Mr. Ellis

Mr. Huse will call at 9:30 a.m. (Tuesday) to inquire about Dmea 4260
4260

Sterling Uranium Corp.

Mr. Huse is from Senator Magnuson's office 4-24-56 Lrm

Harry C Huse deceased
application in my office F.H.C.

Docket

700

Ellis

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

October 29, 1956

Memorandum

To: The Files

From: F. L. Knouse, Mining Engineer
Rare and Miscellaneous Metals Division

Subject: DMEA-4260 (Uranium)
Sterling Uranium Corp.
Telephone call on Oct. 26, 1956, from Harry Huse, calling from Seattle, Washington

Mr. Harry Huse of Senator Magnuson's office called me today concerning DMEA-4260, Sterling Uranium Corporation. Mr. Huse was informed that the application was denied October 10, 1956, and the letter denying the application was addressed to Gordon L. Weggeland, V.P., of the company.

F. L. Knouse

F. L. Knouse

cw

700

FILE COPY
Surname:
Mittendorf
Allen
Lamb
Reynard
Selfridge

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

Mr. Gordon L. Weggeland, Vice President
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Re: Docket No. DMEA-4260 (Uranium)
North Markey Claim Group
San Juan County, Utah

Dear Mr. Weggeland:

Your application for aid in an exploration project and other information available to us in Washington concerning your above-named property have been reviewed.

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

Careful study of all our information, although noting some uranium mineralization on your property, indicates 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. C. Mittendorf (for)

Administrator

FLKnouse/izm 10-9-56
cc to: Docket
Code 700
Mr. Knouse
Admr.'s Reading File
Operating Committee
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
DMEA Field Team, Region III (2)

R.G.4

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

October 9, 1956

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-4260

Commodity: Uranium

Applicant: Sterling Uranium Corporation, a Utah corporation
522 Boston Building
Salt Lake City, Utah

Property: Consists of 28 unpatented lode mining claims comprising the North Markey group as follows: Harold, Beef Loaf, Cheese Omelette, Mexican Girl, Red Head, Helen, Judy, Susie, Butch, Jean, Joan, North Shore, North Shore No. 1, Northside, Northside No. 1, Niagara, Niagara No. 1, November Nights, November Nights No. 1, Not Here, Not Here No. 1, Not There, NotThere No. 1, Napoleon, Napoleon No. 1, Nother, Nother No. 1, and Bill claims, in an unsurveyed area. However, projection of existing land lines indicate the claims cover parts of sec. 13, T. 37 S., R. 14 E., and sec. 18, T. 37S., R. 15 E., S.L.M.& B., San Juan County, Utah.

The property rights of the Applicant are set forth in an "Agreement of Consolidation" entered into January 12, 1955, between the Applicant and the Atomic Uranium, Inc., Red Man Uranium Company, Trans World Uranium Corporation, and the Utah-National Uranium Mining Corporation.

Date of application: April 9, 1956.

Proposed work: Consists of a program to explore for channel type uranium deposits in the Shinarump conglomerate in five areas on the subject property by means of drilling from the surface 55 non-core and core holes (aggregating 16,500 feet) and about 100 hours of tractor w/dozer operating time to strip the rim outcrop. The depth of the proposed drill holes ranges from 150 to 400 feet. The estimated total cost of the work is $77,745.00. There has been no production from the property. However, the Anaconda Copper Company produced 1,214 tons of ore,

averaging 0.20 percent U_3O_8 from an adjoining claim on the east side of the property which is reported mined out. Also, there has been a reported production of 14,800 tons of ore averaging 0.24 percent U_3O_8 and 0.7 percent CU from the Blue Lizard Mine located about 1/4 mile northeast from the property.

About 9,000 feet of roads were constructed to drill sites and 22 non-core and core holes have been drilled on the property. Thirteen of the holes penetrated material that contains 0.02 to 0.05 percent U_3O_8 and disseminated copper mineralization.

