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FILE COPY
Surname:
Murphy
Ellis
Lamb
Kleppard
Selledge

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

Zion View Exploration Company
c/o Richard F. Harless
1410 N. Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA-4329 (Uranium)
Condor, et al., Groups
Washington County, Utah

Gentlemen:

Your application for aid in an exploration project and other information available to us in Washington concerning the 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 Exploration Program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

FMMurphy/izm 10-23-56
cc to: Docket
Code 700
Mr. Murphy
Admr.'s Reading File
Operating Committee
DMEA Field Team, Reg. III (2)
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

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

DOCKET COPY

Murphy
Ellis

October 22, 1956

Summary of Proposed Project

Object: Denial of application for exploration aid

Docket No.: DMEA-4329

Commodity: Uranium

Applicant: Zion View Exploration Company
c/o Richard F. Harless
1410 ~~1910~~ N. Central Avenue
Phoenix, Arizona

Property: Lease on 68 claims, and owner of 13 by location. Claims are situated in secs. 4, 5, 8, 9, and 17, T. 30 S., R. 12 W., S.L.B.M., Washington County, Utah.

Amount of application: $67,331.00 (incorrectly computed); should be $57,167.00.

Date of application: April 9, 1956 (Received June 11).

Referred to Region III: July 2, 1956

Field examination made: August 1, 1956

Field report received: October 15, 1956.

Work proposed: A total of 79 holes, 76 to average 167 feet in depth and 3 to a depth of 402 feet.

Estimated cost:

	Stage I	Stage II
Non-core, 5,746 feet @ $3.50/ft.	$22,925.00	
Core and non-core, 7,348 feet @ $400/ft.		$29,392.00
Bulldozing @ $10/hour	450.00	100.00
Supervision, etc. @$500/month	1,500.00	1,500.00
Miscellaneous	300.00	1,000.00
Totals	$25,175.00	$31,992.00

Grand total for project $57,167.00

Excerpts from Field Team report*:

*Report held since August 20 by Field Team for report of USGS member of examining team. This report was not received. However, USGS member verbally concurred in recommending denial of application.

The subject claims lie along the west edge of Smith Mesa, approximately 2 miles east of the northerly striking Hurricane fault.

Nearly horizontal Triassic sandstones and shales are exposed on the steep, west slope of the mesa, through the claim area. Weak uranium mineralization occurs at three horizons, namely: In the Shinarump; and at the bottoms of the lower and upper Hartley sandstones of the Chinle formation. Malachite and carbonaceous material are associated with the uranium. An estimated total of 300 feet of bulldozer stripping has been accomplished by the applicant along the two Hartley rims. No ore has been produced from the claims.

Only two of fifteen selected samples taken from the Hartley mineralized areas assayed over 0.10% U_3O_8, the remainder ranged from 0.002 to 0.6% U_3O_8. Two samples taken of the base of the lower Hartley and the base of the upper Hartley assayed 0.006 and 0.062% U_3O_8, respectively.

The field examiner concludes that because of the weakness of the uranium mineralization and the limited extent of its occurrence, that an exploration project would not result in the discovery of significant quantities of minable ore on the subject claims.

Commodity Members' comments (excerpts):

U. S. Geological Survey, W. P. Williams, October 17, 1956.

Mr. Williams agrees with the field examiner that the proposed program would not result in a worthwhile discovery, and concurs in the recommendation for denial of the application.

U. S. Bureau of Mines, J. E. Crawford, October 18, 1956.

Mr. Crawford concurs in the Field Team's recommendation.

Rare and Miscellaneous Metals Division, F. M. Murphy, October 22, 1956.

The scattered low-grade uranium mineralization noted by the field examiner apparently indicates that the subject claims have little possibilities for the occurrence of significant ore deposition.

Conclusion and Recommendation:

This Division agrees with the examining engineer that the uranium mineralization showing on the claim doesnot warrant the proposed exploration work. Therefore, it concurs in the examiner's and Field Team's recommendation of denial.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

10-19-56

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

RECEIVED
OCT 19 1956

Date October 18, 1956

DMEA Docket No. 4329
DMEA Contract No.
Commodity U_3O_8
Name of applicant Zion View Expl. Co.
Name of property (Condor, et al, Groups)
Location of property Washington County, Utah
Estimated cost of project

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

Subject: Review of Field Team Report
(Application, Field Team Report, etc.)

1. Date of subject document: _____. 2. Date received by reviewer: 10/16/56

3. Prior reports on this property known to reviewer: Yes ☐, No ☐.

4. Prior reports on nearby properties known to reviewer: Yes ☐, No ☐.

5. Information available on past production: Yes ☐, No ☐.

6. Other pertinent factors known to reviewer: Yes ☐, No ☐.

7. Explain items marked yes above:

8. Factors needing special consideration:
   a. Location ☐
   b. Ownership ☐
   c. Evidence of mineralization ☐
   d. Geology ☐
   e. Proposed exploration method ☐
   f. Alternate exploration method ☐
   g. Costs ☐
   h. _____ ☐

9. Action advised:
   a. Obtain information from applicant ☐
   b. Refer to Field Team ☐
   c. Denial [X]
   d. Agree with Field Team ☐
   e. Disagree with Field Team ☐
   f. Suggest alternate plan ☐
   g. Request another examination ☐
   h. Approval ☐
   i. Consult with Mr. _____ at _____ ARM office.

10. Remarks: (Use back of page if necessary) I concur in the denial. Mr. J. O. Hosted, Washington representative of the Atomic Energy Commission, assisted in the review.

10-18-56

IN REPLY REFER TO:

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

RECEIVED
OCT 18 1956

October 17, 1956

Memorandum

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

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4329, Zion View Exploration Company, Condor, et al. claims, Washington County, Utah, (uranium).

The examining engineer reports that small amounts of uranium minerals on the applicant's property present only weak radioactivity.

The property involved includes a large area composed of 81 mining claims. The only exploration work completed to date on the property consists of about 300 feet of rim stripping which did not disclose ore. No ore has been produced from the property. Samples taken by the examining engineer did not afford assays of ore grade. Significant amounts of ore have not, to my knowledge, been produced from the general vicinity.

The examining engineer is of the opinion that an exploration project would not result in a worthwhile discovery. I agree with the recommendations for denial of the application.

W. P. Williams

W. P. Williams

10-18-56

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

RECEIVED
OCT 1 7 1956

224 New Customhouse
Denver 2, Colorado

October 11, 1956

Memorandum

To: Secretary to the Operating Committee (4)

From: DMEA Field Team, Region III

Subject: Report of Examination Docket DMEA 4329 (Uranium)
Zion View Exploration Company (Condor, et al, Groups)
Washington County, Utah

Enclosed are the original and three copies of the Engineering Report of Examination on the subject property. The Survey participated in the field examination but their report has not been received. It is noted in the attached memorandum from Mr. E. N. Harshman that we have been assured that the Survey examiner concurs in the conclusions and recommendations made in the Engineering Report. We concur in the recommendation that the application be denied.

DMEA Field Team, Region III

E. N. Harshman

By E. N. Harshman
Acting Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE
10-17-56
(date)

IN REPLY REFER TO:

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

RECEIVED
OCT 1 1956
DMEA
DEPARTMENT OF THE INTERIOR

TRANSMITTED
OCT 11 1956

OCT 10 1956
REGION III
DENVER, COLORADO

October 10, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 4329 (Uranium), Zion View Exploration Company (Condor, et al., groups), Washington County, Utah

An examination of the subject property was made on August 1, 1956, by R. W. Osterstock, U. S. Geological Survey, and M. M. Gilkey, U. S. Bureau of Mines. The engineering report recommending denial of the application for exploration assistance was received in your office on August 20, 1956, where it has been held pending receipt of the geologic report.

As you know R. W. Osterstock resigned from the Survey on August 25, 1956. On at least four occasions, both prior to his resignation and, subsequent to it, I was assured by Osterstock that he needed no assistance in preparation of the reports and that they would be transmitted immediately. The latest "firm" date for receipt of the drafts of the reports in Denver was October 3, 1956. An attempt to contact Osterstock today found him out of town. The reports have not been received.

Reviewed by
DMEA OPERATING COMMITTEE
10-17-56
(date)

In view of the considerable time since the field examination and the unreliability of completion dates given by Osterstock, I suggest that the engineering report on the subject property be transmitted immediately to Washington. I have been assured by Wilson that Osterstock concurs with the conclusions and recommendations made in the engineering report; I concur also. The engineering report should suffice for final action by the Washington DMEA staff.

E. N. Harshman
Member, Field Team

EHarshman:mp

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
1600 EAST FIRST SOUTH STREET
SALT LAKE CITY 12, UTAH

August 17, 1956

DMEA
Date Rec'd,
AUG 20 1956
BUREAU OF MINES
Denver, Colorado

TRANSMITTED
OCT 11 1956

RECEIVED
OCT 1 1956

Memorandum

To: W. M. Traver

From: Stephen R. Wilson

Subject: Docket DMEA-4329 (Uranium), Zion View Exploration Co., Condor, et al., groups, Washington County, Utah

Enclosed are the original and 10 copies of an engineering report covering examination of the property of Zion View Exploration Co. for DMEA loan appraisal. The property was examined by M. M. Gilkey with R. W. Osterstock of the Survey August 1, 1956.

The applicant has requested a loan of $57,167 to conduct a two stage diamond drilling project on property located 25 miles northeast of Hurricane, Utah. The property consists of 81 lode mining claims.

The rocks exposed in the area consist of the Moenkopi, Shinarump, and Chinle formations of Triassic age. Minor uranium mineralization is present in the Shinarump conglomerate and also in the upper and lower Hartley members of the Chinle formation. Radiometric tests and chemical assays indicate that the principal occurrences of uranium are in the bases of the two Hartley sandstone members.

The general weakness of uranium mineralization and the limited extent of its occurrences indicate that work proposed by the applicant will not result in discovery of significant uranium ore. The examining engineer recommends that the loan request be denied. I am in accord with this recommendation.

The property of Zion View Exploration Co. and the application were discussed with members of the Atomic Energy Commission.

The brochure transmitted to this office by John F. Shaw is herewith returned.

Stephen R Wilson
Stephen R. Wilson

Enclosures
cc: J. F. Shaw
J. Bruce Clemmer

Reviewed by
DMEA OPERATING COMMITTEE
10-17-56
(date).

FOR UNITED STATES GOVERNMENT USE ONLY

TRANSMITTED

OCT 11 1956

ZION VIEW EXPLORATION CO.
CONDOR, ET AL., GROUPS
WASHINGTON COUNTY, UTAH
DMEA-4329
Uranium

Engineering Report

By M. M. Gilkey
Mining Engineer
Bureau of Mines

August 17, 1956

Reviewed by
DMEA OPERATING COMMITTEE
10-17-56
(8360)

ZION VIEW EXPLORATION CO.
CONDOR, ET AL., GROUPS
WASHINGTON COUNTY, UTAH

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ILLUSTRATIONS

Fig. 1 Location map, Zion View Exploration Co., Washington County, Utah

Fig. 2 Claim and geologic map

SUMMARY

Zion View Exploration Co. has applied for Government assistance in a two-stage drilling project on uranium claims in Washington County, Utah. Estimated cost of the work is $57,167. DMEA personnel examined the property August 1, 1956.

The property is 25 miles by road northeast of Hurricane, Utah, and 6 airline miles west of Zion National Monument. Eighty-one claims are included in the applicant's holdings. Of these, 68 are leased and 13 are held by location.

