DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 4379

DO NOT DETACH THIS SLIP

Action on this document is recorded and controlled in Reports and Records Branch. Any movement of this document between divisions or offices of DMA or movement outside DMA must be reported to the Reports and Records Branch. Actions taken that affect status of the case must also be reported.

This document has been recorded as

Exploration Project

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Routing Slip Cy to Kiilsgaard

To:	700	Date	7/13/56
To:	Mr. Crawford.	Date	7/13/56
To:	Oper. Comm	Date	7-30-56
To:	FEJ	Date	8-1-56
To:	CJM	Date	8-1-56
To:	Mfgr. Com.	Date	8-14-56
To:	F. E. Johnson	Date	8-15-56
To:	Oper Com	Date	8-16-56
To:	F. E. Johnson	Date	8-17-56
To:	Operating Com	Date	10-24-56
To:	Admr.	Date	10-24-56
To:		Date	
To:		Date	
To:		Date	
To:		Date	

DO NOT DETACH

CONTROLLED DOCUMENT

700

FILE COPY
Surname:

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

Texas-Zinc Minerals Corporation
628 Rood Avenue
Grand Junction, Colorado

Re: Docket No. DMEA-4379 (Uranium)
Navajo Tribal Tracts 20 and 22
Navajo County, Arizona

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 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 10-24-56
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

Docket
700

Murphy
Ellis

October 24, 1956

Summary of Proposed Project

Object: Denial of application for exploration aid.

Docket No.: DMEA-4379

Commodity: Uranium

Applicant: Texas-Zinc Minerals Corporation
628 Rood Avenue
Grand Junction, Colorado

Property: Lease on Navajo Tribal Tracts Nos. 20 and 22, lying about 1 mile apart, and 8 miles south Mile Post 197 on the Utah-Arizona border, in Navajo County, Arizona

Amount of Application: $105,887.00

Date of Application: June 26, 1956 - received July 13, 1956

Referred to Region III: August 2, 1956

Field Examination made: August 28, 1956

Field Team Report received: October 11, 1956

Work Proposed:

Stage I - 400 holes totaling 52,000 feet of non-core drilling.
Stage II - 70 holes totaling 5,250 feet of non-core and 5,250 feet of core drilling.

Estimated Costs:

Independent Contracts:		
Non-core drilling, 57,250 ft. @ $1.24/ft.	$70,990.00	
Core drilling, 5,250 ft. @ $2.40/ft.	12,600.00	
Stand-by time, 60 hrs. @ $11.50/hr.	690.00	
Labor and Supervision	16,669.00	
Operating materials and supplies	3,140.00	
Operating equipment (rental)	1,798.00	
TOTAL		$105,887.00

Excerpts from Field Team Report:

The exposed rocks in the vicinity of the tracts are marine and terrestrial sediments ranging in age from Permian to Jurassic.

All known uranium ore deposits in the Monument Valley area occur in the basal Shinarump member ofthe Triassic Chinle formation.

The Shinarump member caps all of Tract No. 20 and the eastern part of Tract No. 22. The contact with the underlying Moenkopi formation is a widespread unconformity, marked by deep channels and scours. Uranium ore is generally localized in deposits in the shorter, discontinuous channels and is notably lacking in the long, deep, continuous channels evident on the subject property.

Significant uranium deposits in Monument Valley fall in an arcuate belt with a well defined boundary on the south and west. The Applicant's property lies about 8 miles outside of the western edge of this favorable belt.

Recent exploratory drilling on a rather intensive scale has verified the unfavorableness of long, deep channels in the vicinity of the Applicant's property. For example:

Company	Land Tract No.	Holes Drilled	Footage Drilled	Classification of Drill Holes
Gibraltar Minerals Co.	2, 25	10	2,400	9 barren; 1 ore
Texas-Zinc Mn'g. Corp.	4,5,13,14	477	60,000	all barren
" " " "	20	86	?	all barren
Continental Oil & Newmont Exploration	8	32	8,100	all barren
Rare Metals Corp.	3	124	13,400	all barren
Phillips Petroleum Corporation	17	64	12,500	63 barren; 1 ore

Ore has been found in the Chinle formation, 13 miles to the northeast, east, and southeast of the subject property, in the Monument No. 1, Mitten Nos. 1, 2, and 3, Radium Hill, Taylor-Reid, Delight, Starlight, and Moonlight claims. A total of 43,500 tons containing 0.33% U_3O_8 has been mined and ore reserves are estimated as 340,000 tons containing 0.31% U_3O_8.

The field examiners and Field Team conclude that the property lies on an area where the chances of finding uranium deposits of significant size and grade are poor, and therefore recommend that the application be denied.

Commodity Member's Comments (excerpts):

USGS, W. P. Williams, October 17, 1956:

Mr. Williams notes that the geological structures, in the form of long, deep channels rather than short discontinuous ones, are known to be unfavorable for ore deposits in the vicinity, and that this geologic premise has been proved during the large amount of drilling done in the area. Because of the general unfavorableness of the area he concurs in the Field Team's recommendation for denial of the application.

USBM, James Paone, October 19, 1956:

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

Rare & Miscellaneous Metals Div., F. M. Murphy, October 24, 1956:

The extensive drilling programs on the various leased tracts of land, including one of the Applicant's tracts, certainly substantiates the field examiner's conclusion that the proposed project area is unfavorable for possible uranium ore occurrences.

Conclusion and Recommendation:

This Division agrees with the field examiner's conclusions and concurs in their recommendation for denial.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

10-24-56

[illegible]
[illegible]
[illegible]
Washington 25, D. C.

RECEIVED
OCT 23 1956

Date 10/19/56

PMU Docket No. 4379
PMU Contract No.
Commodity Uranium
Name of applicant Texas-Zinc Minerals Corp.
Name of property Tracts 20 and 22
Location of property Navajo County, Arizona
Estimated cost of project $105,887.00

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

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

1. Date of subject document: 10/5/56. 2. Date received by reviewer: 10/16/56.

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

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

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

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

7. Explain items marked yes above:

8. Factors needing special considerations:
a. Location ☐
b. Ownership ☐
c. Evidence of mineralization ☐
d. Geology ☐
e. Proposed exploration method ☐
f. Alternate exploration method ☐
g. None ☐
h. [illegible]

9. Action advised:
a. Obtain information from applicant ☐
b. Refer to Field Team ☐
c. Approve ☒
d. Confer with Field Team ☒
e. Disapprove with Field Team ☐
f. Suggest alternate [illegible] ☐
g. Suggest amendment [illegible] ☐
h. Approve ☐
i. Consult with [illegible]

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

10-19-56

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 4379, Texas-Zinc Minerals Corporation, Navajo tracts 20 and 22, Navajo County, Arizona, (uranium).

The examining team reports that the applicant's property lies outside the favorable belt of ore deposits in the vicinity.

Geological structures on the property, in the form of long, deep channels rather than short discontinuous ones, are known to be unfavorable for ore deposits in the vicinity.

A large amount of exploration drilling, both on the subject property and on nearby tracts, has failed to find ore deposits. Eighty-six holes have been drilled on the applicant's property alone, with negative results.

There are many unfavorable features about the property; and there are few, if any, favorable factors. There seems to be little doubt that the application should be denied; and I concur with the recommendations of the examining team.

W. P. Williams

W. P. Williams

10-17-56

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

RECEIVED
OCT 11 1956

224 New Customhouse
Denver 2, Colorado

October 8, 1956

Memorandum

To: Secretary to the Operating Committee

From: DMEA Field Team, Region III

Subject: Joint Report of Examination Docket DMEA 4379 (Uranium) Texas-Zinc Minerals Corporation (Tracts 20 and 22) Navajo County, Arizona

Enclosed are the original and three copies of a joint engineering and geologic report of examination on the subject property.

The field examiners conclude that the subject property lies in an area where the chances of finding uranium deposits of significant size and grade are poor. They recommend that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

E. N. Harshman

E. N. Harshman
Acting Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE
10-15-56
(date)

IN REPLY REFER TO:

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

TRANSMITTED
OCT 8 1956

October 5, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw
E. N. Harshman

Subject: DMEA Docket 4379 (Uranium), Texas-Zinc Minerals Corporation (Tracts 20 and 22), Navajo County, Arizona

Transmitted herewith are the original and nine copies of a joint examination report on the subject property.

The Texas-Zinc Minerals Corporation proposed to explore for uranium ore in Shinarump sediments by 57,250 feet of non-core and 5,250 feet of core drilling at a total estimated cost of $105,887.00.

The examiners conclude, and we concur, that the requested exploration will not result in the discovery of significant uranium deposits.

Denial of the application for exploration assistance, DMEA Docket 4379 is recommended.

John F. Shaw
Superintendent of the Denver
Experiment Station

E. N. Harshman
Member, Field Team

Enclosures (10)
ENHarshman:mp

Reviewed by
DMEA OPERATING COMMITTEE
10-15-56
(date)

MINERAL DEPOSITS
IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
Grand Junction, Colorado

RECEIVED
SEP 24
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

TRANSMITTED
OCT 8 1956

September 21, 1956

Memorandum

RECEIVED
OCT 11 1956

To: Executive Officer, DMEA Field Team, Region III
Through E. N. Harshman
J. F. Shaw

From: J. W. Hasler

Subject: Transmittal of a Geologic portion of a joint Engineering and Geologic report. DMEA docket 4379 (uranium), Texas Zinc Minerals Corporation, Monument Valley, Tracts 20 and 22, Navajo County, Arizona.

The Texas Zinc Minerals Corporation applied to the Defense Minerals Exploration Administration for a loan to explore for uranium on tracts 20 and 22 on the Navajo Indian Reservation, Navajo County, Arizona. The application was referred to the field and an examination was made by Carl Belser, U. S. Bureau of Mines and W. B. Gazdik, U. S. Geological Survey, August 28, 1956.

All the known ore deposits in the Monument Valley area are found in Shinarump sediments that fill channels cut into the upper surface of the underlying Moenkopi formation. Significant uranium deposits appear to fall in an arcuate belt from the Monument No. 2 mine on the east to the Whirlwind mine near the San Juan River on the north. Most of the deposits occur in relatively short discontinuous channels. The subject tracts lie about 8 miles outside the western boundary of the favorable belt in an area where Shinarump channels are long deep scours which are usually barren of mineralization. Recent exploratory drilling on a rather extensive scale by the applicant has verified the unfavorableness of these long deep channels in the vicinity of the applicant's property. It is concluded that the property, therefore, lies in an area where the chances of finding significant uranium deposits are poor and it is recommended that the application for government assistance be denied.

I concur with the conclusions and recommendations of the examining team. The Atomic Energy Commission was contacted relative to the appraisal of the property. Enclosed are the necessary maps for inclusion in a joint report.

Reviewed by
DMEA OPERATING COMMITTEE
10-15-56
(date)

The applicant transmitted 5 applications to this office, 4 of which I forwarded to the executive officer. In view of this fact we will retain our copy of the application until further notice.

J. William Hasler

J. William Hasler

JWH/pls

Reviewed by
DMEA OPERATING COMMITTEE
10-15-56
(date)

FOR UNITED STATES GOVERNMENT USE ONLY

TRANSMITTED
OCT 8 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 4379

TEXAS-ZINC MINERALS CORPORATION

NAVAJO TRIBAL TRACTS NOS. 20 AND 22

NAVAJO COUNTY, ARIZONA

Uranium

Joint Engineering and Geological Report

by

William B. Gazdik, Geologist
Geological Survey

Carl Belser, Mining Engineer
Bureau of Mines

October 5, 1956

Reviewed by
DMEA OPERATING COMMITTEE
10-15-56
(date)

CONTENTS

	Page
Introduction and Summary	1
Acknowledgments	2
Location, Topography, and Climate	3
History and Production	4
Ownership and Extent	4
Present Status	5
Exploration and development	5
Mining and milling equipment and other facilities	5
Geology	6
Ore Deposits	8
Ore Reserves	11
Proposed Exploration	11
Conclusions and Recommendations	14

ILLUSTRATIONS

Figure	Follows page
1. Location map, Navajo Tribal Tracts Nos. 20 and 22, Texas-Zinc Minerals Corp., Navajo County, Arizona. DMEA 4379	3
2. Geologic map of part of Monument Valley showing Navajo Tribal Tracts 20 and 22, Texas-Zinc Minerals Corporation, Navajo County, Arizona and San Juan County, Utah. DMEA 4379	15

DMEA 4379

TEXAS-ZINC MINERALS CORPORATION
NAVAJO TRIBAL TRACTS NOS. 20 AND 22
NAVAJO COUNTY, ARIZONA

INTRODUCTION AND SUMMARY

Texas-Zinc Minerals Corporation, 628 Rood Avenue, Grand Junction, Colorado, submitted an application to the Defense Minerals Exploration Administration for aid in an exploration project on the Navajo Tribal Tracts Nos. 20 and 22, Navajo County, Arizona. The application, DMEA 4379, requested aid in completing 57,250 feet of non-core drilling and 5,250 feet of core drilling at a total estimated cost of $105,887.

A field examination was made on August 28, 1956, by a team from the Geological Survey and the Bureau of Mines.

The property consists of 1,512 acres of Navajo Tribal land, 8 miles south of Mile Post 197 on the Utah-Arizona border, in Navajo County, Arizona. Its altitude is about 5,850 feet.

The exposed rocks in the vicinity are marine and terrestrial sediments ranging in age from Permian to Jurassic.

All known uranium ore deposits in the Monument Valley area occur in the basal Shinarump member of the Triassic Chinle formation. The Shinarump member caps all of Tract No. 20 and the eastern part of Tract No. 22. The contact with the underlying

Moenkopi formation is a widespread unconformity, marked by deep channels and scours. Uranium ore is generally localized in deposits in the shorter, discontinuous channels and is notably lacking in the long, deep, continuous channels.

Significant uranium deposits in Monument Valley fall in an arcuate belt with a well-defined boundary on the south and west. The applicant's property lies about 8 miles outside of the western edge of this favorable belt.

Recent exploratory drilling on a rather extensive scale has verified the unfavorableness of long, deep channels in the vicinity of the applicant's property.

It is concluded that the subject property lies in an area where the chances of finding significant uranium deposits are poor, and it is recommended that the application for Government assistance be denied.

ACKNOWLEDGMENTS

The examining team was accompanied by Phillip H. Lamberton, geologist for the applicant.

The A. E. C. was consulted before the examination was made.

Memorandums of W. P. Williams and James Paone have been carefully noted.

LOCATION, TOPOGRAPHY, AND CLIMATE

The two tracts lie about 1 mile apart and 8 miles south of Mile Post 197 on the Utah-Arizona border, in Navajo County, Arizona (figs. 1 and 2).

The area covers a high tableland cut by sharp ravines. Altitudes of Tribal Tracts Nos. 20 and 22 average about 5,850 feet. The main camp is reached from Mexican Hat, Utah, by traveling 35 miles southwest on Utah State Highway No. 47, thence 25 miles northwest over a fair access road. From the main camp, Tribal Tract No. 22 is 14 miles westerly by road. No access road has been built between the main camp and Tribal Tract No. 20. From the main camp it is 114 miles to Blanding, Utah, and 230 miles north to the Denver and Rio Grande Western railroad at Thompson, Utah.

Labor can be obtained from the surrounding Navajo reservation. Light materials and supplies can be purchased at Blanding, and a new uranium mill is being erected by the Texas-Zinc Minerals Corporation at Mexican Hat, Utah. Water for camp use must be hauled from a spring, 10 miles distant. Some pine and pinon trees grow in the area.