Cost of Proposed Work:

Independent contracts		
16,500 feet drilling, 55 holes, depths 150 to 300 feet (core and non-core quantitites not specified) @ $3.00 to $3.50/ft.	$55,250.00	
740 hrs. D-6 Caterpillar tractor w/dozer, operating time @ $12.00/hr.	8,880.00	
Total		$64,130.00
Labor, Supervision and Consultants		
Geologist-Consultant - 3 mos.	4,500.00	
Driller (to assist in rim stripping) 2 mos.	1,000.00	
Mine superintendent - 2 mos.	1,200.00	
Secretarial work	200.00	
Total		6,900.00
Operating Materials and Supplies		
Explosives, drill bits, steel, gasoline, oil, etc.	2,304.00	2,304.00
Operating Equipment		
Light plant (purchase)	375.00	
200 feet air hose (purchase)	216.00	
Model 105 air compressor (2 mos. @ $100/mo.)	200.00	
Jackhammer (2 mos. @ $75/mo.)	150.00	
300-500 gal. water tank (3 mos. @ $150/mo.)	450.00	
Total		1,391.00

Rehabilitation and Repairs

Bunk and cook house	$ 560.00	
Outhouse and shower	150.00	
Total		$ 710.00

Contingencies

Transportation of compressor, jackhammer, and water tank, etc.	310.00	310.00
Estimated total cost of project		$75,745.00
Government participation @ 75%		$56,808.75

Field Team Report, September, 1950 (Joint report by H. F. Robertson, USBM, and F. M. Byers, USGS).

The North Markey group is on a gently-dipping west flank of the Monument upwarp. The lower Traissic Moenkopi formation is about 200 feet thick, and is overlain by 30 feet of Trassic Shinarump sandstone which is in turn overlain by about 700 feet of Chinle formation. All major uranium deposits on the White Canyon-Red Canyon area occur in scour channel type sediments within the Shinarump formation and usually occur at the base of the formation and show some channel scour into the underlying Moenkopi formation.

Only the northeast bank of one channel is exposed in a gully on the Mexican Girl claim. About 5 feet of scour into the underlying Moenkopi was observed, and the flat base of the channel extends from the bottom of the bank for 100 feet southwest to the head of the gully. One small pod of mineralized conglomerate, 6 inches by 3 feet in cross section, is exposed, but otherwise the flat base of the channel is barren. Applicant claims a second channel exists on the Susie claim, but the examining team could detect no scour in the Moenkopi where the channel was supposed to exist.

The Markey mine is on the east side of the Markey channel, the west side of which crosses the subject claims west of the easternmost boundary about 100 feet. Private and Government drilling indicate the west side of this channel is barren. Also, the Markey channel is probably the southern extension of the Blue Lizard channel (Blue Lizard mine) from which there has been a reported production of 14,800 tons of ore averaging 0.24 percent U_3O_8.

Drilling by the Applicant was concentrated mainly on the Redhead and Mexican Girl claims to find uranium mineralization in a northwest-trending Shinarump channel apparently underlying the property. Three holes, of 20 holes drilled in the channel area, penetrated weakly mineralized sandstone but were not of ore grade. A sample taken on the outcrop assayed 0.07 percent U_3O_8, although high in copper.

Two holes drilled on the Judy claim to test the area back of the mineralized outcrop, on the rim, penetrated weak mineralization in the lower ten feet of the Shinarump formation and averaged 0.04 per cent eU_3O_8. Three channel samples across 1.5 feet on the rim assayed 0.01 to 0.07 per cent U_3O_8.

In summary, assays of 4 channel samples from across the outcrop and radiometric assays of about 20 drill holes indicate no sandstone of ore grade. The shallow channel scour of 5 feet is not indicative of the presence of an ore body on the claims. Therefore, because of the shallow or complete lack of channel scour combined with weak mineralization on the claims, it is recommended that the application for Government exploration assistance be denied.

The Field Team concurs with the examining team's recommendations.

Comments of Commodity Specialists:

U. S. Geological Survey, W. P. Williams, October 3, 1956.

There do not seem to be reasonable chances that further exploration on the property would meet with success. For that reason, I am in accord with the Field examiners'recommendations for denial of the application.

U. S. Bureau of Mines, James Paone, October 8, 1956.

Concur with recommendation of Field Team.

Rare and Miscellaneous Metals Division, F. L. Knouse, October 8, 1956.