The proposed project area lies on a steep, west slope exposing nearly horizontal Triassic sandstones and shales. Weak uranium mineralization occurs at three horizons, in the Shinarump formation, and at the bottoms of the lower and upper Hartley sandstones of the Chinle formation. Malachite and carbonaceous material are associated with the uranium. The uranium minerals have not been identified. An estimated total of 300 feet of bulldozer stripping has been accomplished by the applicant along the two Hartley rims. No ore has been produced from the claims.

Exploratory work proposed by the applicant includes 12,490 feet of noncore drilling and 1,408 feet of core drilling, in a total of 79 holes. Seventy-six of the holes are expected to average 167 feet in depth, and 3 deep holes are estimated to average 402 feet.

Cost of the proposed program is considered to be reasonable, and the drilling is feasible from an engineering standpoint. Geologically,

however, the exploration does not appear to be warranted; the exposures of uranium mineralization are too weak and too limited in extent.

It is recommended that the request for Government assistance be denied.

INTRODUCTION

The Zion View Exploration Co. submitted an application dated April 9, 1956, for Government aid in an exploratory project on uranium property west of Zion National Monument in Washington County, Utah.

An examination of the property was made August 1, 1956, by R. W. Osterstock of the Geological Survey and M. M. Gilkey of the Bureau of Mines. The applicant was represented by R. L. Musslewhite. Charles W. Cottam, one of the owners of the claims, also accompanied the examining team.

The applicant proposes a staged drilling program estimated to cost a total of $57,167. (The amount of $67,331, shown on the application form, is incorrectly computed.) Time to complete the work is estimated at 6 months.

LOCATION

Property of the Zion View Exploration Co. is situated in the eastern part of Washington County, Utah, about 12 miles airline northeast of Hurricane, Utah, and 6 miles west of Zion National Monument (fig. 1). Specifically, the property lies in secs. 4, 5, 8, 9, and 17, T. 40 S., R. 12 W., S.L.B. and M.

From Hurricane, Utah, the property is reached by driving north 3.1 miles on Utah Highway 17, thence east 5.3 miles on Utah Highway 15, thence north 3.8 miles on Air Force project graded road to top of lower mesa, thence continue north 5.4 miles, thence through gate and continue north 1.1 miles to Wallace ranchhouse, thence west 0.3 mile, thence through gate and north 0.2 mile, thence follow west fork through wheat field 1.0 mile, thence enter south boundary of section No. 16 (school section) through gate to north, and continue westerly then northerly a total of 4.8 miles to end of jeep road in the vicinity of the proposed main drilling area on the west edge of Smith Mesa. The last 4.8 miles is barely passable by jeep. Total road distance from Hurricane to the main drilling area is 25 miles.

St. George, Utah, the nearest important town, has a population of 4,562 and is situated 20 miles west of Hurricane on highway U. S. 91. Cedar City, with a population of 6,106, is 41 miles north of Hurricane on highway U. S. 91 and on a branch line of the Union Pacific Railroad.

TOPOGRAPHY AND CLIMATE

The applicant's claims lie along the west edge of Smith Mesa, which constitutes the western extremity of the Colorado Plateau. The area is one of considerable relief. From the top of Smith Mesa, at 5,500 feet altitude, the surface slopes steeply to the west, to approximately 4,000 feet at the bottom of LaVerkin Creek Canyon. Prominently exposed, high on the slope, are outcrops of the nearly

horizontal Shinarump formation and Hartley sandstones, the uraniferous strata of the area. Benches formed by erosion of shales overlying these resistant strata are locally talus covered. Construction of access roads and drill sites on the upper Hartley bench, as proposed by the applicant, would be difficult because of the many large boulders and steep talus slopes.

Vegetation in the area includes abundant juniper and pinon pine trees and sagebrush, also occasional thickets of scrub oak and manzanita.

The climate is semiarid. Project operations would not be seriously hampered by weather conditions. The applicant states that water for project use may be obtained from springs situated about 5 miles north of the proposed project.

OWNERSHIP AND EXTENT

A total of 81 unpatented lode mining claims are included in the proposed project (fig. 2). Sixty-eight of the claims are held by the Zion View Exploration Co. under an assigned lease. The leased claims are as follows:

Condor A, B, C, and D, and Nos. 1 to 19, inclusive
Black Knight Nos. 1 to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

The 68 claims are owned by Charles W. Cottam and Ruth Cottam, Ervin Cronin and Evelyn Cronin, and Donald P. Macdonald and Geraldine W. Macdonald. The owners leased the claims to R. L. Musslewhite, who assigned the lease to Irvin D. Kaplan. Mr. Kaplan, in turn,

assigned the lease to Zion View Exploration Co. The lease is to remain in effect "for so long as the lessee performs all of his obligations hereunder and . . . is diligently conducting mining operations on the leased premises. . . ." Copies of the lease and assignments are attached to the application.

The additional 13 claims, located by the Zion View Exploration Co., are listed below:

Comet Nos. 18 to 23, inclusive
Condor E to G, inclusive
Channel Nos. 4 to 7, inclusive

All claims are recorded at St. George, Utah, county seat of Washington County, in book X-36, as entries Nos. 99294 through 99307, on pages 582 through 595.

HISTORY AND PRODUCTION

The applicant states that all claims involved in the proposed project were located during 1954 and 1955, and that, insofar as is known, no prior location has been made on this ground.

The property has no recorded production.

Exploratory work accomplished to date consists of an estimated 300 feet of bulldozing along the Hartley rims.

GENERAL GEOLOGY

Approximately 2 miles west of the applicant's property is the northerly striking Hurricane fault, the predominant structural feature of the region. Easterly striking adjustment faults of slight

displacement, related to the Hurricane fault, penetrate the nearly horizontal sedimentary rocks outcropping in the area of the proposed project (fig. 2).

In ascending order, the formations exposed in the proposed project area, which is on the east flank of LaVerkin Creek Canyon, are Lower Triassic Moenkopi, Middle Triassic Shinarump, and Upper Triassic Chinle. The Chinle is divided into the Petrified Forest, Trail Hills, and Springdale members, the latter forming the top of Smith Mesa to the east.

Radiometric readings indicate the presence of uranium in the Shinarump. This formation consists of about 90 feet of gray, conglomeratic sandstone unconformably overlying the Moenkopi. Directly above the Shinarump is 150 feet of shale of the Petrified Forest member of the Chinle. Next above the shale is the lower Hartley sandstone consisting of 12 feet of gray and reddish, medium- to coarse-grained sandstone. Overlying the lower Hartley is 45 feet of shale interbedded with thin lenses of sandstone, which in turn is overlain by the upper Hartley. The upper Hartley is about 20 feet thick and is composed of gray to light purple, coarse-grained, lenticular sandstone. Radiometric tests and chemical assays indicate that the principal occurrences of uranium mineralization on the property are at the bases of the two Hartley sandstone units. From the top of the upper Hartley down to the bottom of the Shinarump, the vertical interval including all three of the radioactive strata, is approximately 315 feet.

The uranium minerals present have not been identified. Malachite and carbonaceous material are commonly associated with the uranium mineralization.

Locations of 15 samples taken for chemical assay, from the upper and lower Hartley sandstone rims, are shown on figure 2. Thirteen of the samples were taken by the applicant and two by the DMEA examiners. All of the applicant's samples are select samples; one of the DMEA samples is select and the other represents the bottom 2 feet of the lower Hartley sandstone exposed in a bulldozer cut in the southwest corner of the Condor No. 2 claim.

Assays of samples taken from upper and lower Hartley sandstones

Sample No.	Description	U_3O_8, percent (Chemical)	U_3O_8, percent (Radiometric)
1	Select	0.03	
2	"	.005	
3	"	.22	
4	"	.11	
5	"	.002	
6	"	.06	
7	"	.01	
8	"	.005	
9	"	.005	
10	"	.005	
11	"	.002	
12	"	.003	
13	"	.005	
DMEA-1	2-foot chip sample, base of lower Hartley, associated with disseminated malachite	.006	0.01
DMEA-2	Select, base of upper Hartley, malachite and carbon present	.062	.07

At the time of the DMEA examination the applicant's representative was unable to find the exact locations of samples numbers 3 and 4, the only samples assaying higher than 0.10 percent U_3O_8.

Comparison of radiometric tests with chemical results of the DMEA assays indicates that the uranium is in equilibrium with its decay products.

ORE RESERVES

There are no known ore reserves on the applicant's property.

PROPOSED EXPLORATION AND COSTS

Exploratory drilling proposed by the applicant is in two stages. All holes are to be drilled from the upper Hartley bench. The work in Stage II is contingent on the results of Stage I. Locations of Stage I holes are shown on figure 2. Time to complete the work is estimated at 6 months. The work proposed by the applicant, with estimated footages and costs, is outlined below:

Stage I

1.	Noncore drilling to bottom of lower Hartley ss., 32 holes on 100-foot centers and averaging 167 feet deep = 5,344 feet at $3.50 per foot	$18,704
2.	Noncore drilling through Hartley units and to bottom of Shinarump, 3 holes (Nos. 19, 20, and 21) averaging 402 feet deep = 1,206 feet at $3.50 per foot	4,221
3.	Bulldozing (access roads and drill sites) 45 hours with D7 Caterpillar at $10 per hour	450
4.	Supervision and Technical, 3 months at $500 per month	1,500
5.	Miscellaneous (road maintenance, surveying help, etc.) for 3 months	300
	Total estimated cost of Stage I	$25,175

Total footage for Stage I (all noncore) - 6,550 feet

Stage II

1. Core and noncore drilling to bottom of lower Hartley ss. (only the Hartley ss. units to be cored), in favorable areas located by Stage I drilling, 44 holes on 25-foot centers and averaging 167 feet deep = 7,348 feet (the applicant erroneously computed 7,014 feet), at $4 per foot ----------	$29,392	
2. Bulldozing (access roads and drill sites), 10 hours at $10 per hour ----------	100	
3. Supervision and Technical, 3 months at $500 per month (the applicant erroneously used 6 months for Stage II) ----------	1,500	
4. Miscellaneous (road maintenance, part-time help, unspecified number of U_3O_8 assays at $3.50 each, for 3 months ----------	1,000	
Total estimated cost of Stage II ----------		$31,992

Total footage for Stage II is 1,408 feet of core drilling and 5,940 feet of noncore drilling

Total estimated cost of Stage I plus Stage II ------ $57,167

Total footage for Stage I plus Stage II is 12,490 feet of noncore drilling and 1,408 feet of core drilling

The unit drilling costs, $3.50 a foot for noncore drilling and $4.00 a foot for holes combining core and noncore drilling, were prepared from an estimate made by a representative of Joy Manufacturing (Drilling) Co. The estimates are reasonable in view of the nature of the terrain, length of water haul, and depth of holes. The number of bulldozer hours appears to be too low. Bulldozer work in Stage I includes reconditioning part of the present road, as well as construction of new roads and drill sites, and would probably require at least 80 hours. About 30 hours would seem to be needed for road

and site construction under Stage II. Costs estimated for Supervision and Technical, and Miscellaneous are considered to be reasonable. Spacing of holes at 25-foot centers, as proposed for Stage II drilling, is less than the 50-foot minimum spacing required by DMEA.

Percentage of core recovery from the mineralized sandstones should be satisfactory. The applicant proposes to check for radioactivity the cuttings from noncore drilling through the sandstones and to probe the completed holes.