The main camp is provided with a 4,000-foot landing strip, suitable for twin-motored planes.

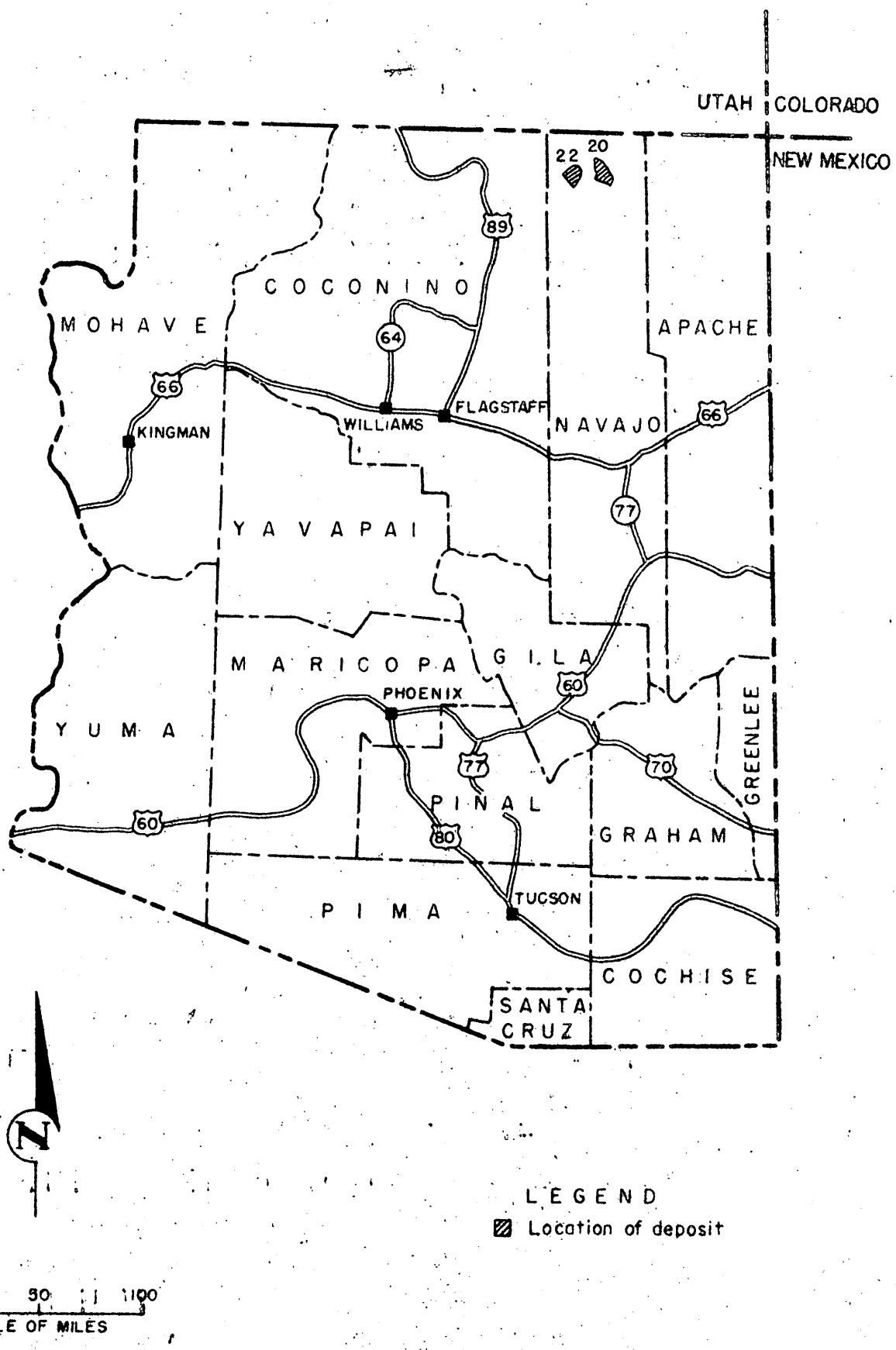


FIGURE 1 - LOCATION MAP, NAVAJO TRIBAL TRACTS NOS. 20 AND 22, TEXAS-ZINC MINERALS CORP., NAVAJO COUNTY, ARIZONA. DMEA 4379

HISTORY AND PRODUCTION

The history of the two tribal tracts as potential uranium areas begins with the exploration permits issued on the tracts on January 24, 1956. As of the date of the examination, Tract No. 22 had not been explored by drilling, but Tract No. 20 had been explored by 86 drill holes, all of which were barren of mineralization. No ore has been found on either tract. However, ore has been found in the Chinle formation, 13 miles to the northeast, east, and southeast in the Monument No. 1, Mitten Nos. 1, 2, and 3, Radium Hill, Taylor-Reid, Delight, Starlight, and Moonlight claims. A total of 43,500 tons containing 0.33 percent U_3O_8 has been mined, and reserves are 340,000 tons, containing 0.31 percent U_3O_8.

OWNERSHIP AND EXTENT

The subject properties consist of Navajo Tribal Tract No. 20, containing approximately 975 acres, and Navajo Tribal Tract No. 22, containing approximately 537 acres. The two tracts are about 4,000 feet apart and 8 miles south of Mile Post 197, on the Utah-Arizona boundary.

Drilling and prospecting permits were issued by the Navajo Tribe to the New-Shat-Tex Corporation on Tracts Nos. 20 and 22

on January 24, 1956. The permits are for a period of 18 months and may be extended or transferred only with the consent of the Navajo Tribal Council and the Secretary of the Interior.

It will be noticed that the application is presented by Texas-Zinc Minerals Company while the permits are issued to New-Shat-Tex Corporation.

PRESENT STATUS

Exploration and development

Tract No. 22 is being drilled under contract by the Southern Geophysical Company, Inc., which, at the time of the examination, was using four Mayhew-1,000 drills and had completed 86 holes averaging 225 feet in depth.

The drilling contractors provide a combination cook house, shop, and bunkhouse. The Texas-Zinc Minerals Corporation has a few trailerhouses at the camp.

Mining and milling equipment and other facilities

There is no mining or milling equipment on the property. Tract No. 22 is provided with a number of access and drill roads, and the A. E. C. has constructed a 4,000-foot landing strip, suitable for twin-engine planes, near the main camp. No access roads have been built to Tract No. 20.

GEOLOGY

The rocks exposed in the vicinity of the subject property are marine and terrestrial sediments ranging in age from Permian to Jurassic. Volcanic necks and lamprophyric dikes, probably of Tertiary age, intrude the sedimentary rocks about 15 miles to the east. Quaternary alluvium, dune sand, and landslide debris are present locally but rock exposures on the sides of mesas are generally excellent.

The principal structural feature in the region is a broad, asymmetrical, north-trending fold known as the Monument Upwarp. It extends from the junction of the Green and Colorado Rivers in Utah southward into Monument Valley where it plunges and disappears near Kayenta, Arizona. The upwarp is about 175 miles long and 75 miles wide. The applicant's property lies in an area where the gently dipping western flank of this major fold is interrupted by north-trending subsidiary folds that are also asymmetrical, with steeply dipping eastern flanks and gently dipping western flanks. The dip of the beds on Tract No. 20 is about 2° NW and on Tract No. 22 about 3° SW (fig. 2).

In ascending order, the rocks that crop out in the immediate area of the subject property are the DeChelly sandstone member and Hoskinnini tongue of the Cutler formation of Permian age, the

Moenkopi and Chinle formations of Triassic age, and the Wingate, Kayenta, and Navajo sandstones of Jurassic age.

All known uranium ore deposits in the Monument Valley area occur in the basal Shinarump member of the Triassic Chinle formation. In the vicinity of the subject property, this member has an average thickness of about 100 feet but locally it thickens to as much as 250 feet. It caps all of Tract No. 20 and the eastern part of Tract No. 22. The Shinarump consists predominantly of medium- to coarse-grained fluvial sandstone which locally grades into a coarse conglomerate at the base. Light-brown, gray, and green lenses of claystone and siltstone, a few inches to as much as 8 feet thick and 100 feet long, are commonly present in the upper part of the member. The sandstone and conglomerate beds are crossbedded and lenticular. Most of the fore-set beds dip northwest, indicating a southern source. Pebbles consist of quartz, quartzite, chert, silicified limestone, clay, and sandstone. Sand grains are mostly quartz, feldspar, and mica. Considerable reworked Moenkopi in the form of blocks and particles is found along the bottom and sides of channels. Silicified and carbonized wood is scattered throughout the member as fragments or logs.

The upper contact of the Shinarump is gradational and locally the member intertongues with overlying Chinle beds. The lower contact with the underlying Moenkopi formation is a widespread

unconformity marked by deep channels and scours. The sediments filling the channels are similar to Shinarump sediments outside of channels except for a greater amount of calcite and carbonaceous material included in channel sediments. In the western part of Monument Valley, the Shinarump forms a resistant sandstone ledge that caps many mesas and tends to form steep, cliff-like features as much as 100 feet high which are unscalable for considerable distances. Where the member forms a widespread erosional surface as it does on Tract No. 20, it is extremely irregular and pitted with depressions or ridged with hummocks as much as 20 feet high.

ORE DEPOSITS

In the Monument Valley area all known uranium ore deposits are localized in Shinarump sediments that fill channels cut into the upper surface of the Moenkopi formation. The channels are symmetrical or asymmetrical scours that may be exposed along mesa sides as U-shaped troughs filled with Shinarump sediments bounded by Moenkopi beds and buried beneath overlying Shinarump non-channel sediments. Where erosion has removed the softer Moenkopi siltstone and the overlying Shinarump beds, the more resistant channel fills, crop out as narrow elongate ridges. Although the detailed origin of these channels is in doubt, it appears likely that they are the result of stream erosion of one form or another.

Known channels in the Monument Valley area range in length from a few hundred feet to as much as four miles, range in width from 5 feet to 2,000 or more feet, and are from a few feet to 150 feet deep. Significant ore deposits occur in the shorter discontinuous channels and are notably lacking in the long, deep and continuous channels.

Mineralized rock occurs chiefly as sandstone or conglomerate impregnated with uranium-vanadium minerals. Smaller amounts of these minerals are contained in mudstone pebbles and seams, or replace carbonaceous material. Copper minerals, mostly carbonates and sulfates, are commonly associated with uranium-vanadium minerals but small amounts of chalcocite, bornite, and chalcopyrite also have been found.

Uranium ore is localized in tabular, lenticular deposits near the Shinarump-Moenkopi contact, but in some places mineralized rock is as much as 10 feet above the contact. The origin of the ore and factors that controlled its localization are not known. Apparently carbonaceous material and clay are closely related to localization of uranium in some complex physical and chemical way. However, the spatial relationship between channels and ore deposits is well known. No ore deposits have been found outside of channel sediments in the Monument Valley area; therefore, prospecting and exploratory drilling have been restricted to known channel outcrops.

Significant uranium deposits in Monument Valley fall in an arcuate belt, with a well-defined boundary on the south and west, trending from the Monument No. 2 mine on the east to the Whirlwind mine near the San Juan River on the north. The applicant's property lies about 8 miles outside the western edge of this favorable belt in an area where Shinarump channels are characteristically long deep and continuous scours. These channels are notably barren except for slight showings of uranium and copper mineralization as an efflorescence which probably precipitated from recently circulating ground water. Such efflorescence probably originated from the general uranium content of the Shinarump member and not from buried deposits. Recent exploratory drilling on a rather extensive scale has verified the unfavorableness of some of the large channels on and in the vicinity of the applicant's property. Channels on Tracts Nos. 2, 3, 4, 5, 8, 14, 17, and 25 were intensively explored with discouraging results (fig. 2). The Phillips Petroleum Corporation drilled 64 holes totalling 12,500 feet on Tract No. 17, about 3 miles north of the subject property. Sixty-three holes were drilled in barren ground and one hole reportedly penetrated 3 feet of mineralized rock containing 0.51 percent U_3O_8 by radiometric assay. The applicant is presently carrying out a rather extensive drilling project on Tract No. 20, one of the land tracts included in

this report. Up to the time the field examination was made, 86 holes had been drilled. The drilling was confined to a large north-trending channel. No mineralized ground was encountered. The company also drilled a total of 60,000 feet in 477 holes on Tracts Nos. 3, 5, 13, and 14 (fig. 2). All of the holes were drilled in barren ground. Available drilling data on some of the land tracts in the western part of Monument Valley are summarized below (fig. 2).

Company	Land tract number	Holes drilled	Footage drilled	Classification of drill holes
Gibralter Minerals Company	2,25	10	2,400	9 barren; 1 ore
Texas-Zinc Mining Corp.	4,5,13,14	477	60,000	all barren
Rare Metals Corp.	3	124	13,400	all barren
Continental Oil & Newmont Exploration	8	32	8,100	all barren
Phillips Petroleum Corp.	17	63	12,500	63 barren; 1 ore

ORE RESERVES

There are no known ore reserves on or near the subject property.

PROPOSED EXPLORATION

The applicant's proposed DMEA project consists of 470 holes requiring an estimated 57,250 feet of non-core drilling and 5,250 feet of core drilling at a total estimated cost of $105,887.

The program is set up in two stages. Stage I drilling, consisting of 52,000 feet of non-core drilling in 400 holes, is designed to delimit Shinarump channels underlying the subject property and to indicate ore bodies if present. The channels would be followed from rim exposures by drilling fences of holes normal to the inferred axial trend of the channels. The fence lines would be 600 feet apart with holes spaced 100 feet apart on the fences.

Proposed Stage II drilling consists of 70 holes requiring 5,250 feet of non-core drilling, and 5,250 feet of core drilling to offset mineralized holes found by Stage I drilling.

The applicant estimates that drill hole depths would average 130 feet for Stage I drilling and 150 feet for Stage II drilling.

The applicant's estimated costs follow:

Individual contracts

57,250 feet non-core drilling at $1.24/ft.	$70,990.00	
5,250 feet core drilling at $2.40/ft.	12,600.00	
60 hours standby time at $11.50/hr.	690.00	
Total individual contracts		$84,280.00

Labor and supervision

1 geologist, 5 mos. at $540/mo.	$ 2,700.00	
1 geologist, 1/2 time, 5 mos. at $300/mo.	1,500.00	
3 geologist-engineer-samplers, 5 mos.	7,250.00	
1 electronic-technician, 5 mos.	2,100.00	
1 draftsman, 1/2 time, 5 mos.	820.00	
Pension plan, etc. 16% of $14,370	2,299.00	
Total labor and supervision		$16,669.00

Operating materials and supplies

Office and drafting supplies, 5 mos. at $75/mo.	$ 375.00	
525 core boxes at $1 each	525.00	
400 assays at $3.50 each	1,400.00	
150 sample bags at $0.40 each	60.00	
Gas, oil, tires, etc., 5 mos. at $91/mo.	455.00	
Gamma-ray logging unit maintenance, 5 mos. at $65	325.00	
Total operating materials and supplies		$ 3,140.00

Operating equipment (rentals)

2-3/4 5on pickup trucks ($5,000) 5/60 of $5,000	$ 416.00	
2 Jeeps ($4,200) 5/60 of $4,200	350.00	
1 Gamma-ray logging unit ($8,000) 5/60 of $8,000	666.00	

1 Office trailer ($2,500) 5/60 of $2,500	$ 208.00	
2 House trailers ($1,900) 5/60 of $1,900	158.00	
Total operating equipment		$ 1,798.00
Rehabilitation and repairs	None	
New buildings, installations, improvements	None	
Miscellaneous	None	
Contingencies	None	
Total estimated cost of project		$105,887.00

CONCLUSIONS AND RECOMMENDATIONS

All known uranium ore deposits in the Monument Valley area are found in Shinarump sediments which fill channels cut into the upper surface of the Moenkopi formation. Significant deposits fall in an arcuate belt extending from the Monument No. 2 mine on the east to the Whirlwind mine, near the San Juan River, on the north. Most of the deposits occur in relatively short, discontinuous channels and are absent in the long continuous ones. The subject property lies about 8 miles outside the western boundary of a favorable belt in an area where Shinarump channels are characteristically long, deep and continuous scours. The channels in this area are notably barren except for slight

showings of uranium and copper mineralization which probably precipitated from recently circulating ground water. Such mineralization, as an efflorescence, probably originated from the general uranium content of the Shinarump member and not from buried deposits. Recent exploratory drilling on a rather extensive scale has verified the unfavorableness of the long, deep channels on and in the vicinity of the applicant's property.

