF PROJECT		$ 10,663.00

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 14 1955

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. 3775
Metal or Mineral Uranium
Date Received 4-14-55
Estimated Cost $10,663
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: Skyline Engineering Company, Inc. (A Colorado Corporation)
4785 E. Evans, Denver, Colorado

(*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. (See Schedule 1, Para 1-c)

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not applicable

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 23 unpatented lode mining claims, known as the Arrowhead group, approximately sections 2, 11, and 12, Township 4 South, Range 82 West, Eagle County, Colorado. (See Exhibit B attached)

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

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

(*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. Owner by location

(*e*) If you own the land, describe any liens or encumbrances on it None

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

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 Schedule 1, Para 4-a)

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. None

(*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 Schedule 1, Para 4-c)

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. North of Wolcott and approximately 93 to 103 miles from Rifle, Colorado

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. Would be available in Glenwood Springs, Colorado or Rifle, Colorado

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

(*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. **(See Schedule 1, Para 5-b)**

(*c*) The work will start within **30** days and be completed within **2** months from the date of an exploration project contract. **(See Schedule 1, Para 5-c)**

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

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: **(Schedule 1)**

(*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)? **Yes**

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated 4-11, 1955

Skyline Engineering Co Inc
(Applicant)

By George A. Frohlich (Pres)

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

SCHEDULE 1

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 14 1955

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

(1-c) Officers:

George Frohlick, President
4785 E. Evans Ave.
Denver, Colorado

B. T. Pull, Vice-President
2000 So. Dahlia
Denver, Colorado

Lloyd E. Hayne, Secretary-Treasurer
2000 So. Dahlia
Denver, Colorado

(4-a) Applicant discovered three outcroppings on the face of a cliff as identified on the plot plan of the claims (Exhibit A). Portions of the cliff face have been broken away and 3-1/2 tons of ore was shipped to mill at Rifle, Colorado with average assays reported of .21% U_3O_8 and .15 % Vanadium. All prospect holes have been dug on the 23 claims by applicant. A road has been bulldozed up to Arrowhead claim #1. The claims have been inspected by an A. E. C. geologist and a report prepared thereon.

The type of deposit is a vein and applicant believes that sufficient ore is present in commercial quantities and grades to warrant further exploration so as to determine the extent of the vein.

(5-b) Plan of Exploration:

Phase #1. Drill 6 test holes - 50 ft. spacings identified as 1, 2, 3, 4, 5, and 6 on Exhibit A.

Phase #2. Drill 6 test holes - 50 ft. spacings identified as 7, 8, 9, 10, 11, and 12 on Exhibit A.

Phase #3. Drill 4 test holes - 100 ft. spacings identified as 13, 14, 15, and 16 on Exhibit A.

Phase #4. Bulldoze road from trail on Claim #20 to lower side of vein exposure on face of cliff on claim #1, as indicated on the map, and strip over burden from face and ledge of cliff and to explore for other outcroppings of ore.

Phase #5. Drive an experimental drift in face of cliff in two places on claim #1, near the cornotite outcrop, in a northerly direction, to determine the continuity and direction of the veins.

Phase #6. Bulldoze trail from claim #1 to copper exposure on claim #24 as identified on Exhibit A and do 8 hours exploratory digging with bulldozer in the copper outcroppings in the shinarump for combinations with uranium ore.

Phase #7. Drill 4 test holes - 200 ft. spacings identified as #17, 18, 19, and 20 on Exhibit A.

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

(5-c) The starting date can be effected by the snow conditions in the area.

(5-d) Mr. George Frohlick, President of applicant, is a general contractor with offices in the city of Denver, Colorado. He has had considerable experience in the use of heavy machinery such as will be needed for the project. He is a graduate of Colorado University, with a degree in Civil Engineering.

Mr. B. T. Pull, Vice-President of applicant, is part owner of a manufacturing company located in Denver, Colorado. He is a graduate of Coe College of Cedar Rapids, Iowa, with a bachelors degree in Chemistry. He has one year post graduate work at University of Heidelberg, Germany and one Year at Dresden University, Germany.

Mr. Lloyd Hayne, Secretary-Treasurer of applicant, is part owner of a manufacturing company located in Denver, Colorado. He is a graduate of Westmar College, LeMars, Iowa. His major was in industrial chemistry. He has one year post graduate work at Colorado University.

Mr. Alfred Frohlick will supervise the work to be done on the claims. He is a general contractor, with offices in the city of Denver, Colorado and is active in the superintendence of this company. He has had experience in mine construction and the use of heavy equipment. He has had approximately one years experience in the field in uranium exploration.