The proposed project is feasible from an engineering standpoint, but has little merit from a geologic point of view. Inasmuch as a project is not to be recommended, complete details of operational arrangements, such as number of drills, expected footage per drill shift, and shifts per day, are not presented herewith. (It is noted that the applicant's estimations of hole depths do not agree with depths computed by adding the stated thicknesses of individual strata.)

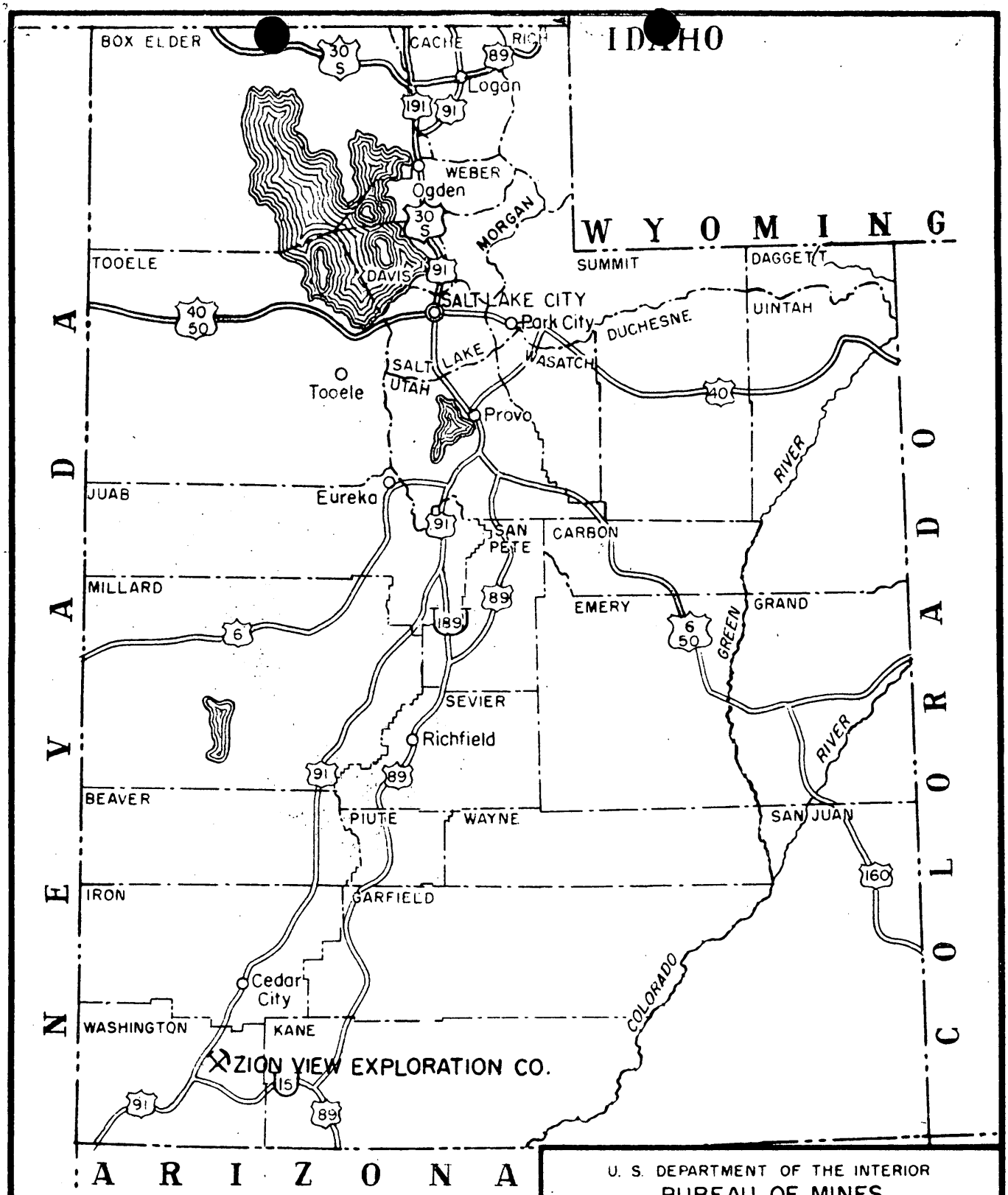
CONCLUSIONS AND RECOMMENDATIONS

Weak uranium mineralization is present in the Shinarump formation and lower and upper Hartley sandstones outcropping on the claims of the Zion View Exploration Co. The principal occurrences on the property are at the lower contacts of the two Hartley units.

The proposed exploratory program is feasible from an engineering point of view, and the estimated cost of the work is reasonable.

Weakness of the uranium mineralization and limited extent of its occurrence, however, indicate that an exploratory project would not result in the discovery of significant quantities of minable ore.

Therefore it is recommended that the applicant's request for Government aid be denied.



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. I DMEA Docket No. 4329

Location Map

ZION VIEW EXPLORATION CO.

WASHINGTON COUNTY, UTAH

ENGINEER *Millard M. GILKEY*	DATE: AUG. 14, 1956
TRACED AUG., 1956; A.P.T.S.	1900 - 407 - G
CHECKED:	

OCT 12 1956

224 New Customhouse
Denver 2, Colorado

October 9, 1956

RECEIVED
OCT 1 1956

Mr. Richard F. Harless
Attorney at Law
1410 North Central Avenue
Phoenix, Arizona

Re: Docket DMEA 4329 (Uranium)
Lion View Exploration Co.
(Condor, et al., Groups)
Washington County, Utah

Dear Mr. Harless:

This will acknowledge receipt of your letter dated October 5, 1956, requesting information regarding the status of the captioned application.

The Field examination of this property has been completed, and reports of examination are now in preparation. When the reports of examination are received in this office, we will forward them to the Washington Office, DMEA, who will advise you of their final decision.

Yours very truly,

E. N. Harshman

E. N. Harshman
Acting Executive Officer

HMC:ytl

Sec. Op. Comm. (2)
Harshman (2)
Docket 4329
Chron.

RICHARD F. HARLESS
ATTORNEY AT LAW
1410 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA
ALPINE 2-1148

HHL

DMEA
DEPARTMENT OF THE INTERIOR
OCT 8 1956
REGION III
DENVER, COLORADO

October 5, 1956

Mr. W. M. Traver,
Executive Officer, DMEA
Field Team, Region III
Department of the Interior,
224 New Customhouse,
Denver 2, Colorado.

RECEIVED
OCT 9 1956

Re: Docket DMEA 4329 (Uranium)
Zion View Exploration Co.
(Condor, et al., Groups),
Washington County, Utah.

Dear Mr. Traver:

Please give me a report on the above entitled application for DMEA loan. The lessees desire to make plans for their future operation and need the information regarding this application as soon as possible.

Very truly yours,

Richard F. Harless

Richard F. Harless.

RFH:jh

7-27-56

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

RECEIVED
JUL 27 1956

July 24, 1956

23A New Customhouse
Denver 2, Colorado

Mr. Richard F. Harless
1419 North Central Avenue
Phoenix, Arizona

Re: Docket DMEA 4329 (Uranium) Zion View Exploration Company (Gunder, et al., Groups), Washington County, Utah

Dear Mr. Harless:

This will acknowledge receipt of your letter dated July 18, 1956 requesting that you be advised prior to the date of the field examination so that your geologist could accompany the field examiners.

The field examiners will advise you as soon as they can definitely schedule a date for the examination so that you or your representative may be present to accompany them.

Very truly yours,

W. M. TRAVER

W. M. Traver
Executive Officer, DMEA
Field Team, Region III

HMC:ab

cc: Sec. Op. Comm. (2)
Docket 4329
Wilson
Osterstock
Chron.
Harshman

COPY

RICHARD F. HARLESS
Attorney at Law
1410 North Central Avenue
Phoenix, Arizona
ALpine 2-1148

RECEIVED
JUL 27 1956

July 18, 1956

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

Re: Docket No. DMEA-4329 (Uranium)
Condor, et al., Groups
Washington County, Utah

Dear Mr. Traver:

Mr. Mittendorf, Administrator of DMEA, advises that the above captioned application has been referred to you for inspection. We would appreciate having a short notice before your inspection in order to arrange the presence of our geologist while you are on the property.

Please advise.

Very truly yours,

/S/ Richard F. Harless

7-13-56

RECEIVED

JUL 1 2 1956

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
July 9, 1956

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4329 (Uranium) Zion View Exploration Company, (Condor, et al. groups) Washington County, Utah.

The application for Zion View Exploration Company, DMEA 4329, in the amount of $67,331.00 was received in this office on July 9.

A field examination will be made and suitable report prepared by an engineer from the Salt Lake Office.

JOHN F. SHAW

John F. Shaw

cc: W. M. Traver
E. N. Harshman
Osterstock
Sec. Op. Com. (2)

7-10-56

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

July 6, 1956

224 New Customhouse
Denver 2, Colorado

JUL 9 - 1956

Memorandum

To: J. F. Shaw (2) (With brochure)
R. W. Gotsenbeck

From: Field Team, Region III

Subject: Docket DMEA 4329 (Uranium) Lion View Exploration Company, (Gunder, et al. groups), Washington County, Utah

Enclosed are copies of the subject application in the amount of $67,331.00, its transmittal to the Executive Officer from the Chairman of the Operating Committee and memoranda of review from R. E. Nelson, USGS, and J. R. Crawford, USBM.

This application was submitted direct to Washington. You will note from the Chairman's letter that two previous applications on properties in the general area, DMEA 3696 and DMEA 4123, have been denied. This alone is not sufficient basis for a denial of the subject application, although such action is recommended in Mr. Nelson's memorandum of review.

Whether a complete review and evaluation of the application with reference perhaps to the Salt Lake area office of the AEC indicates such action or not, we believe that for the good of DMEA's public relations, a field examination should be made and suitable reports prepared.

Should approval of a project be indicated, this office should be advised in sufficient time so they can obtain from the Applicant the Owner's Consent to Lien and Subordination Agreements required.

DMEA Field Team, Region III

W. M. TRAVER,

By W. M. Traver
Executive Officer

Enclosures

WMT:ch

cc: Docket 4329
Chair. Op. Comm. (2)
Berchman
Chron.

6/28/56

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

RECEIVED
JUN 28 1956

June 27, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

Subject: Application for Assistance, DMEA Docket 4329 (Uranium)
Zion View Exploration Company, 1410 N. Central Avenue,
Phoenix, Arizona

I have reviewed the attached application, DMEA Docket 4329, Zion View Exploration Company, 1410 N. Central Avenue, Phoenix, Arizona, dated April 9 and received in this office June 12, 1956. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The application is for the amount of $67,331, with Government participation at 75 percent for 13,564 or more feet of plug and core drilling and associated work.

After having made a complete evaluation of the proposed exploration project, it is our suggestion that the application be forwarded to the Field Team for consideration and that they consult with A. E. Granger, Manager, Salt Lake City Area Office, Atomic Energy Commission, Salt Lake City, Utah.

John E Crawford
John E. Crawford

Attachment

6-15-56

IN REPLY REFER TO:

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

RECEIVED
JUN 1 5 1956

June 14, 1956

Re: DMEA 4329
Zion View Exploration Company
Condor, Falcon etc. groups
Washington Co., Utah
$67,331.00 - Uranium

Memorandum

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

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

Subject: Review of application

The applicant requests assistance in exploring, by stage drilling, the Hartley sandstone member of the Petrified Forest member and the Shinarump conglomerate, shown by rim prospecting to be in places, radioactive. Little visible uranium mineralization has been found but low MR/hr readings and assays of grab samples indicate such is present. One 'picked' sample assayed 0.22% U_3O_8. Of 13 assays reported, one sample assayed 0.11% U_3O_8, one 0.22%, the others 0.03 and less.