It is concluded that the subject property lies in an area where the chances of finding uranium deposits of significant size and grade are poor. It is recommended, therefore, that the application for government assistance be denied.

700

FILE COPY

Surname:

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

AUG 17 1956

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

Re: Docket No. DMEA-4379 (Uranium)
Texas-Zinc Minerals Corporation
Navajo Tribal Tracts 20 and 22
Navajo County, Arizona

Dear Mr. Traver:

In the Administrator's letter of August 2, 1956, advising the Applicant that the above-referenced application had been referred for a field examination, the Applicant was requested to clarify the right of possession of the above tracts.

For your information, in a letter, dated August 9, the Applicant submitted one copy of a Certificate of Incorporation and an Amendment thereto which indicate that the "New-Shat-Tex Corporation" was the original name, which was later changed by an amendment to "Texas-Zinc Minerals Corporation."

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

FRANK D. LAMB

Member, Bureau of Mines

N. E. Nelson

Member, Geological Survey

FMMurphy/gla/izm (8-14-56) 8-15-56
cc to: Docket
Code 700
Mr. Murphy
Admr.'s Reading File
Operating Committee
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

8/14/56

TEXAS-ZINC MINERALS CORPORATION
628 Rood Avenue
GRAND JUNCTION, COLORADO

RECEIVED
AUG 13 1956

August 9, 1956

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

Subject: Docket No. DMEA-4379 (Uranium)
Navajo Tribal Tracts 20 & 22
Navajo County, Arizona

Gentlemen:

I am replying to your letter of August 2nd in which you request documentary proof that Texas-Zinc Minerals has sufficient right of possession of subject tracts for the purpose of a contract.

Attached are copies of Certificate of Incorporation of New-Shat-Tex Corporation, and Certificate of Amendment of Certificate of Incorporation of New-Shat-Tex Corporation.

I believe these two documents should satisfy your requirements.

Yours very truly,

Travis H. Redman

THR/bk

Encl.

CERTIFICATE OF INCORPORATION

OF

NEW-SHAT-TEX CORPORATION

RECEIVED
AUG 13 1956

We, the undersigned, in order to form a corporation for the purposes hereinafter stated, under and pursuant to the provisions of the General Corporation Law of the State of Delaware, do hereby certify as follows:

FIRST: The name of the corporation is NEW-SHAT-TEX CORPORATION.

SECOND: The principal office of the corporation is to be located in the City of Dover, in the County of Kent, in the State of Delaware. The name of its resident agent is the United States Corporation Company, whose address is 129 South State Street in said city.

THIRD: The nature of the business of the corporation and the objects or purposes proposed to be transacted, promoted or carried on by it are:

(a) To search for, locate, prospect and explore for all natural solids, liquids and gases, including, without limitation, ores, metals, minerals and mineral substances, rocks of all kind, timber, coal, petroleum, rock or carbon oils, brines, natural gas and all other volatile substances.

(b) To mine, drill for, extract, or in any manner remove all natural solids, liquids and gases, including, without limitation, ores, metals, minerals and mineral substances, rocks

of all kinds coal, petroleum, rock or carbon oils, brines, natural gas and all other volatile substances.

(c) To lease, option, purchase, or otherwise acquire and sell, dispose of, deal in, develop, manage, operate and improve all natural solids, liquids and gases and all sources or products thereof, including, without limitation, lands, mines, metals, minerals, ores, mineral rights, mineral substances and products, oil lands, petroleum and petroleum products, gas lands, natural gas and natural gas products, coal lands and coal, brine sources and brines, timber and agricultural lands, forest products and other products of the soil, water sources and water, or any interest in connection with any thereof.

(d) To transport, mill, reduce, smelt, convert, refine, process, manufacture, treat, use, prepare for market, sell, or otherwise dispose of, or deal with, any natural solids, liquids and gases, or any product of any thereof.

(e) To the same extent as natural persons might or could do, to purchase or otherwise acquire, and to hold, own, maintain, work, develop, sell, lease, exchange, hire, convey, mortgage or otherwise dispose of and deal in, lands and leaseholds, and any interest, estate and rights in real property, and any personal or mixed property, and any franchises, rights, licenses

or privileges necessary, convenient or appropriate for any of the purposes herein expressed.

(f) To purchase, or otherwise acquire goods, merchandise and personal property of every class, and to hold, own, mortgage, sell or otherwise dispose of, trade, deal in and with the same.

(g) To enter into, make and perform contracts of every kind and description with any person, firm, association, partnership, corporation, Indian tribe or council, government, state, municipality, or other political or governmental division or subdivision, board, commission or other governmental organization or authority.

(h) To purchase or otherwise acquire the whole or any part of the property, assets, business, good will and rights, and in that connection to undertake or assume the whole or any part of the bonds, mortgages, franchises, leases, contracts, indebtedness, guarantees, liabilities, and obligations of any person, firm, association, corporation or organization.

(i) To apply for, obtain, register, purchase, lease, license or otherwise acquire; to hold, own, use, exercise, operate, develop, introduce, grant licenses in respect of, mortgage, sell, assign or otherwise dispose of and turn to account letters patent of the United States or any foreign country, patent rights, licenses, privileges, inventions, devices, improvements, formulae, concessions, processes,

copyrights, trademarks and/or trade names granted by, recognized by or otherwise existing under the laws of the United States or any foreign country.

(j) To borrow or raise money without limit as to amount and to draw, make, accept, endorse, execute and issue promissory notes, drafts, bills of exchange, warrants, bonds, debentures and other negotiable or non-negotiable instruments and evidences of indebtedness and to secure the payment of any of the foregoing and the interest thereon by mortgage upon or pledge, or assignment in trust of the whole or any part of the property of the corporation, and to sell, pledge or otherwise dispose of such bonds and other evidences of indebtedness for the purposes of the corporation.

(k) To purchase, invest in, hold and reissue shares of its own capital stock.

(l) To subscribe for, purchase or otherwise acquire, invest in, hold, own, mortgage, hypothecate, pledge, sell, transfer, assign or otherwise deal in and turn to account shares of capital stock, warrants, scrip, bonds, debentures, notes, evidences of indebtedness, mortgages, deeds of trust, and other obligations and securities of every kind and nature or any interest or participation therein or in any thereof, created, issued, guaranteed or indorsed

by any corporation, joint stock company, association, partnership, trustee, receiver, reorganization committee, syndicate or individual, government, state, municipality, or other political or governmental division, or subdivision, board, commission, or other governmental organization or authority, and while the owner of any such shares of stock, warrants, scrip, bonds, debentures, notes, evidences of indebtedness, mortgages, deeds of trust or other obligations or securities or any interest or participation therein or in any thereof, to possess and exercise all of the rights, powers and privileges of individual ownership in respect thereto, including the right, if any, to vote thereon.

(m) To aid in any lawful manner any corporation, joint stock company, association, partnership, individual, trustee or syndicate whose stocks, warrants, scrip, bonds, debentures, notes, evidences of indebtedness, mortgages, deeds of trust or other obligations or securities or any interest or participation therein, or in any thereof, this corporation may hold as owner or as security or otherwise, or which it may have assumed or guaranteed, and to do any act or thing designed to protect, improve or enhance the value of any such obligations or securities.

(n) To issue in exchange for any property acquired by it and to pay therefor in whole or in part with, the shares of its own capital stock, bonds, debentures, notes or other obligations or evidences of indebtedness.

(o) To conduct business in any of the states, territories, possessions, mandates or dependencies of the United States, in the District of Columbia, and in any and all foreign countries, or colony, possession, dependency, mandate or protectorate thereof, and to have one or more offices therein and to hold, purchase, mortgage and convey real and personal property therein without limit as to amount, but always subject to the laws of such state, territory, possession, dependency or country.

To do whatever it may deem necessary, convenient or proper for the accomplishment of any one or more of the purposes or for the attainment of any one or more of the objects or the furtherance of any of the powers hereinbefore enumerated, and whatever may be incidental thereto, in any part of the world, either alone, as principal, agent or trustee, or in conjunction with any individual, firm, Indian tribe or council, association, joint stock company, partnership, syndicate, trustee, or other

corporation; to do every other act or acts, thing or things incidental or appurtenant to or growing out of or connected with the aforesaid business or powers or any part or parts thereof provided the same be not inconsistent with the laws under which this corporation is organized; and to have all the rights, powers and privileges now or hereafter conferred by the laws of the State of Delaware upon corporations organized under the laws of that state.

The enumeration herein of the objects and purposes of this corporation shall be construed as powers as well as objects and purposes and shall not be deemed to exclude by inference any powers, objects or purposes which this corporation is empowered to exercise, whether expressly by force of the laws of the State of Delaware now or hereafter in effect or impliedly by the reasonable construction of the said laws.

FOURTH: The total number of shares of stock which the corporation is authorized to issue is fifteen thousand (15,000) shares of capital stock and the par value of each of such shares is One Hundred Dollars ($100).

At all elections of directors of the corporation, each stockholder shall be entitled to as many votes as shall equal the number of his shares of stock multiplied by the number of directors to

be elected, and he may cast all of such votes for a single director or may distribute them among the number to be voted for, or any two or more of them as he may see fit.

FIFTH: The minimum amount of capital with which the corporation will commence business is One Thousand Dollars ($1,000).

SIXTH: The name and place of residence of each of the incorporators is as follows:

NAME	RESIDENCE
Donald C. Hain	10 Inwood Terrace Upper Montclair, New Jersey
Robert W. MacMillan	8 Glenwood Road Tenafly, New Jersey
Ray A. Pittman, Jr.	319 East 50th Street New York, New York

SEVENTH: The corporation is to have perpetual existence.

EIGHTH: The private property of the stockholders shall not be subject to the payment of corporate debts to any extent whatever.

NINTH: The following provisions are inserted for the management of the business and for the conduct of the affairs of this corporation, and for further definition, limitation and regulation of the powers of this corporation and of its directors and stockholders:

(1) The number of directors of the corporation shall be such as from time to time shall be fixed by, or in the manner provided in the by-laws, but shall not be less than six. Election of directors need not be by ballot unless the by-laws so provide.

(2) The board of directors shall have power, without the assent or vote of the stockholders, to make, alter, amend, change, add to, or repeal the by-laws of this corporation, except as otherwise provided by such by-laws, to fix and vary the amount to be reserved for any proper purpose; to authorize and cause to be executed mortgages and liens upon any part of the property of the corporation provided it be less than substantially all; to determine the use and disposition of any surplus or net profits, and to fix the times for the declaration and payment of dividends.

(3) In addition to the powers and authorities hereinbefore or by statute expressly conferred upon them, the directors are hereby empowered to exercise all such powers and do all such acts and things as may be exercised or done by the corporation; subject, nevertheless, to the provisions of the statutes of Delaware, of this certificate, and to any by-laws from time to time made by the stockholders; provided, however, that no by-law so made shall invalidate any prior act of the directors which would have been valid if such by-law had not been made.

TENTH: No contract, act or transaction between the corporation and any other corporation shall be affected or invalidated by the fact that any one or more of the directors of this corporation is or are interested in, or is a director or officer, or are directors or officers of such other corporation; and each and every per-

son who may become a director of this corporation is hereby relieved from any liability that might otherwise exist from contracting with the corporation for the benefit of any corporation in which he may be in any wise interested or affiliated.

ELEVENTH: Any person made a party to any action, suit or proceeding by reason of the fact that he, his testator or intestate, is or was a director, officer or employee of this corporation or of any corporation which he served as such at the request of this corporation, shall be indemnified by the corporation against the reasonable expenses, including attorneys' fees, actually and necessarily incurred by him in connection with the defense of such action, suit or proceeding, or in connection with any appeal therein, except in relation to matters as to which it shall be adjudged in such action, suit or proceeding that such officer, director or employee is liable for negligence or misconduct in the performance of his duties. Such right of indemnification shall not be deemed exclusive of any other rights to which such director, officer or employee may be entitled by law, under any by-law, agreement, vote of stockholders or otherwise.

TWELFTH: The corporation reserves the right to amend, alter, change or repeal any provision contained in this certificate of incorporation in the manner now or hereafter prescribed by law, and all rights and powers conferred herein on stockholders, directors and officers are subject to this reserved power.

In addition to any requirements of law with respect thereto, the affirmative vote or consent of holders of at least eighty per centum (80%) of the stock of the corporation issued and outstanding and entitled to vote for the election of directors, shall be required to change the provision in this certificate of incorporation with respect to the right of stockholders entitled to vote for the election of directors to cumulate votes for directors or to amend the certificate of incorporation so as to limit or deny to such stockholders the preemptive right to subscribe to any or all additional issues of stock of the corporation of any or all classes.

IN WITNESS WHEREOF, we have hereunto set our hands and seals, the 29th day of September, 1955.

In the presence of :

DONALD C. HAIN (L.S.)

ELSIE M. ERICKSON

ROBERT W. MacMILLAN (L.S.)

RAY A. PITTMAN, JR. (L.S.)

STATE OF NEW YORK)
: SS.:
COUNTY OF NEW YORK)

RECEIVED
AUG 13 1956

BE IT REMEMBERED that on this 29th day of September, A.D., 1955, personally came before me, ELSIE M. ERICKSON, a Notary Public in and for the County and State aforesaid, DONALD C. HAIN, ROBERT W. MacMILLAN and

RAY A. PITTMAN, JR.

parties to the foregoing certificate of incorporation, known to me personally to be such and severally acknowledged the said certificate to be the act and deed of the signers respectively, and that the facts therein stated are truly set forth.

Given under my hand and seal of office the day and year aforesaid.

~~(SEAL)~~

ELSIE M. ERICKSON

Elsie M. Erickson
Notary Public, State of New York
No. 03-6198650
Qualified in Bronx County
Cert. Filed in New York Co. Clk.
Term Expires March 30, 1956

ELSIE M. ERICKSON
NOTARY PUBLIC
BRONX COUNTY, N.Y.

State of Delaware

RECEIVED
AUG 13 1956

Office of Secretary of State

I, John N. McDowell, *Secretary of State of the State of Delaware,* do hereby certify *that the above and foregoing is a true and correct copy of* Certificate of Incorporation of the "NEW-SHAT-TEX CORPORATION", as received and filed in this office the thirtieth day of September, A.D. 1955, at 10 o'clock A.M.