Mr. Addison Fahlberg is a director of applicant. He is a graduate chemical engineer and has had experience in the use of heavy machinery and equipment. He is part owner of a manufacturing company located in the city of Denver, Colorado.

(6-a)	Independent Contracts:	
	20 Test holes - 100' each at $ .75 per foot	$ 1,500.00
(6-b)	Supervision and Consultants:	
	Superintendent - 2 months at $600.00 per month	1,200.00
	Geologist and Assay Services	250.00
	Total 6-b	1,450.00
(6-c and 6-d)	Operating materials, supplies and labor equipment:	
	Roads: Build Road from trail on claim 20 to lower side of vein exposure on face of cliff on claim 1 and strip over-burden from face and ledge of cliff, to explore for other outcroppings of ore.	
	32 hours of bulldozing at $10.50	$ 336.00
	Bulldoze trail from sotck trail on claim 1 to claim 24, requiring 32 hours of bulldozing trail and 8 hours of exploratory digging.	
	40 hours of bulldozing at $10.50	420.00
	Hauling bulldozer to and from site	70.00
		826.00

SKYLINE ENGINEERING COMPANY

DENVER, COLORADO

(6-c and 6-d)	Experimental Drift:		
	Dynamite and Caps	$ 165.00	
	Rent (1 Mo.) of compressor, drill, hose and feedleg	253.00	
	Rent (1 Mo.) Bits and Drill Steel	125.00	
	Labor (2 men for 20 days) @ $2.50 per hour	800.00	
	Rent - Mucking Tool	50.00	
	Gas and Oil for Compressor	220.00	$ 1,613.00
	Total 6-c and 6-d		2,439.00
(6-e)	Rehabilitation and Repairs - None.		
(6-f)	New Buildings, Improvements, Installations:		
	Bunkhouse:		
	Lumber	200.00	
	Windows	24.00	
	Labor and Contracting	260.00	
	Roofing	22.00	
	Tar Paper	19.00	
	Doors	30.00	
	Hardware	35.00	590.00
	Furnishings:		
	8 bunks at $18.00	144.00	
	Shelves and Tables	50.00	
	6 Cu. Ft. Gas refrigerator	200.00	
	Gas Stove	100.00	
	Light Plant	357.00	
	Kitchen Utensils	73.00	924.00
	Total 6-f		1,514.00
(6-g)	Miscellaneous		
	Food for 420 meals	210.00	
	Salary for cook for 30 days	300.00	
	Hauling gas and supplies	150.00	
	Insurance and Compensation	250.00	
	Total 6-g		910.00
(6-h)	Contingencies		2,850.00
	TOTAL ESTIMATED COST OF PROJECT		$ 10,663.00