The geologic report mentions the Walkeng and Western Gold and Uranium properties as examples of deposits of the general area. Applications of the two companies were denied (DMEA 3913 and 3974).

Of the information afforded by the application, assays of two selected samples only, tend to support the application.

Denial of the application without an examination would seem to be in order and is so recommended.

N. E. Nelson

N. E. Nelson

700

FILE COPY
Surname:

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

JUL 2 - 1956

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

Re: Docket No. DMEA-4329 (Uranium)
Zion View Exploration Company
Condor, et al., Groups
Washington County, Utah

Dear Mr. Traver:

The captioned application is referred to Region III Field Team for investigation, a field examination if deemed advisable, and recommendation.

Enclosed are copies of memoranda, dated June 14 and 27, 1956, by M. E. Nelson, USGS, and J. E. Crawford, USBM, respectively, relating to the application.

We note that the subject property is about 20 miles north of the Lobo Negro Mining and Exploration Company's property, DMEA-3496, and 30 miles north of Arizona Uranium Exploration Company's property, DMEA-4123. The applications from these companies were denied on January 13, 1955 and June 7, 1956, respectively. The rock formations and structural features of the two properties appear to be similar to those of the subject groups.

In the event that the Field Team recommends a project on the subject property, it should advise the Applicant we will require the following documents:

1. Six copies of an Owners' Consent to Lien signed by Charles W. Cottam and Ruth Cottam, his wife, Erven E. Cronin and Evelyn L. Cronin, his wife, and Donald P. Macdonald and Geraldine W. Macdonald, his wife; and

2. Six copies of a Subordination Agreement (or Agreements) signed by R. L. Masslewhite and also Irvin D. Kaplin.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosures
APPROVED:
USBM: P. F. Yopes (GHB)
USGS: Thor H. Kiilsgaard (GHB)

Operating Committee
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

FMMurphy/izm 6-29-56
cc to: Docket
Code 700
Mr. Murphy
Admr.'s Reading File

P.C.S.

700

FILE COPY
Surname:

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

JUL 2 - 1956

Zion View Exploration Company
c/o Richard F. Harless
1910 N. Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA-4329 (Uranium)
Condor, et al., Groups
Washington County, Utah

Gentlemen:

The application for assistance in exploring your property, 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:

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,

G. O. Mittendorf

Administrator

FMMurphy/izm 6-29-56
cc to: Docket
Code 700
Mr. Murphy
Admr.'s Reading File
DMEA Field Team, Reg. III (2)

June 11, 1956

Zion View Exploration Co.
c/o Richard F. Harless
1910 N. Central Avenue
Phoenix, Arizona

Subject: DMEA-4329
Re: Exploration Assistance

Dear Mr. Harless

The receipt of your application dated April 9, 1956 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4329 and referred to the Rare & Misc. 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

RICHARD F. HARLESS
ATTORNEY AT LAW
1410 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA
ALPINE 2-1148

RECEIVED
JUN 1 1 1956

June 9, 1956

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

Gentlemen:

Herewith enclosed is an application of the Zion View Exploration Company for a DMEA Loan for the purpose of carrying on exploratory work on certain uranium mining claims in Southern Utah, which are particularly described in the application.

As nearly as possible, we have endeavored to supply required information. If there are any additional materials or information needed, please advise and we will supply the same.

I would appreciate receiving an acknowledgement of the application and all information regarding the required time for processing and other matters which may be pertinent.

Very truly yours,

Richard F. Harless

Richard F. Harless

RFH:ec
Enc.

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

RECEIVED
JUN 11 1956

Not to be filled in by applicant

Docket No. DMEA-4329
Metal or Mineral URANIUM
Date Received 6/11/56
Estimated Cost $65,331
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: Zion View Exploration Company, c/o Richard F. Harless, 1410 ~~1910~~ N. Central Avenue, Phoenix, Arizona
Partnership, organized under the laws of the State of Utah, (See Item 1)

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract a. (See Item II) b. Zion View Exploration Company Holdings (d) The majority of these claims are held under lease agreement, the terms of which are set forth in that document attached hereto and known as Exhibit I

(*b*) State any mine name by which the property is known. (See Items II and III)

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Property held under lease as evidenced in Exhibit I and II & II-A, attached

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

(*e*) If you own the land, describe any liens or encumbrances on it According to the terms of the Assignment shown on Exhibits 1 and II & II-A Attached.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See Item No. IV.

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 Item No. V)

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

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

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

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

5. *The exploration project.*—(*a*). State the mineral or minerals for which you wish to explore (a) Uranium (b) See Item VI (d) See Item VII

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

(*c*) The work will start within 30 days and be completed within 6 months from the date of an exploration project contract. (See Item VII)

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

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

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

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

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

(*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 [X] Use of equipment owned by you [X] Other

Explain in detail on acompanying paper. (See Item X)

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 April 9, 1956

ZION VIEW EXPLORATION COMPANY
(Applicant)

By Irvin D. Kaplan, Trustee

Irvin D. Kaplan, Trustee

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

Zion View Exploration Company
c/o Richard F. Harless
1410 N. Central Avenue
Phoenix, Arizona

RECEIVED
JUN 1 1 1956

ITEM I

General Partner	Address
R. L. Musslewhite	St. George, Utah
Limited Partners	
A. L. Lasher, Jr.	3623 So. MacGregor, Houston, Texas
Jerry Solomon	4634 Waring, Houston, Texas
Sylvia Garson	P.O. Box 1773, Houston, Texas
Jack Gross	3302 Wentworth, Houston, Texas
Robert W. Welz	P.O. Box 1773, Houston, Texas
Harold I. Daily	1602 W. Clay, Houston, Texas
Max M. Kaplan	P.O. Box 1773, Houston, Texas
Gerald S. Kaplan	301 South Main Ave., San Antonio, Texas
Irvin D. Kaplan	P.O. Box 1773, Houston, Texas

ITEM II

Condor, A, B, C and D, and No. 1, through 19, inclusive
Black Knight Nos. 1to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

All of said claims being located on Lower Smith's Mesa in Sections 4, 8, 9, 17 and 33 of Township 40 South, Range 12 West, Salt Lake Meridian, and are more particularly described in location notices recorded in the office of the County Recorder of Washington County, Utah.

Said lease being recorded in the office of the County Recorder in and for said Washington County, Utah, in Entry 98053, Page 357-366, of the Book S-4, Records of said County, also

Zion View Exploration Company

ITEM II (Continued)

Comet Nos. 18 through 23 inclusive
Condor (E) through "G" inclusive
Channel No. 4 through No. 7, inclusive

The Black Knight No. 8 claim was amended to run 1,500 feet North (not South) and was recorded as Entry # 99294, Book X-36, Page 582.

All other claims listed above are recorded as Entries Nos. 99295 through 99307, in Book X-36, on pages 583 through 595, inclusive, in the office of the County Recorder in and for said Washington County, Utah.

Zion View Exploration Company

ITEM III

The claims of the Zion View Exploration Company are as set forth in Section 3.(a). These claims are more particularly known as:

Condor, A, B, C and D, and No. 1, through 19, inclusive
Black Knight Nos. 1 to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

All of said claims being located on Lower Smith's Mesa in Sections 4, 8, 9, 17 and 33 of Township 40 South, Range 12 West, Salt Lake Meridian, and are more particularly described in location notices recorded in the office of the County Recorder of Washington County, Utah.

The above claims under the direct ownership of the partner, Mr. R. L. Musslewhite, have been assigned by Mr. Musslewhite to the partnership as set forth in the assignment attached hereto and marked Exhibit II.

ITEM IV

Refer to Book and page of the Office of the County Recorder of Washington County, Utah as set forth in Item II.

Zion View Exploration Company

ITEM NO. V

(Refer to Paragraph 4 of Instructions)

The matters and things requested in Section 4 (a) (b) (c) (d) and (e) are set forth in the report of R. L. Musslewhite, Geologist, made on November 7, 1955. This report is comprehensive enough to cover all of the facts requested in these various sections and sub-sections of 4. It is evident from the report, that the mine this far, is not a productive mine, but the potential resources are there and should be explored and developed. Accompanying the report of Mr. Musslewhite are attached maps which properly locate the area and give other pertinent information that will show the value of these mining claims.

ITEM NO. VI

It will be observed from pages 5,6 and 7 of the Musslewhite report (Exhibit III) the description of the work to be performed. Mr. Musslewhite has made a thorough study of these claims and should his proposal be carried out, a true estimate of the potential of these properties will be determined. The enclosed maps may be used to locate the proposed drilling as shown in the Musslewhite report.

Zion View Exploration Company

ITEM VII

The work will be performed under the direction of Mr. R. L. Musslewhite, a registered mining engineer of many years experience throughout the West and who is a graduate with a degree in geology from the University of Texas.

ITEM VIII

An analysis of cost and work to be performed are set forth in the Musslewhite report on pages 3, 4 and 5. (See Exhibit III) Applicants propsoe to do the work directly under the direction of Mr. R. L. Musslewhite.

ITEM IX

The employee's wages and pay will be in accordance with the needs of the work on the local wage scale as set forth in Mr. Musslewhite's report on pages 3, 4 and 5. (See Exhibit III)

The requirements for those things and materials as set forth in Section 6, sub-section (c) through (h) are shown in the Musslewhite report on pages 3, 4 and 5. (Exhibit III)

ITEM X

The partnership who hold leases on which exploration is required, is financilly able to carry out all of its obligations in accordance with the demands of Section 7, DMEA No. 1. The partnership will supply sufficient funds for this purpose and when necessary, will either rent or purchase equipment to carry out the job.

EXHIBIT I.

OPTION AND LEASE AGREEMENT

RECEIVED
JUN 11 1956

This agreement made and entered into this 8th day of August, 1955, by and between Charles W. Cottam and Ruth Cottam, his wife, Erven E. Cronin and Evelyn L. Cronin, his wife, Donald P. Macdonald and Geraldine W. Macdonald, his wife, hereinafter designated as LESSORS, and R. L. Musslewhite hereinafter designated as LESSEE,

WITNESSETH:

For and in consideration of the sum of $300.00 paid by the Lessee to the Lessors, receipt of which is hereby acknowledged by the Lessors, the Lessors hereby grant and give to the Lessee the exclusive option to lease the following described unpatented lode mining claims situate in the County of Washington, State of Utah, to-wit:

Condor, A, B, C & D, and No. 1, through 19, inclusive
Black Knight Nos. 1 to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

All of said claims being located on Lower Smith's Mesa in Sections 4, 8, 9, 1 7 and 33 of Township 40 South, Range 12 West, Salt Lake Meridian, and are more particularly described in location notices recorded in the office of the County Recorder of Washington County, Utah.

The terms and conditions of this option are as follows:

ARTICLE I

Section 1. This option shall remain in full force and effect up to and including the 22 day of August, 1955, and may be exercised at any time prior to its expiration.

Section 2. While this option is in force the Lessee shall have the exclusive right to go upon the premises and explore for minerals and make geologic studies and surveys.

Section 3. This option shall be deemed to have been exercised if, prior to its expiration, the Lessee serves written notice of his intent to exercise it upon the Lessor, Erven E.