In Testimony Whereof, *I have hereunto set my hand and official seal at Dover this* second *day of* May *in the year of our Lord one thousand nine hundred and* fifty-six.

John N. McDowell
Secretary of State

M W Tomlinson

RECEIVED
AUG 13 1956

CERTIFICATE OF AMENDMENT

OF

CERTIFICATE OF INCORPORATION

OF

NEW-SHAT-TEX CORPORATION

* * * * * *

Adopted in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

* * * * * *

WE, E. R. Filley, President and R. A. Oberfell, Secretary of New-Shat-Tex Corporation, a corporation existing under the laws of the State of Delaware, do hereby certify under the seal of the said corporation as follows:-

1. That the Certificate of Incorporation of said corporation has been amended as follows:

a. By striking out the whole of Article FIRST thereof as it now exists and inserting in lieu and instead thereof a new Article FIRST, reading as follows:

"FIRST: The name of the corporation is Texas-Zinc Minerals Corporation."

b. By striking out the second paragraph of Article FOURTH as it now exists and inserting in lieu and instead thereof a new second paragraph of Article FOURTH, reading as follows:

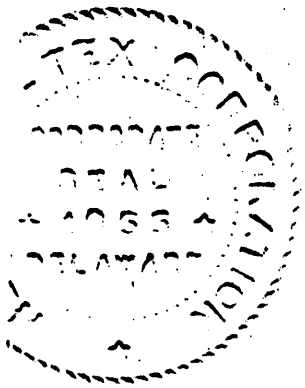
"At all elections of Directors of the corporation, each stockholder shall be entitled to as many votes as shall equal the number of shares duly registered in such stockholder's name."

c. By striking out the second paragraph of Article TWELFTH thereof as it now exists and inserting in lieu and instead thereof a new second paragraph of Article TWELFTH, reading as follows:

"In addition to any requirements of law with respect thereto, the affirmative vote or consent of the holders of at least eighty per centum (80%) of the stock of the corporation issued and outstanding and entitled to vote for the election of Directors shall be required to amend the Certificate of Incorporation so as to limit or deny to such stockholders the pre-emptive right to subscribe to any or all additional issues of stock of the corporation of any or all classes."

2. That such amendments have been duly adopted in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, WE, E. R. Filley, President, and R. A. Oberfell, Secretary of New-Shat-Tex Corporation have signed this Certificate and caused the corporate seal of the corporation to be hereunto affixed this sixth day of April, 1956.



President

Secretary

STATE OF NEW YORK)
: SS.:
COUNTY OF NEW YORK)

RECEIVED
AUG 13 1956

BE IT REMEMBERED, that on this sixth day of April, 1956, personally came before me, Fred V. Saake a Notary Public in and for the County and State aforesaid, duly commissioned and sworn to take acknowledgements or proofs of deeds, E. R. Filley, President of New-Shat-Tex Corporation, a corporation of the State of Delaware, the corporation described in the foregoing Certificate, known to me personally to be such, and he the said E. R. Filley as such President, duly executed said Certificate before me and acknowledged the said Certificate to be his act and deed and made on behalf of said corporation; that the signature of said President and of the Secretary of said corporation to said foregoing Certificate are in the handwriting of the said President and of the Secretary of said corporation, respectively, and that the seal affixed to said Certificate is the common or corporate seal of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office the day and year aforesaid.

SEAL

Fred V. Saake
Notary Public
State of New York

Fred V. Saake

FRED V. SAAKE
Notary Public, State of New York
No. 30-3420556
Qualified in Nassau County
Cert. filed with New York
County Clerk and Register
Term Expires March 30, 1957

State of Delaware

RECEIVED
AUG 13 1956

Office of Secretary of State.

I, **John N. McDowell**, *Secretary of State of the State of Delaware,* **do hereby certify** *that the above and foregoing is a true and correct copy of*

Certificate of Amendment of Certificate of Incorporation of the "NEW-SHAT-TEX CORPORATION", as received and filed in this office the tenth day of April, A. D. 1956, at 9 o'clock A. M.

In Testimony Whereof, *I have hereunto set my hand and official seal at Dover this* second *day of* May *in the year of our Lord one thousand nine hundred and* fifty-six.

John N. McDowell
Secretary of State

M O Tomlinson

RECEIVED
AUG 2 0 1956

August 7, 1956

Memorandum

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

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4379 (Uranium), Texas-Zinc Minerals Corporation (Navajo Tribal Tracts 23 and 22), Navajo County, Arizona

The application for Texas-Zinc Minerals Corporation, DMEA 4379, in the amount of $105,887.00 was received in this office on August 7, 1956.

A field examination will be made and suitable report prepared by an engineer from the Denver or Grand Junction office.

JOHN F. SHAW
John F. Shaw

cc: W. M. Traver (2)
E. N. Barshman
J. W. Hasler
M. H. Salsbury
John F. Shaw
Sec. Op. Com. (2)

8/9/56

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

RECEIVED
AUG - 9 1956

224 New Customhouse
Denver 2, Colorado

August 6, 1956

Memorandum

To: J. F. Shaw (2) with brochure
J. W. Hasler

From: Field Team, Region III

Subject: Docket DMEA 4379 (Uranium) Texas-Zinc Minerals Corporation (Navajo Tribal Tracts 20 and 22) Navajo County, Arisona

Enclosed is the subject application in the amount of $105,887.00. A field examination and suitable report are requested.

Enclosed for your further information are a copy of a letter from the Chairman, Operating Committee, dated August 2, 1956, copy of a letter from the Administrator to the applicant, dated August 2, 1956 and memoranda of review of the application by James Paone and W. P. Williams.

DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

HMC:jy
cc: Docket 4379
Sec. Op. Comm. (2)
Harshman
Chron.

Surname copy
700

Murphy
Ellis
Hudson
Martin
Nelson
Johnson
Mittendorf

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

AUG 2 1956

Texas-Zinc Minerals Corporation
628 Rood Avenue
Grand Junction, Colorado

Re: Docket No. DMEA-4379 (Uranium)
Navajo Tribal Tracts 20 and 22
Navajo County, Arizona

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 for a field examination 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 at the earliest opportunity in regard to your project.

In your application it is stated (page 6 of supplementary information) that, Tracts 20 and 22 are held by Texas-Zinc Minerals Corporation. However, we note that the Navajo Tribe Permits on these tracts are granted to New-Chat-Tex Corporation. Will you kindly submit documentary proof that your Corporation has sufficient right of possession of these two tracts for the purpose of a contract.

In regard to your request that the Government waive its requirement of the Owner's Consent to Lien, in lieu thereof we will require a Performance Bond or a suitable third party guaranty in the event a contract is approved.

Kindly submit the information regarding your right of possession of the two tracts of land as soon as possible.

Sincerely yours,

G. O. Mittendorf

Administrator

FMMurphy/ai 7-30-56
cc to: Docket
Admr. Reading File
Code 700
Mr. Murphy
DMEA Field Team, Region III (2)

Su[illegible]me copy

700

Murphy
Ellis
Martin
F E Johnson

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

AUG [illegible] 1956

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

Re: Docket No. DME-379 (Uranium)
Texas- inc Minerals Corporation
Navajo Tribal Tracts 20 and 22
Navajo County, Arizona

Dear Mr. Traver:

The captioned application is referred to Region III Field Team for a field examination and recommendation.

Enclosed are copies of memoranda, dated July 16 and 23, 1956, by W. P. Williams, USGS, and James Paone, USBM, respectively, relating to the captioned application.

Also enclosed are two copies of a letter, of even date, by the Administrator requesting clarification of the applicant's right of possession of Tracts 20 and 22, and advising the applicant concerning our requirements in regard to guaranties in the event a contract is approved.

Sincerely yours,

W. S. Martin (EST)
ACTING Chairman, Operating Committee

Enclosures

APPROVED:

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

N. E. Nelson (EST)
Member, Geological Survey

FMMurphy/ai 7-30-56
cc to: Docket
Admr.'s Reading File
Operating Committee
Code 700
Mr. Murphy
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

7/23/56

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

RECEIVED
JUL 23 1956

July 23, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

Subject: Application for Assistance, DMEA Docket 4379 (Uranium)
Texas-Zinc Minerals Corporation (Tracts 20 and 22) Navajo County, Arizona

I have reviewed the attached application, DMEA Docket 4379, Texas-Zinc Minerals Corporation (Tracts 20 and 22) Navajo County, Arizona, dated July 13 by the Field Team and received in this office July 18, 1956. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The applicant has requested Federal aid to explore for uranium on Tracts 20 and 22 on the Navajo Indian Reservation, Navajo County, Arizona. The project includes 57,250 feet of non-core and 5,250 feet of core drilling at a unit cost of $1.24 and $2.40 respectively. The total estimated cost is $105,887.

The applicant wishes to explore the outcropping Shinarump channels by a drilling grid consisting of fence lines across the full width of the channel at 600 foot intervals, with holes spaced 100 feet apart along the fence lines. The second phase of the program consists of 70 holes to offset any ore holes found in phase one.

We concur in the recommendation of the Field Team that a field examination be made.

Attention of the field is directed to application form MF103 which has not been dated or signed by the applicant.

James Paone
James Paone

Attachment

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

[illegible]

Unless the Skinarump channels on the property are exceptionally well developed and possess lithologic characteristics favorable for ore deposition the proposed work might represent a prospecting venture that would not be appropriate for DMEA participation at this time.

I believe the property should be examined in the field with the above points in mind. In addition, if the applicant has done some drilling nearby, further light might be shed on the possibilities for success of the proposed project.

W. P. Williams

WPWilliams:btr
7/17/56

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

July 13, 1956

Texas-Zinc Minerals Corporation
628 Rood Avenue
Grand Junction, Colorado

Subject: DMEA-4379
Re: Exploration Assistance
Tracts 20 and 22

Gentlemen

The receipt of your application dated (Application Undated) for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4379 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

July 13, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

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

DMEA
- 4379 Texas - Zinc Minerals Corporation
Tracts 20 and 22

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

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

July 10, 1956

224 New Customhouse
Denver 2, Colorado

DMEA-4379

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Application for DMEA Aid (Uranium) Texas-Zinc Minerals Corporation (Tracts 20 and 22) Navajo County, Arizona

Enclosed are two copies of the subject application in the amount of $105,887.00. This application was submitted to the Grand Junction office, DMEA and they retained one copy.

Also enclosed are four copies of a review of the application by members of the Grand Junction office, DMEA. They recommend that a field examination be made. We concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

RECEIVED
JUL 13 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
Grand Junction, Colorado

MINERAL DEPOSITS
DMEA
RECEIVED
JUL 9 1956

DMEA
Date Rec'd
JUL 10 1956

July 6, 1956

BUREAU OF MINES
Denver, Colorado

Memorandum

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

From: J. William Hasler
M. H. Salsbury

Through: E. N. Harshman

Subject: Application by Texas-Zinc Minerals Corporation for DMEA aid to explore Tracts 20 and 22, Navajo County, Arizona.

The Texas-Zinc Minerals Corporation, a joint venture between The Texas Company and The New Jersey Zinc Company has applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on certain tracts of land on the Navajo Indian Reservation, Navajo County, Arizona.

The application was submitted to the Grand Junction office of DMEA. Five copies of the application were submitted, four of which accompany this letter of recommendation for a field examination.

The application was reviewed with Charles H. Bowen, Acting District Geologist, Atomic Energy Commission and M. H. Salsbury, U. S. Bureau of Mines DMEA representative in Grand Junction.

Uranium ore deposits in the Shinarump member of the Chinle formation have been discovered and extensively mined in Monument Valley in Utah and Arizona. Prominent among the producing mines in the area are Monument No. 1, Mitten Nos. 1, 2, and 3, the Radium Hill, Taylor-Reid, and Industrial Uranium's Daylight, Starlight and Moonlight claims. There has been a total of 43,500 tons of uranium ore mined from these mines and others in the area that will average 0.33 percent U_3O_8 and 0.93 percent V_2O_5. Ore reserves amount to about 340,000 tons averaging 0.31 percent U_3O_8 and 0.93 percent V_2O_5, and ore bodies range in size from 20,000 tons to 200,000 tons.

Extensive exploratory work has been carried on throughout the Monument Valley area by the Texas Company while jointly connected with the Shattuck-Denn Mining Corporation, known as New-Shatt-Tex corporation.

RECEIVED
JUL 13 1956

Results of the work near tracts 20 and 22 to date, as reported by the Atomic Energy Commission, has not been too encouraging, however, there may be chances of discovering other deposits of similar size and grade as those to the east of the property. The Phillips Petroleum Company has drilled the Shinarump north of tract 20 and have reported 3 feet of 0.51 percent U_3O_8 from one hole.

The program submitted by the applicant, if approved, will be difficult to administer because of the necessity of following unknown channels with a series of fences of drill holes that may have to be changed from proposed locations as the drilling progresses. This kind of a program will call for a contract that will allow as much flexibility as possible in order to adequately explore the extension of paleostream channels.

The applicant proposes to explore several of these paleochannels, and it is recommended that a field examination be made relative to their request for DMEA aid.

J. William Hasler
J. William Hasler,
U. S. Geological Survey

M. E. Salsbury
M. E. Salsbury,
U. S. Bureau of Mines

JWH/dm

cc: Harshman
DMEA file
Chron file

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

7/10/56

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

Not to be filled in by applicant

Docket No. 4379
Metal or Mineral Uranium
Date Received 7-13-56
Estimated Cost $105,887
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: TEXAS-ZINC MINERALS CORPORATION
628 Rood Avenue, Grand Junction, Colorado

A Delaware Corporation

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

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. See Attachment No. 1

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See Attachment No. 2

(*b*) State any mine name by which the property is known. None

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise The Tracts are held under 18 month Drilling and Exploration Permits from Navajo Tribe.