U.S. Department of the Interior
Geological Survey

DMEA Docket 3775
Initial Report

Prepared for
Defense Minerals Exploration Administration

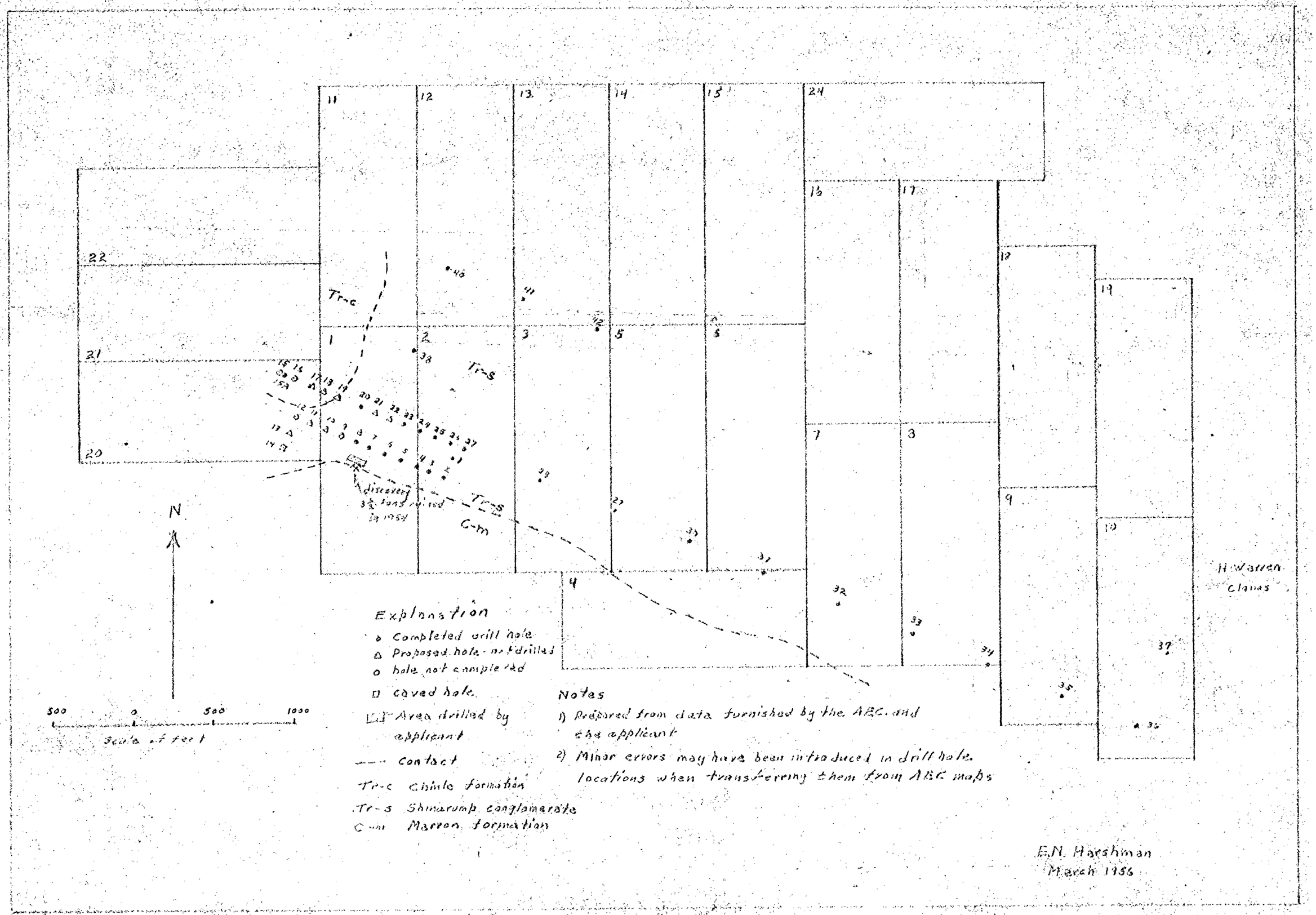
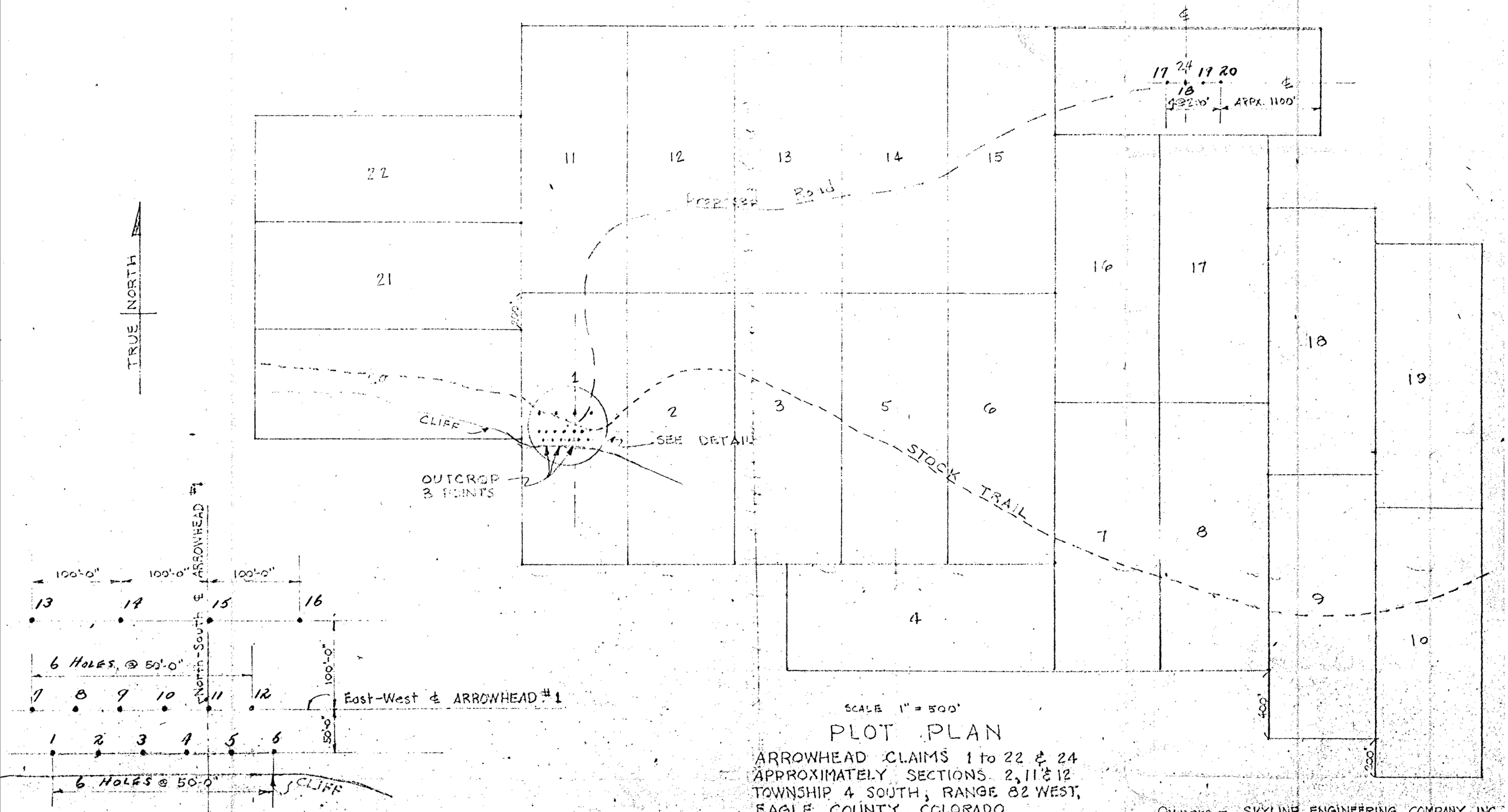