Cronin who shall accept such a notice upon behalf of all the Lessors.

Section 4. Upon exercise of this option by the Lessee the lease agreement set forth in Article II hereof shall thereupon become and be in full force and effect.

ARTICLE II.

Section 1. The Lessee shall as soon as possible and at his own expense obtain an abstract or abstracts of title to the leased mining claims described above.

Section 2. Immediately upon receipt of abstracts of title showing that the Lessors have marketable title to all of the leased claims the Lessee shall pay the Lessors the sum of $2700.00 which shall be in addition to the $300.00 option payment; provided, however, that if the abstracts disclose that the Lessors have marketable title to fewer than the 60 claims then the Lessee shall have the right and election to do one of the following:

(a). To declare this lease terminated.
(b). To pay the Lessors a sum bearing the same proportion to 2700 that the number of claims with marketable title bears to 60.

Section 3. This lease shall cover and apply to all of the above described claims to which the Lessors have a marketable title.

Section 4. As part of the consideration for this lease and in addition to the initial lease payment specified in paragraph 2 above the Lessee shall pay the Lessors a royalty in the amount of 8% of the gross mill receipts derived from all ores or minerals of any kind produced or extracted from the leased premises.

Section 5. As further consideration for this lease the Lessee agrees to perform, at his expense, all annual assessment work necessary in keeping all of the leased claims in

good standing and to have prepared and recorded at his expense the necessary affidavits of proof of such assessment work.

Section 6. During the term of this lease the Lessee agrees to pay all taxes and assessments of any kind levied or assessed against the leased premises or improvements made thereon including all personal property taxes levied against equipment or other personal property used or placed upon the leased premises by the Lessee.

Section 7. The initial lease payment and all royalty payments required to be made by the Lessee to the Lessors shall be paid to the Bank of St. George, St. George, Utah, as collecting agent for the Lessors; and the Lessors shall have the duty of advising the Bank as to their respective addresses and/or any assignment of the interest of any of the Lessors hereunder.

Section 8. The Lessee agrees to keep adequate books and records of his mining operations and to allow the Lessors or any of them or their authorized agents to inspect the same at reasonable times.

Section 9. The Lessee agrees to remit to the Lessors the royalties due them within 30 days after the Lessee receives payment for ores or minerals and that, if arrangements can be made, the Lessee will instruct the purchasers of ores or minerals to remit the Lessors' royalties directly to the Bank of St. George.

Section 10. The Lessee agrees to indemnify and save the Lessors harmless from any loss and/or liability of any kind caused by or arising out of the Lessee's conduct of mining operations on the leased premises.

Section 11. This lease shall remain in full force and effect for so long as the Lessee performs all of his obligations hereunder and in addition thereto is diligently

conducting mining operations on the leased premises in a minerlike manner; Provided that cessations of mining operations because of strikes, inclement weather, floods, fire or other causes beyond the control of the Lessee shall not render the Lessee in default for failure to donduct mining operations.

Section 12. Upon the termination of this lease the Lessee shall have the right to remove all his equipment and personal property from the leased premises and to remove any movable fixtures or improvements he has placed or constructed upon the leased premises.

Section 13. Should the Lessee be in default in any of his obligations under this lease, then the Lessors shall have the right to serve the Lessee with a written notice specifying wherein the Lessee is in default and requiring said default to be remedied within 30 days after the service of the notice. If the Lessee's default is not remedied within the 30 day period, and not otherwise, the Lessors shall be entitled to reenter and retake possession of the leased premises without further notice or legal process; provided that the Lessee shall be allowed a reasonable time within which to remove his personal property and movable fixtures and improvements.

ARTICLE III

This option and lease agreement shall apply to and be beinding upon the heirs, assigns, successors and personal representatives of the parties hereto.

IN WITNESS WHEREOF the parties hereunto set their hands and seals the day and year first above written.

/S/ L. L. Musslewhite
LESSEE

/S/ Charles W. Cottam
Ruth Cottam
Ervin Cronin
Evelyn Cronin
Donald Macdonald
Geraldine W. Macdonald
LESSORS

STATE OF UTAH)
ss.
County of Washington)

RECEIVED
JUN 11 1956

On the 8 day of August, 1955 personally appeared before me R. L. Musslewhite signer of the foregoing instrument who duly acknowledged to me that he executed the same.

SEAL

/s/ David H. Anderson
Notary Public

Residing: St. George, Utah

My Commission expires:
Feb. 22, 1957

- - - - - - - -

STATE OF Utah)
ss.
County of Washington)

On the 8 day of August, 1955 personally appeared before me Charles W. Cottam and Ruth Cottam, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

SEAL

/s/ David H. Anderson
Notary Public

Residing: St. George, Utah

My Commission expires:
Feb. 22, 1957

STATE OF Utah)
ss.
County of Washington)

On the 8th day of August, 1955 personally appeared before me Evan E. Cronin and Evelyn L. Cronin, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

SEAL

/s/ David H. Anderson
Notary Public

Residing: St. George, Utah

My Commission expires; Feb. 22, 1956

STATE OF Utah)
ss
County of Washington)

On the 8 day of August , 1955 personally appeared before me Donald P. Macdonald and Geraldine W. Macdonald, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

SEAL

David H. Anderson
Notary Public

Residing: St. George, Utah

My Commission expires:

Feb. 22, 1957

AMENDMENT AND SUPPLEMENT TO OPTION AND LEASE AGREEMENT

This amendment and supplement to option and lease agreement made and entered into this 8th day of August, 1955 by and between Charles W. Cottam and Ruth Cottam, his wife, Erven E. Cronin and Evelyn L. Cronin, his wife, Donald P. Macdonald and Geraldine W. Macdonald, his wife, hereinafter designated as LESSORS, and B. L. Musslewhite hereinafter designated as LESSEE, WITNESSETH:

THAT WHEREAS the Lessors hereinabove named did previously to this hour on the 8th day of August, 1955 make and enter into an option and lease agreement with the Lessee above named, and

WHEREAS the above parties desire to amend and supplement the option and lease agreement originally made and hereinabove referred to in the following particulars, to wit,

By adding thereto to Article III Section 2, sub-paragraphs a, b, and c, to wit 1

Section 2 of Article III. As part of the original consideration to the original option and lease agreement herein referred to it is mutually covenanted and agreed as follows:

(a). The Lessors further grant and agree with the Lessee that the Lessee is to have the exclusive option to purchase the royalties or any fraction thereof which may go to the Lessors or such amount as will equal any bona fide royalty offer made and tendered to the Lessors.

(b). Said Lessees in consideration of the premises and in consideration of the original option and lease agreement covenant and agree that the

assessment work which they have agreed to perform under the original agreement will be done on or before May 15th of the year in which the assessment work is due.

(c). If after the signing of this agreement it is discovered that any claim set out in the original option and lease agreement is defective in any manner or it is not surveyed or is erroneously located the Lessors shall have the right at their own expense to remedy and correct said defeciencies or erroneous location. It is further mutually agreed that when the claims set out in the original agreement are actually surveyed if there are any gaps not covered that the Lessors deem of value they shall have the right to locate the gaps either by new location or amended location at their own expense. Said gaps hereinafter covered by amended location or new location are to become a part of and it is agreed that they are included as part of the mining claims to be covered by the original option and lease agreement.

IN WITNESS WHEREOF said parties have hereunto set their hands and seals the day and date above mentioned.

/s/ L. D. Musslewhite
LESSEE

/s/ Charles W. Cottam

Ruth Cottam

Ervin Cronin

Evelyn Cronin

Donald Macdonald

Geraldine W. Macdonald
LESSORS

STATE OF UTAH)
ss.
County of Washington)

RECEIVED
JUN 1 1 1956

On the 8 day of August, 1955, personally appeared before me R. L. Musslewhite, signer of the foregoing instrument who duly acknowledged to me that he executed the same.

SEAL

/s/ David H. Anderson
Notary Public
Residing: St. George, Utah

My Commission Expires:
Feb. 22, 1956

STATE OF UTAH)
ss.
County of Washington)

On the 8 day of August, 1955 personally appeared before me Charles W. Cottam and Ruth Cottam, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

SEAL

/s/ David H. Anderson
Notary Public
Residing: St. George, Utah

My Commission expires:
Feb. 22, 1 9 5 7

STATE OF UTAH)
ss.
County of Washington)

On the 8 day of August, 19551 personally appeared before me Erven E. Cronin and Evelyn L. Cronin, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

SEAL

/s/ David H. Anderson
Notary Public
Residing? St. George, Utah

My Commission expires;
* Feb. 22, 1957

STATE OF UTAH)
ss.
County of Washington)

On the 8 day of August, 1955, personally appeared before me Donald P. Macdonald and Geraldine W. Macdonald, his wife, the signers of the foregoing instrument who duly acknowledged to me that they executed the same.

/s/ David H. Anderson
Notary Public
Residing: St. George, Utah

My Commission expires:

Feb. 22, 1957

Entry No. 98053 Recorded at request of R. L. Musslewhite
Date August 9, 1955, at 11:05 A.M. Book S-4, page 357 to 366
Fee $21.70

/s/ Helen P. Bleah Washington County Recorder, By_____Deputy

C3-379-1
C3-381-1
C3-385-1
C3-387-1
C3-383-1

EXHIBIT II

ASSIGNMENT OF INTEREST IN LEASE OF MINING CLAIMS

WHEREAS, R. L. Musslewhite, did on the 8th day of August 1955, as Lessee, enter into a certain lease agreement with Charles W. Cottam, his wife Ruth Cottam, Ervin E. Cronin, and his wife Evelyn L. Cronin, Donald P. McDonald, and his wife Geraldine W. McDonald, as Lessors, covering the following described mining claims, towit:

Condor, A, B, C & D, and No. 1, through 19, inclusive
Black Knight Nos. 1 to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

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All of said claims being located on Lower Smith's Mesa in Sections 4, 8, 9, 17 and 33 of Township 40 South, Range 12 West, Salt Lake Meridian, and are more particularly described in location notices recorded in the office of the County Recorder of Washington County, Utah.

AND WHEREAS, said lease agreement heretofore identified, was amended and supplemented by changing Article 3 of said agreement of August 8, 1955, and

WHEREAS, in accordance with said agreement of August 8, 1955, the said R. L. Musslewhite has exercised the option set forth therein, and now is in possession of the leased mining claims under said agreement, and

WHEREAS, the Said R. L. Musslewhite desires to assign and transfer to Irvin Kaplin a portion of his right title and interest inanto said mining claim, as set forth in the agreement of August 8, 1955 in the supplement thereto.

NOW THEREFORE, IN CONSIDERATION OF THE PREMISES AND the payment of $1.00 b Irvin Kaplin to R. L. Musslewhite, said R. L. Musselwhite does hereby assign, transfer, and set over to Irvin Kaplin all his right title and interest inanto the agreement of August 8, 1955 and the supplement thereto, together with his rights as Lessee inanto the mining claims herein described. Provided, however, that the said R. L. Musslewhite reserves to himself an undivided gross 5% interest inanto all

the benefits under said agreement of August 8, 1955, and the supplements thereto, together with an undivided 5% gross interest inanto the mining claim, or any royalties or proceeds received from the mining claim, whether by mining operation, royalty payments or the sale of said claims.

Irvin Kaplin, the Assignee herein, by accepting this assignment, does hereby recognise and agree to the condition that R. L. Musslewhite retains for himself an undivided 5% gross interest inanto the contracts and mining claims herein described and refered to, and is more particularly set out in the foregoing reservation to R. L. Musslewhite.