(*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. See Attachment No. 3

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

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

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See Attachment No. 4

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See Attachment No. 4

(*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 Attachment No. 4

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.
See Attachment No. 4

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.
See Attachment No. 4

RECEIVED
JUL 13 1956

16—66551-1

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

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See Attachment No. 5

(*c*) The work will start within 90 days and be completed within 14 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See Attachment No. 5

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

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

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

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

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

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

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

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

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

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs. See Attachment No. 6

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 [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated _____, 195__

_____
(Applicant)

By _____

_____

_____

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

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

APPLICATION FOR AID

IN AN

EXPLORATION PROJECT

TEXAS-ZINC MINERALS CORPORATION

JUNE 26, 1956

TABLE OF CONTENTS

		Page
Form MF 103		1
Attachment No. 1 -	Titles, Names and Addresses of Officers	2
Attachment No. 2 -	Property Rights	3
Attachment No. 3 -	Property Rights Navajo Drilling & Exploration Permits	7
Attachment No. 4 -	Physical Description	8
Attachment No. 5 -	Description of the Proposed Exploration Project	11
Attachment No. 6 -	Estimate of Costs	13
Attachment No. 7 -	Copies of Drilling Bids	16

ILLUSTRATIONS

Figure No. 1	Index Map	8-A
Figure No. 2	Geology & Property Map	In Pocket
Figure No. 3	Outline of Proposed Work	12-A

RECEIVED
JUL 13 1956

ATTACHMENT NO. 1

TITLES, NAMES, AND ADDRESSES OF OFFICERS

President
E. R. Filley
THE TEXAS COMPANY
135 East 42nd
New York 17, New York

Vice-President
S. S. Goodwin
NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, New York

Vice-President
F. J. Maloit
NEW JERSEY ZINC COMPANY
Gilman, Colorado

Vice-President
G. Herzog
THE TEXAS COMPANY
P. O. BOX 425
Bellaire, Texas

Treasurer
S. T. Crossland
THE TEXAS COMPANY
135 East 42nd
New York 17, New York

Secretary
R. A. Oberfell
NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, New York

Comptroller
E. E. Schwegler
NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, New York

Assistant Treasurer
H. D. Teeters
THE TEXAS COMPANY
135 East 42nd
New York 38, New York

Assistant Secretary
L. G. Miller
New Jersey Zinc Company
New York 38, New York

Director
F. J. Baxter
New Jersey Zinc Company
160 Front Street
New York 38, New York

Director
W. H. Callahan
NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, New York

Director
E. R. Filley
THE TEXAS COMPANY
135 East 42nd
New York 17, New York

Director
S. S. Goodwin
NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, New York

Director
Gerhard Herzog
THE TEXAS COMPANY
P. O. Box 425
Bellaire, Texas

Director
J. H. Rambin, Jr.
THE TEXAS COMPANY
135 East 42nd
New York 17, New York

ATTACHMENT NO. 2

PROJECT 3-32

TRACT 20

LEGAL DESCRIPTION

(a) Beginning at Station LP-4A from whence Mile Post No. 197, which is a fixed point on the boundary line between the states of Arizona on the South and Utah on the North, bears N.02°11'E. a distance of 40090.4 feet; thence N.15°47'E. 950.6' to LP-5; thence N.02°25'W. 254.3' to LP-6; thence N.23°14'W. 185.9' to LP7; thence N.85°54'W. 561.3' to LP-8; thence N.30°08'W. 195.0' to LP-9; thence S.74°35'W. 242.6' to LP-9A; thence N.04°36'E. 492.8' to LP-10; thence N.28°29'W. 409.1' to LP-11; thence N.01°25'W. 475.2' to LP-12; thence N.18°32'W. 736.4' to LP-13; thence N.35°52'W. 262.1' to LP-14; thence S.56° 37'W. 182.5' to LP-15; thence S.11°17'W. 86.9' to LP-16; thence S.08°55'E. 328.8' to LP-16A; thence S.49°24'W. 503.6' to LP-17; thence S.25°30'W. 253.5' to LP-18; thence S.12°56'W. 239.6' to LP-19; thence S.06°00'E. 692.4' to LP-20; thence S.20°38'W. 431.1' to LP-20A; thence N.15°19'W. 492.3' to LP-21; thence N.63°23'W. 263.9' to LP-22; thence N.34°22'W. 794.1' to LP-23; thence N.10°13'W. 1,045.8' to LP-24; thence N.11°48'W. 242.2' to LP-25; thence N.18°32'W. 984.6' to LP-26; thence N.20°53'W. 433.2' to LP-27; thence N.27°50'W. 494.2' to LP-28; thence N.73°23'W. 117.8' to LP-29; thence S.71°03'W. 90.8' to LP-30; thence S.64°38'W. 324.0' to LP-30A; thence N.85°30'W. 368.3 to LP-31; thence S.64° 35'W. 124.4' to LP-32; thence S.47°01'W. 383.3' to LP-33; thence N.60°46'W. 840.2' to LP-34; thence N.18°42'W. 273.2' to LP-35; thence N.21°08'W. 191.6' to LP-36; thence N.65°09'W. 1363.9' to LP-37; thence N.85°49'W. 178.3' to LP-38; thence S.30°00'W. 420.4' to LP-38A; thence N.40°41'W. 878.5' to LP-39; thence N.65°41'W. 119.0' to LP-40; thence N.39°23'W. 457.9' to LP-40A; thence N.09° 35'W. 616.2' to LP-41; thence N.53°52'W. 366.2' to LP-42; thence N.62°45'W. 446.9' to LP-43; thence S.86°20'W. 176.8' to LP-44; thence S.13°51'E. 130.7' to LP-45; thence S.13°48'E. 564.6' to LP-46; thence S.44°45'E. 207.5' to LP-47; thence S.01°43'W. 416.6' to LP-47A; thence S.47°22'W. 167.9' to LP-48; thence S.21°25'W. 155.9' to LP-49; thence S.24°01'E. 517.7' to LP-49A; thence S.31° 18'W. 371.0' to LP-50; thence S.08°17'E. 262.6' to LP-51; thence S.22°54'E. 507.9' to LP-52; thence S.22°24'E. 503.3' to LP-53; thence S.48°33'E. 421.1' to LP-53A; thence S.09°44'E. 861.9' to LP-54; thence S.55°42'E. 809.8' to LP-54A; thence S.26°34'W. 468.8' to LP-55; thence S.14°34'E. 384.2' to LP-56; thence S.28°02'E. 577.0' to LP-57; thence S.26°35'W. 436.6' to LP-58; thence S.04°59'W. 898.8' to LP-59; thence S.49°08'E. 439.8 to LP-59A; thence N.67°23'W. 635.3' to

ATTACHMENT NO. 2 (Cont.)

Tract 20 Legal Description (Continued)

LP-60; thence S.20°00'W. 1002.6' to LP-61; thence S.04°57'E. 1152.9' to LP-62; thence S.07°34'E. 534.5' to the SW Corner of the tract; thence N.76° 06'E. 237.2' to LP-64; thence N.78°04'E. 7859.6' to LP-78; thence N.87° 37'E. 460.3' to LP-4A, the place of beginning. This tract as described herein contains 1,098.9 acres, more or less.

Signed _____
Prof. Eng. & Land Surveyor
Utah Reg. No. 1596

State of Colorado) ss.
County of Mesa)

The foregoing instrument was acknowledged before me this 26th day of May, 1956. Witness my hand and official seal.

_____
Notary Public
My Commission expires Novembe[illegible]

ATTACHMENT NO. 2 (Co[illegible].)

PROJECT 3-32

TRACT 22

LEGAL DESCRIPTION

Beginning at Station B-1 from whence Mile Post No. 197, which is a fixed point on the boundary line between the states of Arizona on the south and Utah on the north, bears N.20°23'E. a distance of 43,524.5 feet; thence S.58°06'E. 327.3' to B-2; thence S.13°58'E. 171.9' to B-3; thence S.44°57'E. 146.2' to B-4; thence S.65°03'E. 535.3' to B-5; thence N.80°09'E. 135.0' to B-6; thence N.33°53'E. 304.2' to B-6A; thence N.69°32'E. 387.6' to B-7; thence N.55°14'E. 387.5' to B-8; thence N.44°50'E. 451.1' to B-9; thence N.08°59'E. 1,087.7' to B-10; thence N.04°08'W. 340.2' to B-11; thence N.17°45'W. 493.8' to B-12; thence N.32°19'W. 119.2' to B-13; thence N.63°18'W. 294.9' to B-13A; thence N.03°37'W. 564.6' to B-14; thence N.10°56'W. 330.9 to B-15; thence N.62° 30'W. 318.1' to B-16; thence S.84°43'W. 319.9' to B-16A; thence N.13°36'E. 1058.7' to B-17; thence N.03°08'W. 441.8' to B-18; thence N.14°06'W. 667.7' to B-19; thence S.87°31'W. 261.4' to B-19A; thence N.18°10'W. 675.5' to B-20; thence N.02°41'E. 461.0' to B-21; thence S.43°38'W. 6031.1' to B-22; thence S.45°50'E. 4759.3' to B-23; thence N.02°18'W. 1067.5' to B-1, the place of beginning. This tract, as described herein, contains 524.3 acres, more or less.

Signed _____
Prof. Eng. & Land Surveyor
Utah Reg. No. 1596

State of Colorado)
County of Mesa) ss.

The foregoing instrument was acknowledged before me this _____ day of June, 1956. Witness my hand and official seal.

_____
Notary Public
My Commission expires November 1, 1959

(c) The two tracts described above are held by Texas-Zinc Minerals Corporation under an 18 month Drilling and Exploration Permit. The 18 month period began on March 12, 1956, and will terminate on September 12, 1957. Under this permit the applicant has exclusive right to drill and explore the tracts, and to apply for a mining lease under which he may carry out the actual mining operation. As it will be impossible for the applicant to obtain a Consent to Lien from the Navajo Tribe, the applicant requests that a waiver of the Consent to Lien be granted.

ATTACHMENT NO. 3

IN REPLY REFER TO:

Resources:
Realty

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
Navajo Agency
Window Rock, Arizona
March 13, 1956

Nav-Shat-Tex Corporation
628 Rood Avenue
Grand Junction, Colorado

Gentlemen:

Enclosed herewith, are approved copies of your Drilling and Exploration permits covering Tracts 4 & 5, 13, 14, 20 and 22, for which you were highest bidder during sale of said permits on January 24, 1956.

These Drilling and Exploration permits covering said tracts were approved by the General Superintendent on March 12, 1956.

Yours very truly,

Thomas Lynch
for M. D. Long
Chief, Branch of Realty

Enclosure

ATTACHMENT NO. 3 (Cont.)

[redacted]

THE NAVAJO TRIBE

DRILLING AND EXPLORATION PERMIT

TO: Non-Short-Tex Corporation

628 Rood Avenue

Grand Junction, Colorado

1. Pursuant to approval of your bid at the sale held at Window Rock, Arizona, on January 24, 1956, you are hereby granted an exclusive drilling and exploration permit for a period of eighteen (18) months from date of approval hereof upon Navajo Tribal Lands described as follows: Tract No. 20

The Southeast corner is approximately S 82½° E., 30,550 feet from the SE corner of Section 24, T. 13 S., R 13 E., S.L.B.M., and contains approximately 775 acres in Navajo County, Arizona.

2. You are not permitted under this permit to sell ore, but you may remove small quantities for assay or experimental purposes.

3. You are required to pay individual Navajo Indians who may have customary, established, allocated, or assigned use rights for all damage caused by you which affects the surface of the lands involved or any improvement of said Navajo Indians, as determined by the Secretary of the Interior, or his authorized representative.

4. No RENEWAL or extension of this permit may be granted; nor may the permit be sold, assigned, sublet, or transferred in any manner without the consent of the Advisory Committee of the Navajo Tribal Council and the Secretary of the Interior or his authorized representative. No overriding royalty on account of production under any lease may be created as an incident of such transfer or otherwise, and the payment of any overriding royalty on account of production under any lease will constitute cause for concellation and forfeiture. "Overriding royalty" for the purpose of this paragraph is defined as any payment of any kind whatever, other

than payment of a tax or the Tribal royalty, measured by a percentage of the production or of the gross or net value thereof. Payment of a percentage of the net profit of a mining venture shall not be included in the definition of overriding royalty.

5. During the term of this permit you are granted the exclusive right to apply for and be granted a mining lease upon the lands above described, subject to acreage limitations and other lawful regulations.

6. You are required to furnish the Navajo Tribe, at the office of the Tribal Mining Engineer, Window Rock, Arizona, complete drill records and all information obtained from drilling and exploration each thirty (30) days during the term of this permit.

7. You shall have the privilege of constructing and maintaining, at your own expense, any additional roads across Permitter's lands that are necessary in carrying on the actual drilling and exploration work. Water and power lines may also be installed.

8. You shall have the right to drill and equip water wells on the land. At the termination of the permit or any leases taken all wells will be left intact and properly cased.

9. Permittee agrees to employ Indians, giving priority to the members of the Navajo Tribe, in all positions for which they are qualified and available and shall pay the prevailing wage rate for similar services in the area. The Permittee shall do everything practicable to employ qualified Indians, giving priority to the members of the Navajo Tribe, and their equipment in all hauling of materials under the permit and any leases taken and any work done thereunder, insofar as Permittee does not use its own equipment for that purpose. Permittee agrees to make special effort to work Indians, giving priority to the members of the Navajo Tribe, into skilled, technical, and other higher jobs in connection with the Permittee's operations under the permit and leases taken thereunder.

10. Upon termination of operations, Permittee will leave all of the areas on which it has worked in a condition that will not be hazardous to life or limb, and will take reasonable precautions for the conservation and protection of the property involved.

The above permit is accepted and permittee hereby agrees to be bound by all the terms and conditions thereof.

THE NAVAJO TRIBE

BY [illegible]
Chairman, Navajo Tribal Council
(Permitter)

~~New~~-Shat-Tex Corporation

[illegible]
(Permittee)

APPROVED: DATE: MAR 1[illegible]

J. Warren Spaulding
GENERAL SUPERINTENDENT

ATTACHMENT NO. 3 (Cont.)

[redacted]

THE NAVAJO TRIBE

DRILLING AND EXPLORATION PERMIT

TO: New-Shat-Tex Corporation

621 Rood Avenue

Grand Junction, Colorado

1. Pursuant to approval of your bid at the sale held at Window Rock, Arizona, on January 24, 1956, you are hereby granted an exclusive drilling and exploration permit for a period of eighteen (18) months from date of approval hereof upon Navajo Tribal Lands described as follows: Tract No. 22

The North corner is approximately S 41½° W., 39,970 feet from the NE corner of Section 34, T. 43 S., R. 13 E., S.L.B.M., and contains approximately 537 acres in Navajo County, Arizona.

2. You are not permitted under this permit to sell ore, but you may remove small quantities for assay or experimental purposes.

3. You are required to pay individual Navajo Indians who may have customary, established, allocated, or assigned use rights for all damage caused by you which affects the surface of the lands involved or any improvement of said Navajo Indians, as determined by the Secretary of the Interior, or his authorized representative.

4. No ~~removal~~ renewal or extension of this permit may be granted; nor may the permit be sold, assigned, sublet, or transferred in any manner without the consent of the Advisory Committee of the Navajo Tribal Council and the Secretary of the Interior or his authorized representative. No overriding royalty on account of production under any lease may be created as an incident of such transfer or otherwise, and the payment of any overriding royalty on account of production under any lease will constitute cause for cancellation and forfeiture. "Overriding royalty" for the purpose of this paragraph is defined as any payment of any kind whatever, other

than payment of a tax or the Tribal royalty, measured by a percentage of the production or of the gross or net value thereof. Payment of a percentage of the net profit of a mining venture shall not be included in the definition of overriding royalty.

5. During the term of this permit you are granted the exclusive right to apply for and be granted a mining lease upon the lands above described, subject to acreage limitations and other lawful regulations.

6. You are required to furnish the Navajo Tribe, at the office of the Tribal Mining Engineer, Window Rock, Arizona, complete drill records and all information obtained from drilling and exploration each thirty (30) days during the term of this permit.

7. You shall have the privilege of constructing and maintaining, at your own expense, any additional roads across Permitter's lands that are necessary in carrying on the actual drilling and exploration work. Water and power lines may also be installed.

8. You shall have the right to drill and equip water wells on the land. At the termination of the permit or any leases taken all wells will be left intact and properly cased.

9. Permittee agrees to employ Indians, giving priority to the members of the Navajo Tribe, in all positions for which they are qualified and available and shall pay the prevailing wage rate for similar services in the area. The Permittee shall do everything practicable to employ qualified Indians, giving priority to the members of the Navajo Tribe, and their equipment in all hauling of materials under the permit and any leases taken and any work done thereunder, insofar as Permittee does not use its own equipment for that purpose. Permittee agrees to make special effort to work Indians, giving priority to the members of the Navajo Tribe, into skilled, technical, and other higher jobs in connection with the Permittee's operations under the permit and leases taken thereunder.