The field examination indicates the probability of making a significant discovery by additional exploration of the property is not promising. Therefore, the application should be denied.

Conclusions:

A review of all our information relating to the proposed project indicates that the probability of making a significant discovery is not sufficiently promising for Government participation. Therefore, the application should be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis

OCT 9 1956

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

RECEIVED
OCT - 8 1956

Date October 8, 1956

DMEA Docket No. 4260
DMEA Contract No.
Commodity Uranium
Name of applicant Sterling Uranium Corporation
Name of property North Markey Claims
Location of property San Juan County, Utah
Estimated cost of project $76,745.00

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

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

1. Date of subject document: 9/28/56. 2. Date received by reviewer: 10/2/56.

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

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

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

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

7. Explain items marked yes above:

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

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

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

RECEIVED

OCT - 8 1956

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

Date October 8, 1956

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BUREAU OF MINES
Washington 25, D. C.

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10/4/56 gla

IN REPLY REFER TO:

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

October 3, 1956

RECEIVED
OCT - 4 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 4260, Sterling Uranium Corporation, North Markey claims, Red Canyon, San Juan County, Utah.

The field examiners report that the principal mineralized Shinarump channel in the area, the Markey-Blue Lizard channel, all but misses the applicant's property.

There is another channel on the property, but it appears to be very small and with very low relief. Twenty-two drill holes on the property failed to discover new ore reserves.

There do not seem to be reasonable chances that further exploration on the property would meet with success. For that reason, I am in accord with the field examiners' recommendations for denial of the application.

W. P. Williams

W. P. Williams

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GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

October 3, 1956

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W. P. Williams

Copy to: Director's Reading 4212
Branch Reading 4212
DMEA (3)
Docket File
Chron File
J. E. Crawford, 3641
J. O. Hosted, 3210

Williams:baf
G: 10/3/56

IN REPLY REFER TO:

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

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October 3, 1956

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GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

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G: 10/3/56

10/4/56 gla

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

RECEIVED
OCT - 1 1956

224 New Customhouse
Denver 2, Colorado

September 28, 1956

Memorandum

To: Secretary to the Operating Committee

From: DMEA Field Team, Region III

Subject: Joint Report of Examination Docket DMEA 4260 (Uranium)
Sterling Uranium Corporation (North Markey Claim Group)
San Juan County, Utah

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

The examiners concur that significant amounts of uranium ore would not result from an exploration project on this property. They recommend that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

W. M. Traver
Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE
10-3-56
(date)

TRANSMITTED
SEP 28 1956

DMEA
DEPARTMENT OF THE INTERIOR

SEP 28 1956
REGION III
DENVER, COLORADO

MINERAL DEPOSITS
DMEA
RECEIVED
SEP 27 1956
U.S.
GEOLOGICAL SURVEY
DENVER, COLORADO

UNITED STATES DEPARTMENT OF THE INTERIOR
P. O. BOX 360
GRAND JUNCTION, COLORADO

RECEIVED
OCT - 1 1956

September 25, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

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

From: J. William Hasler

Subject: Transmittal of joint engineering and geologic report, DMEA docket 4260, Sterling Uranium Corporation (North Markey group of claims), San Juan County, Utah

The Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah, made application to the Defense Minerals Exploration Administration to explore for uranium on the North Markey group of claims in the Red Canyon area in southeastern Utah. The application was referred to the field and an examination was made August 21, 1956, by an examining team consisting of F. M. Byers, Jr., U. S. Geological Survey, and H. F. Robertson, U. S. Bureau of Mines.

Development work on the property consists of 22 holes concentrated in the north central part of the group. Five of the holes were weakly mineralized, but none was sufficiently thick or contained enough uranium to indicate ore. There has been no production from the North Markey group of claims.

The applicant proposed to explore an area that appears to be an extension of the Blue Lizard channel which has had a considerable amount of production. However, the data obtained to date, and results of the field examination, do not support this idea. The exploration program proposed by the applicant would include holes ranging in depth from 150 to 400 feet and is not justified by the potential size and number of ore bodies that may exist on the property. The examining team, therefore, recommends denial of the application. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission geologists at the White Canyon AEC camp were consulted relative to the appraisal of the subject property.