IN WITNESS WHEREOF said parties have hereunto set their hand and seal this 23rd day of September, 1955.

s/ R. L. Musslewhite
Assignor

_____
Assignee

Subscribed and sworn to before me, LeRoy H. Cox, Notary Public, by R. L. Musslewhite this 23rd day of September 1955.

s/ LeRoy H. Cox
Notary Public of St. George, Utah

Commission expires

Subscribed and sworn to before me, _____ Notary Public, by Irvin Kaplin this _____ day of _____, 1955.

_____
Notary Public

EXHIBIT II-A

THE STATE OF TEXAS)
COUNTY OF HARRIS)

ASSIGNMENT OF
LEASE OF MINING CLAIMS

RECEIVED
JUN 11 1958

Whereas, on the 8th day of August, 1955, a certain mining lease agreement was made and entered into by and between Charles W. Cottam and wife, Ruth Dottam, Ervin E. Cronin and wife, Evelyn Cronin, and Donald P. McDonald and wife, Geraldine W. McDonald, all of St. George, Utah, Lessors, and R. L. Musslewhite, of St. George, Utah, Lessee, covering the following described land in the County of Washington and State of Utah, to-wit:

Condor, A, B, C and D, and No. 1, through 19, inclusive
Black Knight Nos. 1 to 9, inclusive
Channel Nos. 1 to 3, inclusive
Falcon Nos. 1 to 18, inclusive
Comet Nos. 1 to 13, inclusive, and 16 and 17

All of said claims being located on lower Smith's Mesa in Sections 4, 8, 9, 17 and 33 of Township 40 South, Range 12 West, Salt Lake Meridian, and are more particularly described in location notices recorded in the office of the County Recorder of Washington County, Utah.

Said lease being recorded in the office of the County Recorder in and for said Washington County, Utah, in Entry 98053, Page 357-366, of the Book S-4 Records of said County; and

Whereas, the said lease and all rights thereunder or incident thereto are now owned by Irvin D. Kaplan, also known as Irvin Kaplin, of Houston, Harris County, Texas, subject, however, to the following:

1. The lease agreement and its amendatory supplement dated August 8, 1955, recorded in Entry 98053, Page 357-366, in the office of the County Recorder, Washington County, Utah; and

2. The reservation in the said R. L. Musslewhite of an undivided 5% gross interest in and to all the benefits under said

THE STATE OF TEXAS ⦇

COUNTY OF HARRIS ⦇

Before me, the undersigned authority, on this day personally appeared Irvin D. Kaplan, being the same person whose name is sometime spelled Irvin Kaplin, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office on this the 3rd day of January, 19 56.

_____

Notary Public in and for
Harris County, Texas

agreement of August 8, 1955,, and its amendatory supplement, together with an undivided 5% gross interest in and to the mining claims above described, and royalties or proceeds accrying from said claims, whether by mining operations, royalties, or sale of said claims, all according to that certain reservation contained in that instrument of assignment from R. L. Musslewhite to Irvin Kaplin (otherwise known as Irvin D. Kaplan), covering the above described mining claims, dated September 23, 1955, recorded in the office of the County Recorder in and for Washington County, Utah, in Entry 99424, Page 43-44 of the Book S-6 Records of said County, to which instruments and their records reference is here made for all purposes.

Now Therefore, for and in consideration of One Dollar and other good and valuable considerations), the receipt of which is hereby acknowledged, the undersigned, the present owner of said mining claims and all rights thereunder or incident thereto, except as aforesaid, do hereby bargain, sell, transfer, assign and convey all rights, title and interest of the original lessee and present owner in and to said lease and rights thereunder in so far as same cover the mining claims above described, to Zion View Exploration Company, a limited partnership duly organized and existing under the laws of the State of Utah, and domiciled in St. George, Utah, and to its successors and assigns, subject to the terms, conditions, comenants, reservations and exceptions above described or referred to.

In Witness Whereof, the undersigned owner and assignor has executed this instrument this 3rd day of January, 1956.

Irvin D. Kaplan

Irvin Kaplin

EXHIBIT III.

GEOLOGICAL REPORT

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GEOLOGICAL REPORT

COTTAM, CRONIN, AND MACDONALD GROUP

WEST SMITH MESA

WASHINGTON COUNTY, UTAH

November 7, 1955

by

H.L. Musslewhite

GEOLOGIST

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INTRODUCTION

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The subject area is composed of 77 unpatented mining claims consisting of approximately 1400 acres located prinsiply in sections 4,8,9, and 17 of township 40 south and range 12 west of the Salt Lake Meridian. These claims are situated on the west edge of Smith Mesa, and extend along the east side of La Verkin Creek, approximately 9 miles northest of Hurricane, Utah. Access into the area is gained by proceeding east 7.9 miles on State Highway 15; thence north 7.8 miles on the road into the Supersonic Military Air Research Track (Project SMART) located on Lower Smith Mesa; thence west 1.5 miles on road through cultivated fields to a dugway over the upper rim onto the claims. Use of the Military road requires written permission, but an alternate route in available by going north and northwest 13 miles on the county road at Vergin, Utah.

The purpose of the investigation was to determine whether or not the subject area has sufficient merit to warrant an exploration program in search of commercial uranium deposits. The method of this investigation was by geological observations while conducting a radiometric survey, and surface mapping of the claims and outcrops. Special interest was devoted to the outcrops of the Shinarump formation and the Hartley sandstone of the Petri-Forest member of the Chinle formation where radiometric anomalies

and mineralization were observed.

SUMMARY AND CONCLUSIONS

The claims under consideration are located on the west edge of Smith Mesa, which is the western extent of the Colorado Plateau province. Rock exposures of the Moenkopi, Shinarump, and Chinle formations (Triassic) outcrop along the flanks of the entire mesa. The Hartley sandstone of the Petrified Forest member of the Chinle formation affords the most favorable characteristics for uranium deposition. Erosional channels within this zone contain coarse clastics, and petrified wood, with copper mineralization, impregnating the wood and sediments. Selected samples were found to contain a maximum uranium oxide content of 0.22 percent by chemical assay. Abnormal radiometric readings were observed in several locations along this outcrop. The predominant structure is the Hurricane fault system to the west which caused minor relief faults and gentle flexures within the subject area. Commercial uranium deposits have been proven in the general region, and exploration throughout the area is being continued.

In conclusion, the Hartley sandstone has sufficient geological merit to warrant an exploration program in search for commercial uranium deposits. Chemical assays of selective samples indicate

that uranium occurs in commercial quality, but it is necessary to conduct an exploration program to determine if the occurrence is in commercial quantity.

RECOMMENDATIONS

The writer recommends an exploration program conducted in the following manner:

Stage 1. Drill 35 holes shown on the Composite Map with a plug bit, and probe these holes for radiometric analysis. These locations are situated along favorable areas for uranium deposition. A test through the Hartley sand zone will require a depth of 167 feet. Locations 19, 20, and 21 should be drilled to a depth of 402 feet for radiometric analysis of the anomalies in the Shinarump formation. The estimated total cost of this stage will be $25,175.00 computed on the following basis:

a) Drilling: Plugging with air circulation

32 locations at 167 ft. per test of Hartley sand zone.....	5344 ft.
3 locations (19,20, & 21) at 402 ft. per test of Shinarump and Hartley sand zone.....	1206 ft.
Total Footage.....	6550 ft.
Estimated cost of 6550 ft. at $3.50 per fot.....	$22,925.00

b) Bulldozing: It is estimated that it will require 45 hours to recondition the present road and to build new roads.

45 hours at $10.00 per hour..... $450.00

c) Salary for geologist and supervisor:

3 months at $500.00 per month 1500.00

d) Miscellaneous expenses:

For road maintenance, part time surveying help, and other expenses..... 300.00

TOTAL COST OF STAGE 1..... $23,175.00

Stage 2. Should Stage 1 prove unsuccessful, the program should be revaluated and probably discontinued. The areas determined by Stage 1 to have a favorable radiometric assay should be drilled on 25 ? feet centers, and cores cut in the sand zone for chemical assays. Assuming that one-half of the area drilled in Stage 1 is favorable, the estimated cost of this stage will be $30,156.00 computed in the following manner:

a) Drilling and coring:

44 locations at 167 ft. per hole.....7014 ft.

7014 ft. at $4.00 per ft..... $28,056.00

b) Bulldozing: For additional locations

10 hours at $10.00 per hour..... 100.00

c) Salary for geologist and supervisor:

6 months at $500.00 per month..... $3,000.00

d) Miscellaneous expenses:

For core assays, part time help, road maintenance, and expenses.....1 1,000.00

TOTAL COST OF STAGE 2..... $8,136.00

Stage 3. It is impossible to estimate the footage required for this stage until previous work is completed. After review of Stages 1 and 2, ore bodies should be blocked out by drilling on a 25 foot grid ? system.

GEOGRAPHY

In general, Smith Mesa is within the geological province of the Colorado Plateau, and is considered to be the western limit of this province in the area. West of the mesa, from the Hurricane fault westward, is a transition zone between the Colorado Plateau and the Basin and Range Provinces of Nevada and California. The Colorado Plateau is predominately an area of severe topographic features composed of cliffs, plateaus, and canyons disrupted by areas of igneous activity with great variations in relief.

Smith Mesa is a typical mesa composed of a flat table-like

upper surface formed by the resistant cap of Springdale sandstone. The western edge descends over two distinct benches formed by intermediate resistant strata of sandstone, onto another well developed bench formed by the resistant Shinarump formation. The lower bench is known locally as "Lower Smith Mesa". Below this bench the descent is essentially vertical to the floor of the La Verkin Creek canyon.

The western slope of this area is covered by abundant cedar and pinon trees with an underbrush of scrub oak and sagebrush.

Occasional dry washes dissect the western slope, and contain water only during the intermittent rainfall of the area.

Rock exposures are primarily well evident, but are occasionally covered by vegetation and talus from the overlying sale. The more resistant strata of sandstone form benches that give the area topographic expression.

STRATIGRAPHY AND PETROGRAPHY

The scope of this report deals only with the Shinarump formation (middle Triassic) and the Petrified Forest member of the Chinle formation (upper Triassic). Investigation of the other existing formations in the area was performed entirely for structural analysis with little attention devoted to their lithological characteristics.

Shinarump Formation:

The Shinarump formation lies unconformable upon the Moenkopi formation (lower Triassic) as evidenced by the erosional channels, ripple marks, and the eroded contact of these two formations. The Shinarump is readily recognized in the area because of the steep cliffs formed along the face, and the topographic benches formed by its resistance to erosion. The formation consists of 90 to 106 feet of white to gray, conglomeratic sandstone, that shows many variations in texture, bedding, and distribution of the component materials. The pebbles are predominantly rounded to sub-rounded, green, yellow, and red jasper and white quartzite in a matrix of white to brown, medium to coarse sandstone. Pebbles of magnetite, limestone, and chert were also observed. Abundant petrified wood is present in the formation, particularly in the base. The petrified wood is oriented primarily parallel to the strike of the formation, and may indicate thedirection of deposition and possibly the direction of erosional channels not seen in the outcrop. Two small erosional channels occur along the Moenkopi-Shinarump contact at points A and B on the attached Composite Map (Plate 2). These channels contain coarse detrital compount of coarse sandstone and sandy conglomerate with abundant petrified

wood scattered throughout. No mineralization nor abnormal radioactive readings were observed in channel A, but copper (malachite) stains were noted in channel B. Additional copper stains and radiometric readings to 0.16 milliroentgens per hour were observed along the shaded area of the aforementioned map. No uranium mineralization was found, although the copper mineralization and abnormal radioactivity may indicate the presence of such an occurrence.