10. Upon termination of operations, Permittee will leave all of the areas on which it has worked in a condition that will not be hazardous to life or limb, and will take reasonable precautions for the conservation and protection of the property involved.

The above permit is accepted and permittee hereby agrees to be bound by all the terms and conditions thereof.

THE NAVAJO TRIBE

BY Paul Jones

Chairman, Navajo Tribal Council
(Permitter)

NEW-SHAT-TEX CORP.

Evan Lancaster

(Permittee)

APPROVED, DATE: MAR 12 1956

J. Warren Spaulding

GENERAL SUPERINTENDENT

ATTACHMENT NO. 4

PHYSICAL DESCRIPTION

(a) As far as is known there has been no mining of uranium or exploration activity on the project area.

At the present time, the applicant is engaged in a drill program on three other tracts in the Nokai-Hoskinnini Mesa area behind other outcropping channels. Tracing the channel by drilling has presented no special problem, and several areas of weak mineralization have been located.

(b) There has been no production of uranium from the project area. A brief description of production from the adjacent area is given under (c) below.

(c) The subject tracts lie in the western portion of Monument Valley, along the northern boundary of Navajo County, Arizona (see index map, Figure 1). As this area has been withdrawn from prospecting activity for the past several years, private enterprise has conducted no exploration, and Indian and Government attention has been minor.

The favorable formation in the area is the Triassic Shinarump which caps Nokai and Hoskinnini Mesas on which the tracts are located. This formation has a thickness of approximately 100 feet, and the full section is excellently exposed in sheer cliffs at the mesa edge. An erosional unconformity exists between the Shinarump and the underlying Moenkopi formation. This feature is evidenced by bold channel scours into the Ancient Moenkopi surface which have been filled with Shinarump sediments. One or more channel outcrops exist on each of the project area tracts.

A sizeable number of important uranium mines have been found in the Shinarump. Notable among these are the Happy Jack, Maybe, and Blue Lizard Mines of Red and White Canyon, Utah, and the Monument No. 1, Monument No. 2., and Industrial Uranium Company mines of Monument Valley, Arizona. It is generally recognized and evidenced by the above samples, that all Shinarump ore occurrences are found in ancient stream channels which were eroded in the Moenkopi surface. The accumulations of carbon trash and interfingering lenses of sandstone, mudstone, and shale are believed to produce a favorable environment for the deposition of ore.

Current exploration for ore bodies in the Shinarump often comprises the following steps:

1. Locating a channel by drilling or by mapping of rim outcrops.

2. Drilling or drifting along the channel searching for a segment of the channel which is mineralized. In this regard it is interesting to note that large ore bodies have been located by drilling behind channel outcrops which showed little or no mineralization.

Considerable exploration activity is underway at the present time in the Oljeto Syncline area which is immediately east of the Hoskinnini-Nokai area and off the Navajo withdrawal (See Figure 2). Recent finds in this area, which total several hundred thousand tons have been made by systematically drilling along channels which were barren at the outcrop.

The applicant feels that a well planned and well executed program of exploration drilling behind the channel outcrops

which occur on the project tracts stands an excellent chance of finding ore.

(d) The project area may be reached by car over an access road which connects with the Kayenta, Arizona - Mexican Hat, Utah Highway No. 47 (see Figure 2). The road distance from Kayenta to the Texas-Zinc Minerals Corporation drilling camp on Nokai Mesa is 25.5 miles. Food and general hardware items are available at Kayenta. Machinery and heavy equipment are available at Blanding, Utah, which lies 80 miles by road to the northeast.

Motel, trailer park, cafe and school facilities are available at Kayenta.

An excellent 4,000 foot landing strip is maintained and is in current use on Nokai Mesa. This strip was constructed by the U.S.A.E.C., and is capable of handling small twin engined aircraft. It is located approximately four miles northeast of Tract #20.

(e) A sufficient supply of non-technical manpower (Navajo) is available in the area. Many of the Indians have had experience in the Shinarump mines of the district. Materials and supplies, other than general hardware, must be brought in from Blanding, Utah, or Flagstaff, Arizona. Diesel fuel for power and equipment will be delivered to the job by distributor's trucks.

Water for camp use must be trucked in from a spring some ten miles distance along the access road. Portable diesel generator units will be used to furnish power.

ATTACHMENT NO. 5

DESCRIPTION OF THE PROPOSED EXPLORATION PROJECT

(a) Uranium ores

(b) It is proposed to explore the Shinarump channels in the project area with non-core drilling supplemented by core drilling in the ore zones. As it is impossible to pre-determine the exact course of a channel behind the rim through outcrop examination, the specific location of drill holes cannot be anticipated. The first phase of the program will determine the gross features of the channel, trace its course, and indicate ore bodies. The second phase will entail more closely spaced core drilling to determine the size and grade of the ore bodies indicated by the first phase work.

Reference is made to the map of the project area which shows the pattern of drilling for Phase 1, see Figure 3. In this step, non-core drilling will be done to explore an estimated 17,400 linear feet of Shinarump channel. The drilling grid proposed for this work will include fence lines across the full width of the channel at 600 foot intervals, with holes spaced 100 feet apart along the fence lines. With the course of the channel thus determined, two holes will be drilled on each intermediate 200 feet fence lines to test the bottom portion of the channel for mineralization. In conjunction with this program the following data will be assembled:

1. Detailed lithologic logs will be prepared from an examination of the cuttings from each hole.

2. A gamma-ray log will be run on each hole using a Raschol type logging unit.

3. A plane table survey will closely follow the drilling to give coordinate and elevation reference needed for determining the elevation of the Shinarump-Moenkopi contact.

From this data, a paleotopographic map will be prepared to assist in showing the configuration of the channel. An isorad map will be prepared from the gamma-ray log data. Assays will be made of cuttings where radiometric values of the cuttings or gamma ray log data indicates such to be advisable.

The phase 1 program will involve drilling 400 non-core holes which will average 130 feet in depth, or a total of 52,000 feet of non-core drilling.

The phase 2 work will comprise more closely spaced core drilling of ore bodies found through Phase 1 work. This work will involve a reasonable determination of grade and tonnage. It is estimated that a total of 70 holes averaging 150 feet deep will be needed. Of this total footage (10,500), only the bottom half of each hole would be cored. Thus, the phase 2 program would include 5,250 feet of non-core drilling and 5,250 feet of core drilling.

The parent companies of Texas-Zinc Minerals Corporation have conducted major exploration programs throughout the world. Mr. Frank J. Maloit, Manager of Western Mines for the New Jersey Zinc Company and Vice-President of Texas-Zinc Minerals Corporation, will have over-all charge of the exploration program on the project area. Mr. Maloit has been a leading figure in western mining for many years.

ATTACHMENT NO. 6

ESTIMATE OF COSTS

(a) Independent Contracts

Bids were obtained in February, 1956, from Southern Geophysical Company, D. H. Mott and Sons, Inc., and Sprague and Henwood, Inc., for approximately 170,000 feet of drilling in the project area. The bids are compared in the following table.

Company	Per Foot Cost Non-Core Drilling 0-200'	Per Foot Cost Non-Core Drilling 200-300'	Per Foot Cost Core Drilling 0-200'	Per Foot Cost Core Drilling 200-300'	Extra Charges/ Bulldozing, Etc.
Southern Geophysical	1.24	1.24	2.40	2.40	Few
Mott & Sons	1.35	1.35	3.75	3.75	Several
Sprague & Henwood	1.80	2.00	4.50	5.00	Numerous

Reference is made to Attachment No. 7, copies of the Southern Geophysical, Mott, and Sprague & Henwood bids, for a more detailed comparison.

The estimate of the contract drilling costs which follows is based on the rates of Southern Geophysical Company.

Estimated---57,250 feet non-core drilling at $1.24/foot	$70,990.00	
Estimated--- 5,250 feet of core drilling at $2.40/foot	12,600.00	
Estimated--- 60 hours standby time for radiometric survey, emplacement of casing, etc. @ $11.50/hr.	690.00	
Total Estimated Contract Cost of Drilling		$ 84,280.00

(b) Labor, Supervision and Consultants

Supervision 1 geologist	5 months	$ 2,700.00
1 geologist - ½ time	5 months	1,500.00

ATTACHMENT NO. 6 Cont.)

Technical Services			
3 geologists-engineer-sampler	5 months	$ 7,250.00	
1 electronic technician	5 months	2,100.00	
1 draftsman - ½ time	5 months.	820.00	
		$14,370.00	
Pension Plan, Group Life Ins., Savings Plan and Vacation: 16% x $14,370.00		2,299.00	
Total			$ 16,669.00

(c) Operating Materials & Supplies:

Office & Drafting Supplies $75.00/mo.	$ 375.00	
525 core boxes @ $1.00	525.00	
Analytical Costs - 400 assays $3.50 ea.	1,400.00	
150 sample bags @ $0.40	60.00	
Gas, Oil, Tires, Etc., $95.00/mo.	455.00	
Gamma logging unit maintenance $65.00/mo.	325.00	
Total		$ 3,140.00

(d) Operating Equipment

2 - 3/4 ton pickup trucks ($5,000) $5000/60 = $83.33 per mo.	5 mos.	$ 416.00	
2 - Jeeps ($4,200) $4200/60 = $70.00 per mo.	5 mos.	350.00	
1 - Gamma logging unit ($8,000) $8,000/60 = $133.33 per mo.	5 mos.	666.00	
1 - Office Trailer ($2,500) $2500/60 = $41.66 per mo.	5 mos.	208.00	
2 - House Trailers ($1,900) $1900/60 = $31.66 per mo.	5 mos.	158.00	
Total			$ 1,798.00

(e) Rehabilitation and Repairs

None

Attachment No. 6 (Cont.)

New Building, Improvements, Installations

None

Miscellaneous

None

Contingencies

None

ESTIMATED TOTAL COST OF PROJECT	$105,887.00

ATTACHMENT NO. 7

COPIES OF DRILLING BIDS

(1) Southern Geophysical Company

(2) Sprague & Henwood, Inc.

(3) D. H. Mott & Sons, Inc.

SIDON HARRIS, PRESIDENT

Southern GEOPHYSICAL

PRECISION SEISMIC SURVEYS ▽ DATA REANALYSIS

P. O. Box 1398, Grand Junction, Colorado

February 7, 1956

Mr. Ivan Pancake
NEW SHAT TEX CORPORATION
628 Rood Avenue
Grand Junction, Colorado

Dear Mr. Pancake:

Herewith two copies of a contract proposal to cover the drilling program described in your letter of January 27, 1956.

To summarize our proposal, Southern will establish a field camp headquarters sufficient to accomodate your personnel and Southern's personnel with mess and sleeping facilities, provide drilling services, bulldozer for access roads, four drill units—each equipped with a dust sampler and each served by a truck-mounted 600 c.f.m. rotary air compressor. In addition to the required equipment, we propose to provide a standby drill and air compressor to insure against losses due to breakdown and other causes. Our basic, non-core price for this service is $1.28 per foot to depths of 300 feet. Core will be taken for an additional $1.22 per foot.

We propose to establish and maintain two-way radio communications between the field camp and Grand Junction. These facilities would be available for your use without expense beyond any telephone toll charges which might be involved.

Our mess schedule is arranged to provide meals for up to five of your field personnel without charge. In addition, we can provide living quarters, office space, shower facilities, and electricity without charge, at your option.

We shall be willing to consider any suggestion which you may have regarding this agreement, and shall be pleased to discuss with you any question which may arise in connection with your appraisal of our proposal.

Very truly yours,

Howard B. Dutro

Howard B. Dutro
Manager, Grand Junction Division

EXHIBIT "A"

Attached to Agreement dated ~~March~~ February 27th, 1956, between the NEW-SHAT-TEX CORPORATION, herein called NST, and the SOUTHERN GEOPHYSICAL COMPANY, INC., herein called SOUTHERN.

The drilling program contemplated under this agreement calls for approximately 170,000 feet of hole to be drilled on certain tracts located on Hoskinnini, Nokai, and Long Point Mesas, Navajo County, Arizona. SOUTHERN shall furnish the following personnel, equipment, and supplies to perform the work at the prices specified:

A. DRILLING SERVICES, FIELD CAMP, AND SUPPLIES

1. Drilling Services

SOUTHERN shall furnish the following personnel and equipment:

a. Drilling

Personnel	Equipment
Four Drillers	Four truck-mounted Mayhew 1000 (or equivalent) rotary drilling machines, each equipped with a Winter-Weiss primary and secondary dust sampling system.
Four Helpers	Four truck-mounted Ingersoll-Rand or Chicago Pneumatic 600 c.f.m. rotary air compressors.

All necessary tools for drilling, including drill pipe, bits, core barrels, and accessory supplies.

b. Auxiliary Drilling Equipment and Personnel

Personnel	Equipment
One Drill Foreman	One pickup truck
	Two drill-service pickup trucks
	One Caterpiller D-6A angle bulldozer, or equivalent

2. Field Camp

SOUTHERN shall establish and operate a field camp sufficient to provide sleeping quarters, office space, cooking, mess, shower, and shop facilities for SOUTHERN's personnel, equipment, and up to five of NST's employees. Such camp shall include the following:

a. Personnel

One Administrator-Clerk
One Cook
One Cook's Helper
One Mechanic-Bulldozer Operator

b. Building

One 32' x 60' steel building, partitioned for cooking, mess-recreation, office, and shop space.

c. Camp Equipment

Stove, refrigerator, deep freezer, and mess utensils
Sleeping bunks, recreation, and shower
Shop and welding equipment
Two-way radio communications system
Spare parts inventory
One water truck
One Utility truck
One 5 K.V.A. electric light plant

d. Standby Equipment

One truck-mounted Mayhew 1000 rotary drilling machine equipped with dust sampler

One truck-mounted Ingersoll-Rand 315 c.f.m. rotary air compressor

One 3 K.V.A. electric light plant.

e. Supplies

All of the supplies necessary to operate and maintain the camp for the personnel and equipment specified, including food, fuel, water, and electric power.

NST agrees to pay to SOUTHERN, as full compensation for work performed by the above personnel and equipment, at the following rates:

Non-core drilling ..... $1.24 per foot

Core drilling ..... $2.40 per foot

Maximum hole depth not to exceed 300 feet

Standby time.....$11.50 per hour

If, for any reason, dust samples are not taken by SOUTHERN in a manner acceptable to NST, NST shall have the option of causing SOUTHERN to re-drill the hole at no cost to NST.

If, for any reason, the core recovery for any hole is less than 80 percent, the price for non-core drilling shall be applicable to the total depth of the hole.

B. TERMINATION

1. Completion of Program

NST shall have the right to terminate this agreement upon the completion of a total of 170,000 feet of hole drilled as a result of operations under this agreement.

2. Failure to Meet Production Schedule

Should SOUTHERN fail to maintain drill production equal to an average of 15,000 feet of hole per month, where standby time is not the contributing factor, NST shall have the right to terminate this agreement upon fifteen (15) days advance written notice from NST to SOUTHERN.

3. Curtailment of Program

Should NST desire to terminate this agreement prior to the completion of a total of 170,000 feet of hole because of program curtailment or otherwise, excepting that covered by Section B, Subsection 2, hereinabove, such termination may be effected by NST paying to SOUTHERN as liquidated damages, in addition to other payments specified herein, a sum equal to the product of the amount by which the total footage drilled hereunder is less than 170,000, multiplied by $0.15 ($0.15 (170,000 minus total feet drilled hereunder)).