Fig 3 Map of Skyline Engineering Company — Arrowhead Claims, Eagle County, Colorado showing location of holes drilled by the A.E.C.

EXHIBIT A



DRILL HOLE DETAIL ARROWHEAD NO.1
SCALE 1" = 100'

SCALE 1" = 500'

PLOT PLAN

ARROWHEAD CLAIMS 1 to 22 & 24
APPROXIMATELY SECTIONS 2, 11 & 12
TOWNSHIP 4 SOUTH, RANGE 82 WEST,
EAGLE COUNTY, COLORADO

Owners - SKYLINE ENGINEERING COMPANY INC.
4785 EAST EVANS DENVER, COLO.

SKYLINE ENGINEERING CO., INC.

DENVER, COLORADO

Recording #	State	County	Date Recorded	Book	Page	Claim Name	Number	Town-ship	Range	
84740	Colorado	Eagle	March 15, 1955	146	361	Arrowhead	1	4S	82W	
84741	Colorado	Eagle	March 15, 1955	146	363	Arrowhead	2	4S	82W	
84742	Colorado	Eagle	March 15, 1955	146	365	Arrowhead	3	4S	82W	
84743	Colorado	Eagle	March 15, 1955	146	367	Arrowhead	4	4S	82W	
84744	Colorado	Eagle	March 15, 1955	146	369	Arrowhead	5	4S	82W	
84745	Colorado	Eagle	March 15, 1955	146	371	Arrowhead	6	4S	82W	
84746	Colorado	Eagle	March 15, 1955	146	373	Arrowhead	7	4S	82W	
84747	Colorado	Eagle	March 15, 1955	146	375	Arrowhead	8	4S	82W	
84748	Colorado	Eagle	March 15, 1955	146	377	Arrowhead	9	4S		Due West of Red and White Mountain
84749	Colorado	Eagle	March 15, 1955	146	379	Arrowhead	10	4S		Due West of Red and White Mountain
84750	Colorado	Eagle	March 15, 1955	146	381	Arrowhead	11	4S	82W	
84751	Colorado	Eagle	March 15, 1955	146	383	Arrowhead	12	4S	82W	
84752	Colorado	Eagle	March 15, 1955	146	385	Arrowhead	13	4S	82W	
84753	Colorado	Eagle	March 15, 1955	146	387	Arrowhead	14	4S	82W	
84754	Colorado	Eagle	March 15, 1955	146	389	Arrowhead	15	4S	82W	
84755	Colorado	Eagle	March 15, 1955	146	391	Arrowhead	16	4S		Due West of Red and White Mountain
84756	Colorado	Eagle	March 15, 1955	146	393	Arrowhead	17	4S		Due West of Red and White Mountain
84757	Colorado	Eagle	March 15, 1955	146	395	Arrowhead	18	4S		Due West and North of Red and White Mountain
84758	Colorado	Eagle	March 15, 1955	146	397	Arrowhead	19	4S		Due West and North of Red and White Mountain
84759	Colorado	Eagle	March 15, 1955	146	399	Arrowhead	20	4S	82W	Section 12
84180	Colorado	Eagle	August, 1954	145	538	Arrowhead	21	4S	82W	Section 2 or 11 approximate
84181	Colorado	Eagle	August, 1954	145	539	Arrowhead	22	4S	82W	Section 2 or 11 approximate
84182	Colorado	Eagle	August, 1954	145	540	Arrowhead	24	4S	82W	Section 12 approximate

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
DENVER
APR 14 1955