Study of the Shinarump outcrop and the Moenkopi-Shinarump contact was restricted to accessible areas due to the inaccessible cliff faces along the ledge. Distant observations were made with binoculars from the floor of LaVerkin Canyon, with special attention devoted to erosional channels along the contact where visible; however, it should not be construed that the study of this formation was complete or satisfactory.

Chinle Formation:

The Chinle formation lies directly on the wavy surface of the Shinarump formation, and is represented by 753 feet of sandstone, shale, marls bentonite, thin conglomerates, and thin limestone subdivided into the following members: Petrified Forest, Trail Hills, and Springdale.

Petrified Forest Member:

The Petrified Forest member lies conformable on theShinarump

formation, and is represented by 323 feet of variegated shales, sandstones, and bentonite seams. This member is readily identified by the contrast in the brilliant variegated colors of purple, blue, white, and green that are peculiar to it. The majority of the time in the subject area was spent in the study of this member, especially the Hartly sandstone units, since most of the known occurrences of uranium mineralization in the general area are found within this zone. The lower part of this member is composed of 149 feet of stratified green, purple, blue, and gray shales, and thin fine to medium grained, hard, white, purple, gray, and red sandstones with small seams of bentonite, calcareous material, calcdony, jasper, and gypsum. Scattered throughout this zone are found chips of petrified wood, occasional mud balls, and manganese nodules. Overlying this zone is 12 feet of lower Hartley sandstone which is a hard, white to light red, medium to course grained, cross-bedded sandstone composed chiefly of quartz with some feld-spar. The nature of this unit is lenticular in origin, and it varies in thickness from 3 to 25 feet over the length of the claims. In section 4, at the north end of the claims, course clastic and conglomeritic material was found in lenses that contains chips of petrified wood and limbs with copper mineralization impregnating the sandstone and coating the wood. In the area of Condor 1 and Condor 2, shown in red on the Composite Map, an anomalous radiometric reading of 0.15 milliroentgens per hour were

observed in the zones exhibiting the most copper staining and petrified wood. Although no visual uranium mineralization was found, a "Grab" sample obtained from station 6 was found to contain 0.06 percent uranium oxide by chemical analysis (Plate 3). Above this sandstone is 45 feet of friable, variegated shale interbedded with lenses of thin, hard, fine to medium grained, white, red, and purple sandstone. Lying unconformable above this zone, as evidenced by the erosional contact, is the upper Hartley sandstone composed of 22 feet of white to light purple, hard to friable, coarse grained, cross-bedded, lenticular sandstone consisting chiefly of quartz and abundant weathered feldspar. The thickness of this unit varies from 16 to 20 feet over the length of the claims. Several erosional channels were observed along the lower contact of this stratum, that contain clastic detritus, and chips of petrified and carbonized wood impregnated with copper stains. Again, as in the lower Hartley sandstone, high radiometric readings were observed where this condition exists. Along the contact on claims Channel 6 and 7, a zone approximately 67 feet in length was found, that contains a large quantity of petrified and carbonized wood. This area gave radiometric readings as high as 0.19 milliroentgens per hour. "Grab" samples from this area were found to contain a maximum

uranium oxide content of 0.22 percent by chemical assay. Erosional channels of this type offer a favorable environment for the occurence of uranium mineralization. Above the Hartley sand is 86 feet of mariegated shales and marls of irregular composition, texture, and bedding, interbedded with thin sandstone lenses.

Trail Hills Member:

The Trail Hills member of the Chinle formation is composed of 324 feet of stratified shale and sandstone, that forms a slope with steps above the Petrified Forest member. The contact of these two members is recognized by the contrast in color of the upper red member and the variagated lower member.

Springdale Member:

The Springdale sandstone member lies unconformable upon the Trail Hills member, and consists of 107 feet of orange to red, hard, medium to coarse grained, cross-bedded sandstone, with occasional shale partings and conglomertic lenses. This member forms a prominent vertical cliff, and is the resistant cap of upper Smith Mesa.

STRUCTURE

The predominant structural feature of the region is the Hurricane fault that lies immediately west of the subject area, across the La Verkin Canyon. This is a great normal fault of nearly vertical dip in excess of 75 degrees, upthrown to the east, with a displacement of several thousand feet. The upthrown block forms a prominent escarpment (Hurricane Cliffs) that can be traced north and south for a distance of 180 miles. It probably occured contemporaneous, or nearly so, in Tertiary time, with the large igneous mass to the west known as the Pine Valley Mountains. It is believed that the majority of the more localized structures within this region were formed by the same forces that gave rise to this large fault system.

In the subject area, east and essentially parallel to the Hurricane fault (Plate 1), another fault has been interpreted because of the abrupt change in dip from 40 degrees to 2 degrees in the Kaibab and Moenkopi formations, and visible drag folds, usually associated with fault movement, that can be seen along the west flank of La Verkin Canyon.

The general structure of the subject area is one of nearly horizontal beds with dips of 2 degrees to 9 degrees to the northeast with minor variation of this dip due to small gentle flexures.

The three faults shown on the Composite Map were encountered while surface mapping the area. The fault in section 4 was interpreted because of the discordant dip observed within the Petrified Forest and Trail Hills members, and the occasional slickensides noted on the sandstone fragments. Vegetation and talus cover this zone, but it is believed that a large wash occupies the probably trace of this fault. The fault in section 8 was observed in the Shinarump outcrop showing a dip of 24 degrees northeast, and a throw of 8 feet. The fault in section 17 was interpretated again because of the discordant dip and slickensides found within this area. The upper Hartley sandstone along this fault is poorly defined, and may represent small displacement. Here, again, a large wash occupies the probable trace of the fault. All of these faults are of small magnitude, and probably represent relief fractures that occurred contemporaneous with the Hurricane fault system.

ECONOMIC CONSIDERATIONS

Since the close of the silver mines in the Leeds-Silver Reef district, which produced $9,000,000 worth of ore during the period 1875-1900, economic geology has been of minor importance in the general area. Recent discoveries of uranium ore bodies has renew-

ed interest throughout the entire area. Several individuals and organizations are conducting active exploration programs in search of commercial uranium deposits with some success.

The Western Gold Uranium Company has proven reserves in excess of 35,000 tons of uranium and silver ores on their properties in the Leeds-Silver Reef area. The Walkeng Mining Company has proven reserves of 16,000 tons of uranium ore on their properties in the same district. Both of these organizations are engaged in exploration programs.

In the immediate area of Smith Mesa, John E. Hammell and Associates are presently engaged in an exploration program of the Hartley sands in section 23, township 39 south, range 12 west. It is reported by reliable sources that they have cored a 7 foot interval of channel material in the Hartley sandstone that averaged 0.29 percent uranium oxide by chemical assay.

On the Rogers claims, that join the subject claims on the south in section 21, a good example of an erosional channel at the base of the upper Hartley sandstone can be seen. The channel has been exposed by a drift driven into it for approximately 30 feet. The channel varies in thickness from 0 to 6½ feet, and contains coarse sandstone and conglomerate, cut by an 18-inch carbon

seam with marcasite, limonite, and abundant carbonized wood. A 5 foot channel sample from this zone has been reported to average 0.27 percent uranium oxide by chemical assay.

An aerial radioactive anomaly in the southeast corner of section 33, township 39 south, range 12 west ajoining the subject claims on the north, was posted in February, 1955 by the Atomic Energy Commission.

The Atomic Energy Commission buying station at Maryvale, Utah is the nearest present market for uranium ores, and requires a truck haulage of 160 miles from the subject claims. However, the Western Gold Uranium Company, who has an Atomic Energy Commission mill permit, reports that they will start construction of their mill at Leeds, Utah immediately, and that it will be in operation within six months. This mill site will require a truck haulage of 31 miles from the subject claims.

****/s/ R. L. Musslewhite

R. L. Musslewhite
Geologist

EXHIBIT IV-B.

165 SOUTH WEST TEMPLE ST.

CERTIFICATE OF ASSAY

TELEPHONE WASATCH 1214

BLACK & DEASON

ASSAYERS AND CHEMISTS

George Jennings

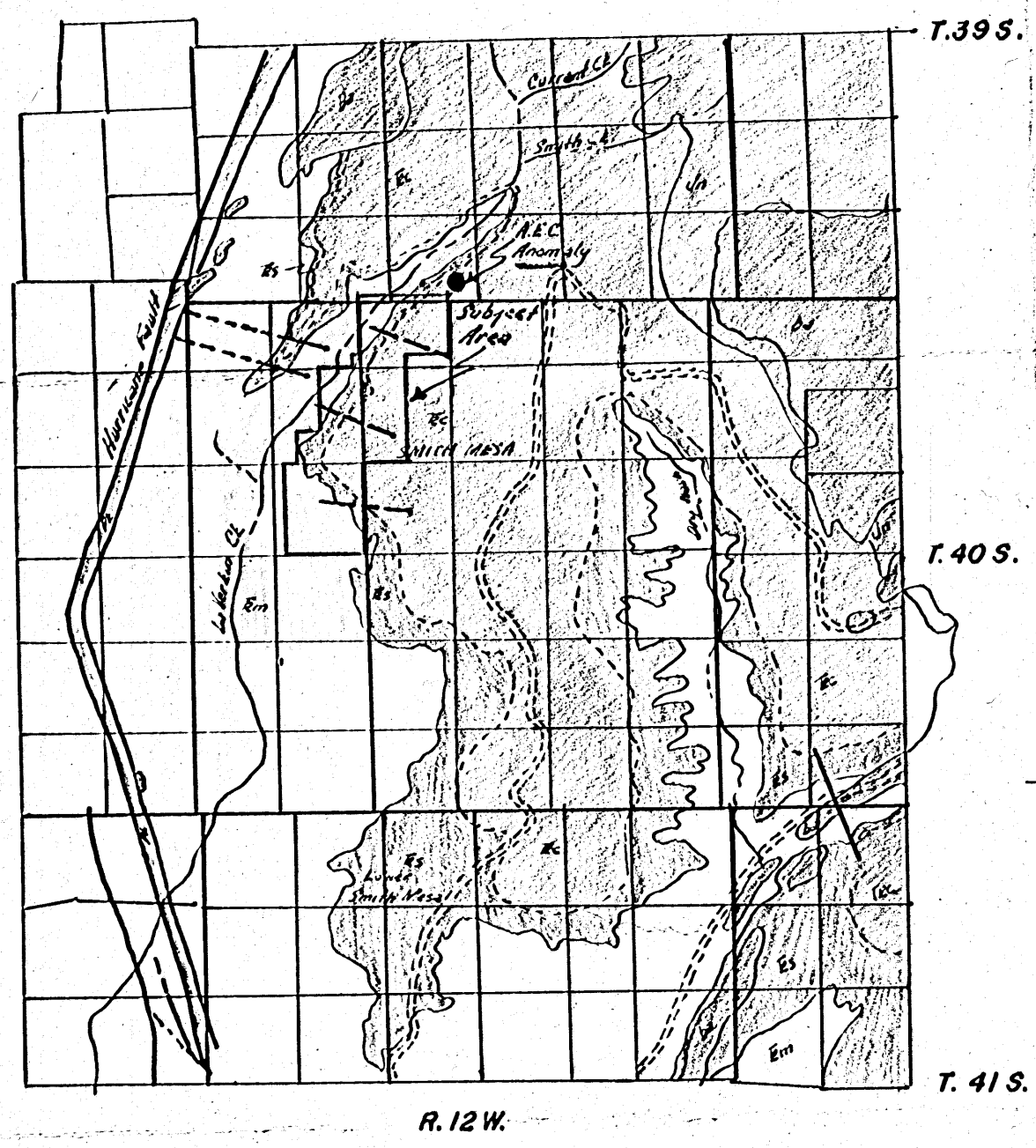
SALT LAKE CITY, UTAH. April 21, 1955

ASSAY PER TON OF 2000 POUNDS

NAME	NO.	GOLD OUNCES	VALUE GOLD PER TON	SILVER OUNCES	WET LEAD %	COPPER %	INSOLUBLE %	ZINC %	%	IRON %	%
									Uranium U_3O_8		Value per ton
#1											
#2 Black									0.03		
#3 C W									0.005		50¢
									0.22		
#4 Cu											
#5									0.[illegible]		
#6									0.002		20¢
									0.06		
#7											
#8									0.01		
#9									0.005		50¢
									0.005		50¢
#10											
#11									0.005		50¢
#12									0.002		20¢
									0.003		30¢
#13											
									0.005		50