C. ADDITIONAL WORK HOURS

The above specified prices of $1.24 and $2.40 per foot are based upon anticipated production of 20,000 feet per month. A production schedule based upon this figure shall be established, i.e., total expected footage at the end of first month - 20,000, total expected

footage at the end of second month - 40,000 etc. Should SOUTHERN be unable to meet this schedule by working a normal schedule with the equipment provided for, SOUTHERN shall have the right to work additional hours or to add drill units in excess of those specified in an effort to bring production up to an average of 20,000 feet per month.

D. ADDITIONAL ITEMS

NST shall reimburse SOUTHERN for the cost delivered to the field camp location of:

1. Casing, when required, provided approval of NST prior to purchase has been obtained.

2. Core boxes and dust sample bags in quantities and of types approved by NST.

E. GROSS RECEIPTS TAX

NST shall reimburse SOUTHERN for the tax or fee based upon gross receipts due under this contract, which is levied or may be levied by any state or political subdivision having jurisdiction over the area wherein the work is performed.

F. RENEGOTIATION

1. The entire operation discussed herein contemplates that air drilling techniques are applicable to efficient drilling operations in the prospective area. While a surface reconnaissance of the area does not suggest the presence of a prolific aquifer, the possible existence of localized perched water tables is not precluded. Should drilling fluid be required to drill any portion of the footage contemplated hereunder, NST and SOUTHERN agree that the prices to drill with fluid shall be negotiated.

2. The price schedule herein is based upon hole depths not in excess of 300 feet. Should deeper drilling be required, NST and SOUTHERN agree to negotiate prices for that footage drilled at depths in excess of 300 feet.

Approved for NST

By: _____

EP
1/8

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK · PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO.

EXECUTIVE OFFICES & PLANT
221 W. OLIVE STREET
SCRANTON, PA.

SINCE 1883

SPRAGUE & HENWOOD, INC.

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

PLEASE REPLY TO
P. O. BOX 645
GRAND JUNCTION, COLO.
TELEPHONE 034

February 8, 1956

New-Shat-Tex
628 Rood Ave.
Grand Junction, Colo.

Attn: Mr. Evan Pancake

Gentlemen:

In accordance with our conversations based on your letter dated January 27, 1956, we herewith submit our proposal for drilling approximately 170,000 feet in the Navajo Indian Reservation on the Nokai and Hoskinnini Mesas, Monument Valley area.

PROPOSAL

Non-Core
Item 1. - From surface to 200 ft. depth....$1.80 per ft.
Item 2. - From 200 ft. to 400 ft. depth....$2.00 per ft.

Core
Item 3. - From surface to 200 ft. depth....$4.50 per ft.
Item 4. - From 200 ft. to 400 ft. depth....$5.00 per ft.

Delays
Item 5. - For all delays, such as radiometric logging of holes, or for any other delays required by the customer..$12.00 per hr.

Bulldozer
Item 6. - (a) Transportation to and from job area..Lump Sum.....$500.00

(b) Working bulldozer, furnishing operator and fuel.....$8.50 per hr.

Mobilization and Camp Maintenance
Item 7. - (a) If a minimum of 150,000 feet is not drilled, the rate of $0.10 per ft. will be charged for all footage representing the difference between actual footage drilled, and 150,000 ft. Item 7 will not be applicable if 150,000 ft. or more, is drilled ...As stated.....$0.10 per ft.

Grand Junction, Colorado
February 8, 1956

(Cont. Page -2-)

Mess Hall and Lodging Facilities

Item 8. - In the event Sprague & Henwood, Inc. would maintain eating and lodging facilities for personnel requiring such facilities, the following charge would apply for customer's personnel..$4.00 per day per man

This proposal is subject to the following conditions:

1. All drill hole locations and access roads to drill sites will be constructed and maintained to accommodate Sprague & Henwood, Inc. truck mounted drills and water trucks. Any bulldozer work required for preparation of sites and roads will be furnished by the customer at no cost to Sprague & Henwood, Inc.

2. Cores and samples will be delivered at drill hole locations, and storage and preservation of cores will be the responsibility of the customer.

3. Upon completion of a hole to the specified bottom depth and prior to moving the drill rig, if the drill and crew are required to stand by while the customer logs said hole with subsurface logging equipment, or if the drill and crew are required to perform additional work in the hole for use of subsurface logging equipment, Sprague & Henwood, Inc. will be paid at the rate per hour specified under Item 5. of proposed schedule above.

4. In the event the customer does not have logging equipment available at the time the hole is completed to specified depth, the customer may require that the casing be set and left in the hole and the drill moved to another site. Sprague & Henwood, Inc. shall be paid at the rate per hour under Item 5. for the time required to set casing, return, set up on hole, and pull the casing. If such casing should be impossible to recover after diligent effort on the part of Sprague & Henwood, Inc., using such equipment normally capable of performing the operation efficiently, then the casing left in the hole will be paid for by the New-Shat-Tex Corp. at the fair market value.

5. All work shall be performed in such a manner as to secure maximum core recovery from each hole drilled and to deliver as complete and accurate core samples as are consistent with good drilling practice. The customer may require core runs of five feet when necessary to attain satisfactory core recovery. In the event an 85% core recovery is not obtained in the coring zone of any completed hole, the footage drilled in this coring zone will be charged at the non-core price.

6. Dust samples will be collected where possible, using such equipment as is normally used for this work. If circulation cannot be maintained, or moisture is encountered, contractor will not be required to furnish dust sample.

Grand Junction, Colorado
February 8, 1956

(Cont. Page -3-)

7. Records will be maintained for roller bit consumption monthly. Should average footage per bit fall below 100 ft., contractor will be reimbursed at rate of 50¢ per ft. for all footage representing difference of actual footage drilled per bit and 100 ft.

8. In any non-core portion of any hole, if penetration requires use of diamond bits, footage drilled by using diamond bits, will be charged at the coring rates.

9. All holes will be located in the field by the customer.

10. All rights of entry to and exit from the property will be obtained by the customer.

11. Although it is anticipated, 4 drills will be required for this work, by mutual agreement of customer and contractor, one additional drill rig may be moved on job for purposes of increasing monthly footage.

12. Payments are to be made monthly based on completed holes, within 15 days after date of invoice. Should payments not be made within the specified period then Sprague & Henwood, Inc. reserves the right to terminate operations.

We thank you for the opportunity of submitting this proposal, and we trust you will find it acceptable.

Very truly yours,

SPRAGUE & HENWOOD, INC.

Vincent D. Nourse

Vincent D. Nourse

VDN:bc

CC: Scranton
File

EP 2/8

B. H. MOTT & SONS, INC.

CONTRACTORS

BIRMINGHAM, ALA.
PLANT AND OFFICE
2512 8 COURT N.
PHONE 7-7500

AIR, ELECTRIC, GASOLINE
INSIDE MINE DRILLING
LARGE DIAMETER HOLES
AIR ROTARY

DIAMOND CORE DRILLING

COAL, FIRE-CLAY, MINERALS, FOUNDATION TESTING
URANIUM-VANADIUM

FIRST NATIONAL BANK BUILDING
ROOM 210 PHONE 2012

GRAND JUNCTION, COLORADO

HUNTINGTON, W. VA.
PLANT AND OFFICE
830 EIGHTH AVENUE
PHONE 20238

PRESSURE-GROUTING
MINE SHAFTS PRE-GROUTED
DAMS, TUNNELS, BLDGS.
MFG. CORE DRILLS

FEBRUARY 7, 1956

NEW-SHAT-TEX CORPORATION
628 ROOD AVENUE
GRAND JUNCTION, COLORADO

GENTLEMEN:

WE WISH TO THANK YOU FOR THE OPPORTUNITY TO BID ON THE WORK THAT YOU HAVE IN MONUMENT VALLEY. WE HAVE DRILLED THE SHINARUMP FORMATION IN THAT AREA AND IN OTHER PLACES. IT IS OUR UNDERSTANDING THERE WILL BE APPROXIMATLY 170,000 FEET OF DRILLING WITH 80% - 90% OF THE HOLES PLUGGED AND THE BALANCE TO HAVE SOME CORING IN THE ORE ZONES.

IT WOULD BE OUR INTENTION TO PUT TWO ROTARY TYPE DRILLS SIMILIAR TO PORTADRILL, MAYHEW OR DAVEY DRILLS AND TWO DIESEL POWERED CORE DRILLS (JOY 22) ON THIS PROJECT. THE AIR COMPRESSORS USED WOULD BE OF SUFFICIENT SIZE TO EFFICIENTLY HANDLE THE DEPTH OF THE HOLES BEING DRILLED. WE HAVE THE INGERSOLL-RAND 315 AND 600 CFM NEW TYPE GYRO FLO DIESEL POWERED COMPRESSORS, ALSO COMPRESSORS MOUNTED ON SOME OF THE DRILLS.

WE SUBMIT THE FOLLOWING FOR YOUR CONSIDERATION:

AIR PLUG DRILLING

SAMPLES WILL BE CAUGHT EVERY FIVE FEET AS LONG AS CUTTINGS RETURN TO THE SURFACE. IN THE ORE ZONE SAMPLES COULD BE TAKEN MORE OFTEN. CONTAINERS FOR SAMPLES TO BE FURNISHED BY NEW-SHAT-TEX. WE TO SUPPLY EQUIPMENT, MEN AND SUPPLIES FOR OUR OPERATION FOR THE SUM OF $1.35 PER FOOT TO 300 FEET.

AIR CORE DRILLING

THE CORE RECOVERY WOULD BE MAINTAINED HIGH AS POSSIBLE CONSIDERING MATERIAL TO BE CORED. THERE WOULD BE ON GRINDING OF CORES AND GOOD DRILLING PRACTICES USED AT ALL TIMES. CORE BOXES FOR SAVING OF CORE FURNISHED BY NEW-SHAT-TEX. AIR CORE DRILLING TO 300 FEET @ $3.75 PER FOOT.

IT IS ANTICIPATED THAT ALL DRILLING CAN BE COMPLETED BY AIR DRILLING. IN THE EVENT WET GROUND REQUIRES THE USE OF WATER FOR DRILLING PURPOSES WE COULD FURNISH 1500 GALLON WATER TRUCK (S) FOR HAULING DRILLING WATER. WE WOULD SUPPLY DRIVER, FUEL AND EQUIPMENT FOR $4.50 PER HOUR.

B. H. MOTT & SONS, INC.
CONTRACTORS

BIRMINGHAM, ALA.
PLANT AND OFFICE
2512 8 COURT N.
PHONE 7-7500

AIR, ELECTRIC, GASOLINE
INSIDE MINE DRILLING
LARGE DIAMETER HOLES
AIR ROTARY

DIAMOND CORE DRILLING
COAL, FIRE-CLAY, MINERALS, FOUNDATION TESTING
URANIUM-VANADIUM

FIRST NATIONAL BANK BUILDING
ROOM 210 PHONE 2610

GRAND JUNCTION, COLORADO

HUNTINGTON, W. VA.
PLANT AND OFFICE
930 EIGHTH AVENUE
PHONE 20288

PRESSURE-GROUTING
MINE SHAFTS PRE-GROUTED
DAMS, TUNNELS, BLOCS.
MFG. CORE DRILLS

ROADS, DRILL SITES, ETC.
WE TO FURNISH CATERPILLAR D-6 OR EQUIVALENT FOR PURPOSE OF MAKING AND MAINTAINING ROADS, LEVELING OF DRILL SITES, ETC. FOR THE SUM OF $9.50 PER HOUR, THIS TO INCLUDE COST OF MAINTENANCE, FUEL AND OPERATOR.

STANDBY TIME
DELAYS CAUSED BY NEW-SHAT-TEX FOR LOGGING OF DRILL HOLES OR OTHER DELAYS THAT STOP OUR DRILLING OPERATIONS WOULD HAVE STANDBY FEE OF $10.00 PER HOUR PER DRILL.

RADIO OPERATION
WE WOULD MAINTAIN BETWEEN THE HOURS OF 7:30 AM AND 5:30 PM RADIO CONTACT BETWEEN THE FIELD OPERATION AND OUR OFFICE IN GRAND JUNCTION. USE OF THIS SERVICE WOULD BE AVAILABLE TO NEW-SHAT-TEX PERSONNEL AT NO CHARGE.

AIR TRANSPORTATION
WE OPERATE, WITH FULL TIME PILOT, A 1955 CESSNA 180 PLANE FOR USE IN OUR DRILLING OPERATIONS. THIS PLANE WOULD BE AVAILABLE TO NEW-SHAT-TEX FOR ANY EMERGENCY SITUATIONS.

THERE WOULD BE A PROJECT SUPERVISOR ON THE JOB WHO COULD MAKE FIELD DECISIONS. THE WORKING SCHEDULE WOULD BE ONE THAT WOULD SUIT BOTH PARTIES.

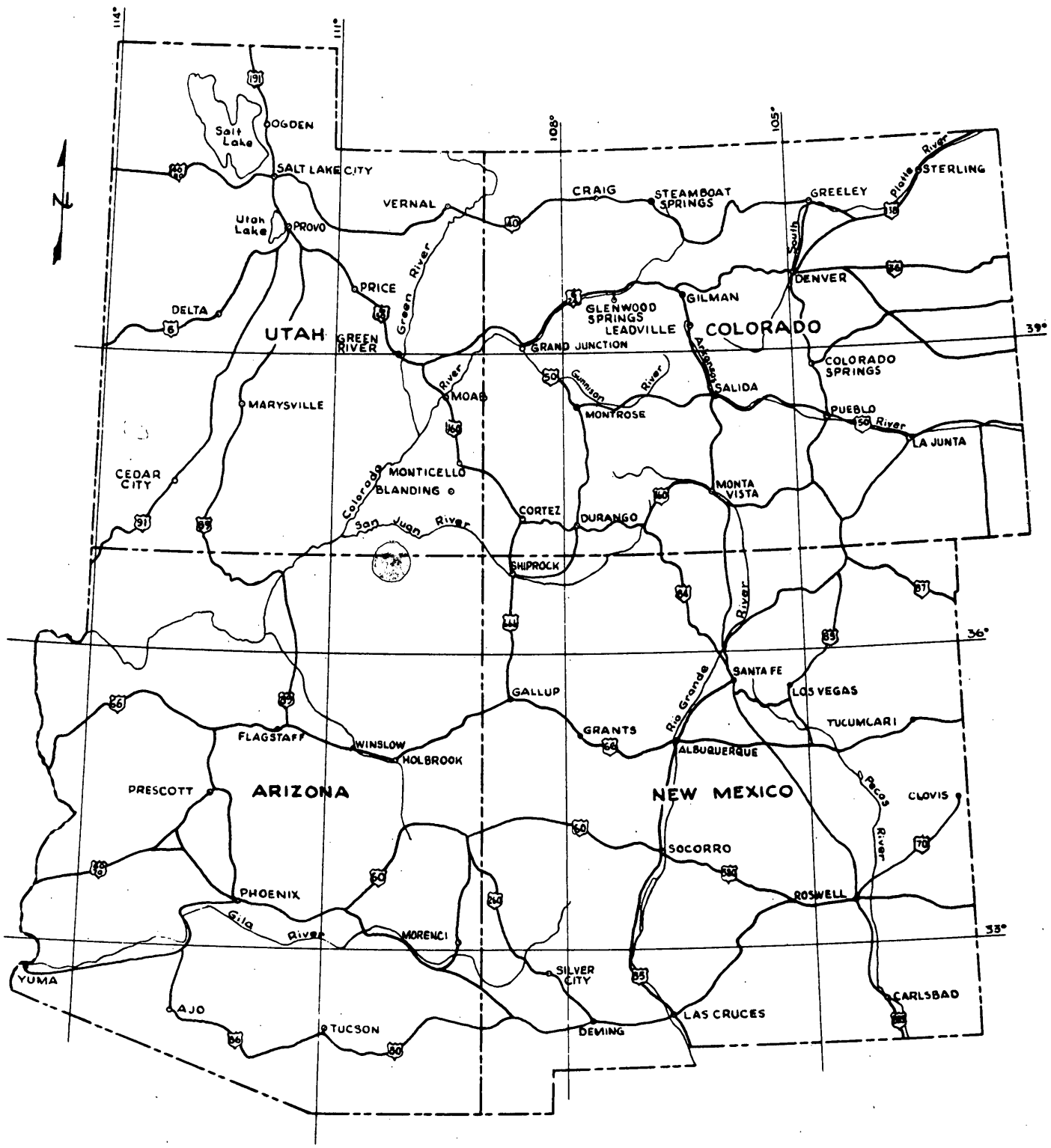
ALL OF THE DRILLING OPERATIONS WOULD BE COVERED BY WORKMENS COMPENSATION, PUBLIC LIABILITY AND PROPERTY DAMAGE BY THE TRAVELERS INSURANCE COMPANY OF HARTFORD, CONN.