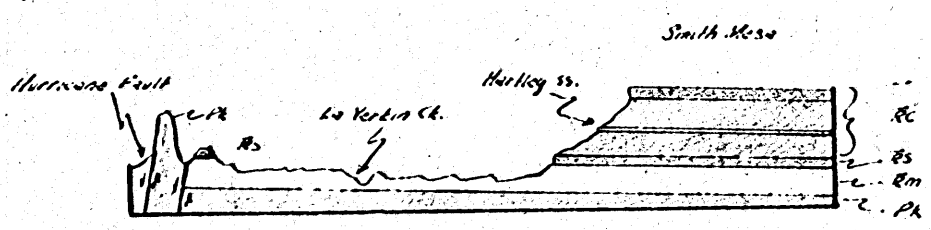
CHARGES. $ paid

B W Deason



LEGEND

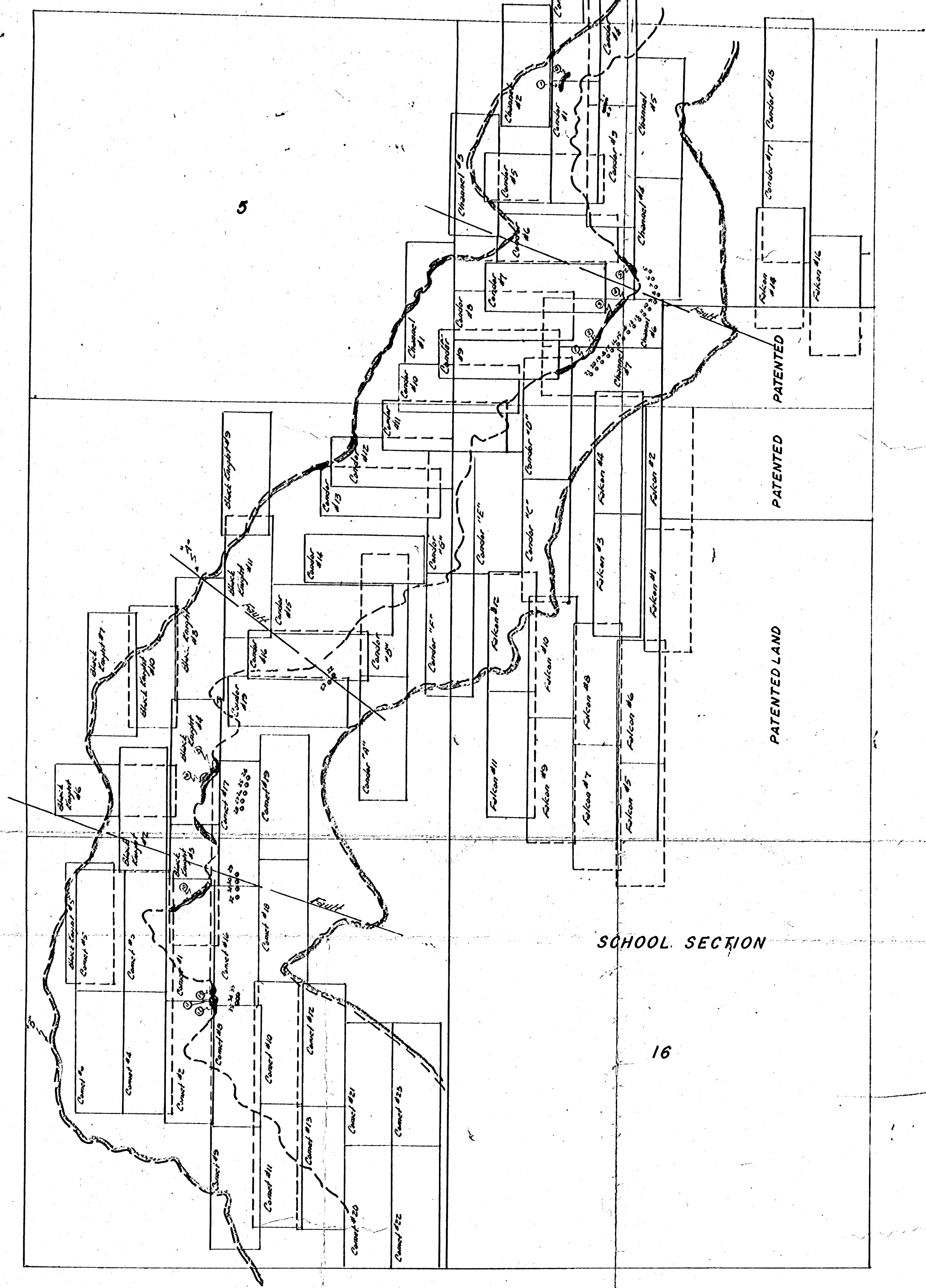
Jn	NAVAJO SS. (JURASSIC)
Rc	CHINLE FM. (TRIASSIC)
Rs	SHINARUMP FM.
Rm	MOENKOPI FM.
Pk	KAIBAB LS. (PERMIAN)
ba	BASALT (TERTIARY)
———	FAULT



GENERALIZED SECTION

PLATE I

INDEX MAP & GENERALIZED SECTION



LEGEND

- SPRINGDALE SS.
- UPPER HARTLEY SS.
- SHINARUMP FM.
- ANOMALY - 0.06 - 0.19 MR./HR.
- SELECTIVE SAMPLE SITE (PLATE 3)
- PROBOSED LOCATIONS

COMPOSITE MAP

COTTAM, CRONIN, & MACDONNELL GROUP

T-40S R-12W

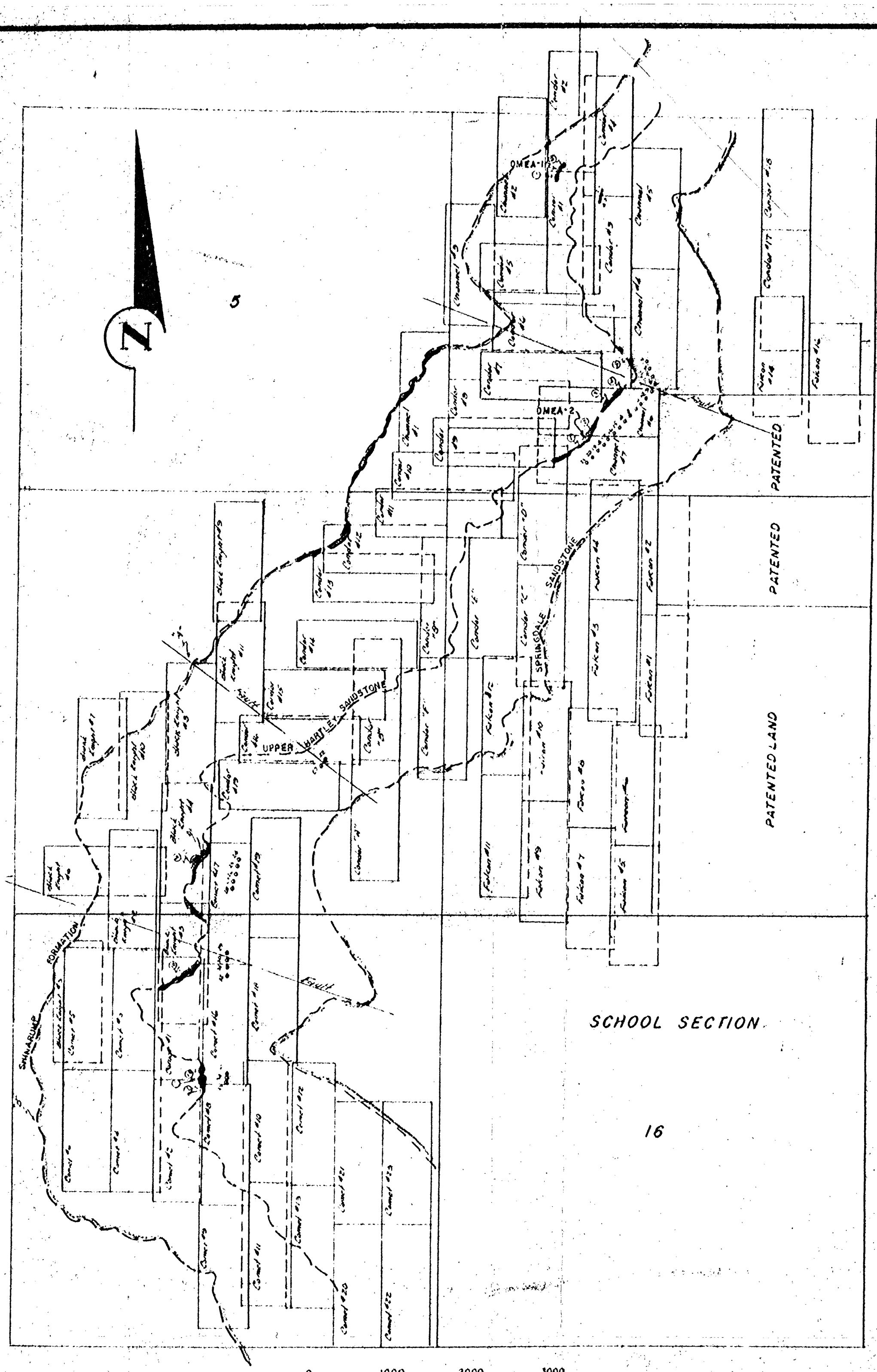
WEST SMITH MESA

WASHINGTON COUNTY, UTAH

SCALE: 1 IN. = 1000 FT.

OCTOBER 1955

R.L. MUSSLEWHITE



NOTE

DATA TAKEN FROM COMPANY MAP.

LEGEND

- SPRINGDALE SS.
- UPPER HARTLEY SS.
- SHINARUMP FM.
- ANOMALY - 0.06 - 0.19 MR./HR.
- SAMPLE LOCATION
- PROPOSED LOCATIONS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 2 OMEA Docket No. 4329

Claim and Geologic Map

ZION VIEW EXPLORATION CO.

WASHINGTON CO., UTAH

ENGINEER: Millard M. GILKEY	DATE: AUG. 15, 1966
TRACED: AUG., 1968; BY: A.P.T.S.	1900 - 408 - E
CHECKED:	