BECAUSE OF THE VARIOUS CONDITIONS OF EVERY JOB WE DO NOT HAVE A STANDARD FORM CONTRACT, EACH CONTRACT BEING WRITTEN TO COVER CONDITIONS SATISFACTORY TO EACH PARTY.

VERY TRULY YOURS,

B. H. Mott, Jr.

B.H. MOTT, JR.

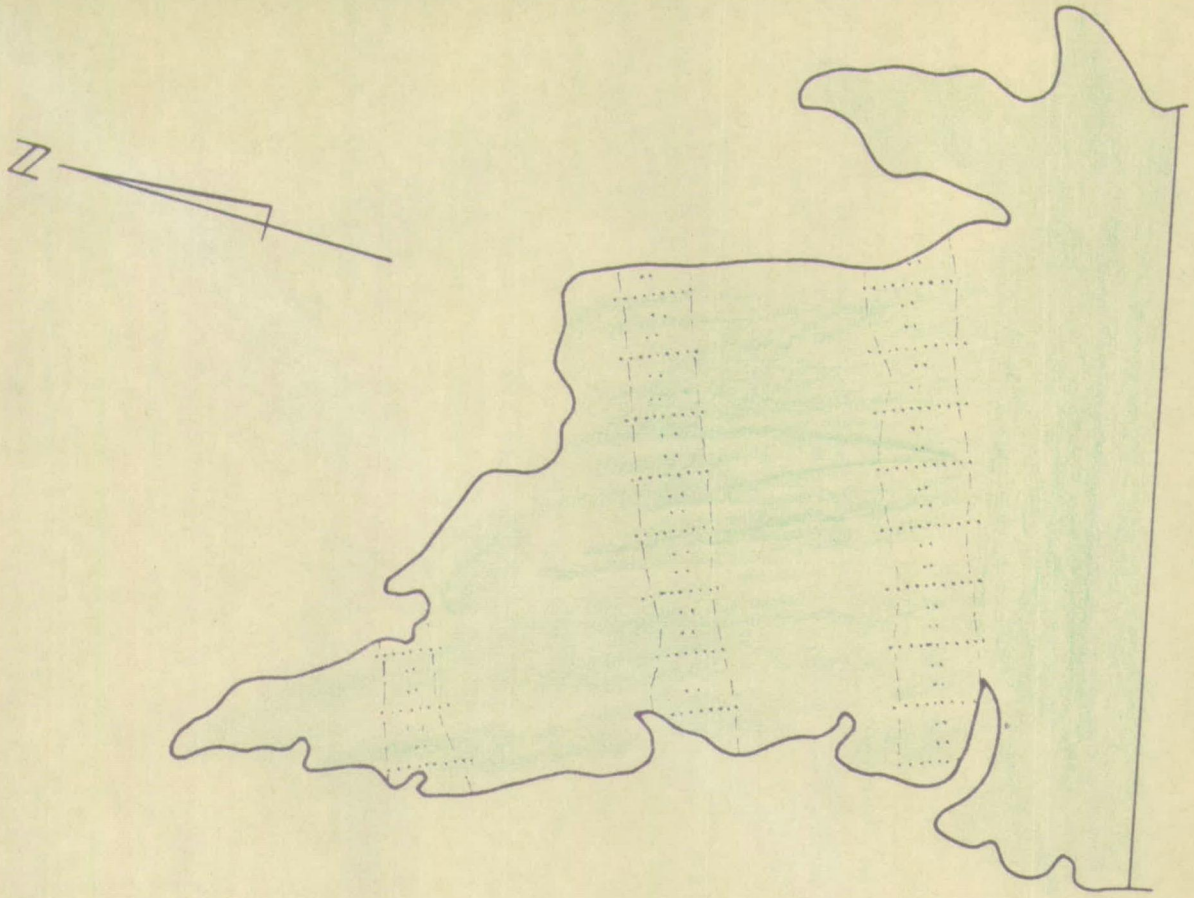


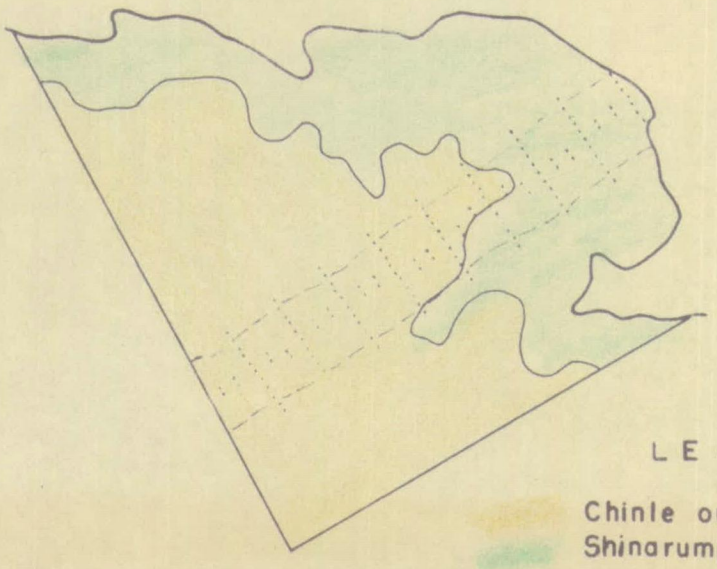
TEXAS-ZINC MINERALS CORP.

PROJECT AREA

1" = 100 Mi.

FIGURE # 1





LEGEND

Chinle outcrop
Shinarump outcrop
Proposed drilling

note: channel courses assumed

DATE: BY:	TRACT 20 & 22	FIGURE 3
SCALE: 1" = 2000'	LONG POINT MESA, ARIZ.	FILE NO. EX-MV-29

1201 N. DIVISION STREET
SPOKANE 2, WASHINGTON

Contract Administration and Audit Division
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D.C.

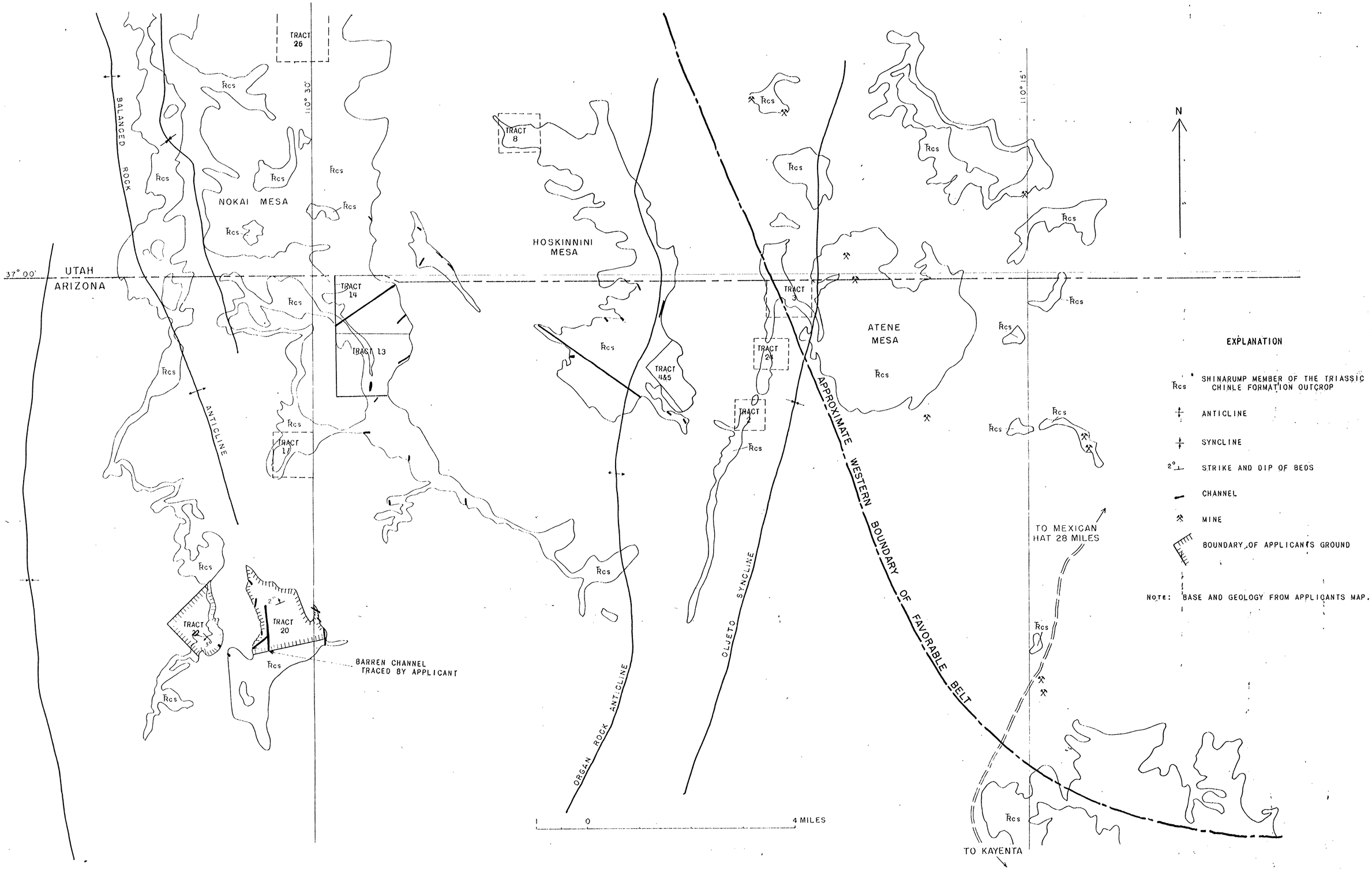
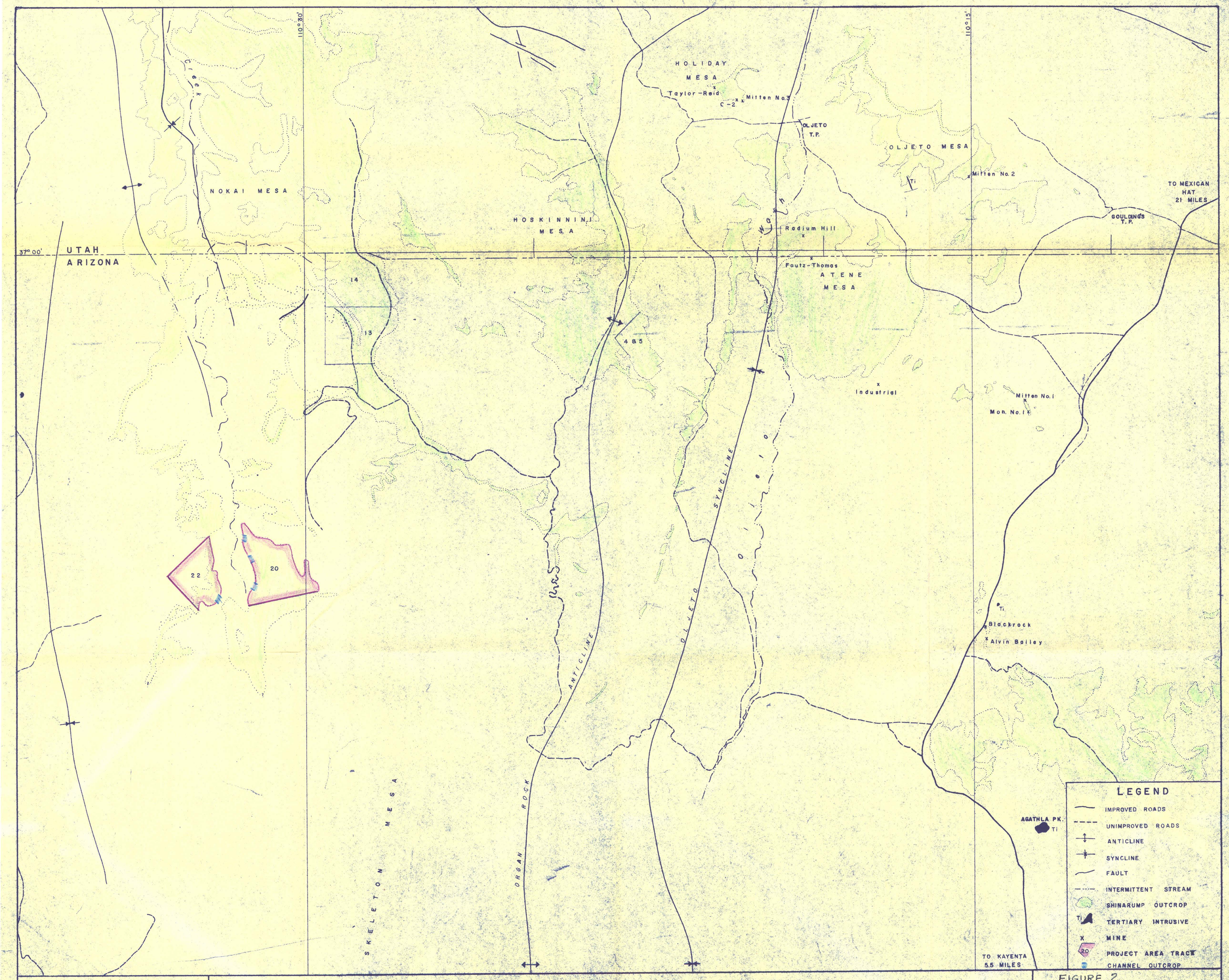


Figure 2.--GEOLOGIC MAP OF PART OF MONUMENT VALLEY SHOWING NAVAJO TRIBAL TRACTS 20 AND 22, TEXAS-ZINC MINERALS CORPORATION, NAVAJO COUNTY, ARIZONA AND SAN JUAN COUNTY, UTAH.



DATE: MAY, 1956
SCALE: 1" = 1 MILE

TEXAS- ZINC MINERALS CORPORATION

FIGURE 2
FILE NO: EX-MV-26