Enclosed are the brochure and the required number (12) of maps for inclusion in the joint engineering and geologic report.

J. William Hasler
J. William Hasler,
Geologist

JWH/mlr
Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
10-3-56
(date)

FOR UNITED STATES GOVERNMENT USE ONLY

TRANSMITTED
SEP 28 1956

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

RECEIVED
OCT - 1 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

DMEA 4260

Sterling Uranium Corp.

North Markey claims

San Juan County, Utah

Uranium

Joint Engineering and Geologic Report

By

H. F. Robertson
Bureau of Mines

F. M. Byers
Geological Survey

September 1956

Reviewed by
DMEA OPERATING COMMITTEE
10-3-56
(date)

RECEIVED
OCT - 1 1956

DMEA 4260

STERLING URANIUM CORP.

INTRODUCTION

Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah, made application on April 9, 1956, to the Defense Minerals Exploration Administration to explore for uranium on the North Markey group of claims in the Red Canyon area. The application, DMEA 4260, requested Government participation in drilling 55 holes containing about 16,500 feet of core and noncore footage and about 100 hours of rim stripping at an estimated total cost of $75,695.00.

The claims were examined on August 21, 1956 by a DMEA examining team consisting of F. M. Byers, USGS, and H. F. Robertson, USBM.

The property consists of 28 unpatented lode claims on the southeast side of Red Canyon approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. The North Markey group covers parts of section 13, T. 37 S., R. 14 E., and section 18, T. 37 S., R. 15 E., Salt Lake Base Meridian, San Juan County, Utah.

Development work on the property consists of 22 holes concentrated in the north central part of the claim group. Five of the holes were weakly mineralized but none were sufficiently thick or contained enough uranium to indicate ore. There has been no production from the North Markey group of claims.

The rocks exposed in the vicinity of the claim group, in ascending order are the Moenkopi formation, Shinarump conglomerate, Chinle formation, and the Wingate formation, all of Triassic age. All major uranium deposits in the White Canyon-Red Canyon area occur in channel type sediments within the Shinarump formation. The channels usually occur at the base of the Shinarump conglomerate and usually show some channel scour into the underlying Moenkopi formation.

The applicant submitted an assay report of four samples taken from channel exposures on the property. The samples were assayed for uranium and copper and indicate the presence of small amounts of both metals. The examining team inspected the areas sampled and noted that the mineralized material occurred as very thin seams and did not specifically indicate that ore bodies of significant size might be present.

The supposition that the property overlies an extension of the Blue Lizard channel and would be similarly mineralized cannot be supported by the available data.

The exploration program proposed by the applicant would include holes ranging in depth from 150 to 400 feet and is not justified by the potential size and number of ore bodies which may exist on the property.

The examining team, therefore, recommends denial of the application.

ACKNOWLEDGEMENTS

The examining team was accompanied by Robert M. Anderson, geologist, who represented the applicant.

Atomic Energy Commission personnel at the Natural Bridges Camp, White Canyon, Utah, were consulted for information about the subject area.

LOCATION, TOPOGRAPHY, AND CLIMATE

The North Markey group of claims lie in an unsurveyed area on the southeast side of Red Canyon, approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. Projection of existing land lines into the area indicates the claim group covers parts of section 13, T. 37 S., R. 14 E. and section 18, T. 37 S., R. 15 E., Salt Lake Base Meridian.

The Red Canyon area lies in west-central San Juan County, in the southeast corner of Utah. The area of the North Markey group can be reached by traveling about three miles south of Blanding, Utah, on Highway 47; thence westerly for 38 miles on a graveled access road to a junction with Highway 95; thence 8 miles west of the junction and about one-half mile beyond the entrance to the Natural Bridges National Monument to an improved dirt road which heads southwesterly; thence 11 miles to a fork in the road; thence 14 miles out the right-hand fork into Red Canyon and the North Markey group of claims. The Posey and Blue Lizard mines are also in the same area. The property is about 270 miles from Grand Junction, Colorado, the nearest major supply center.

The claims lie on a steeply sloping bench between the vertical Wingate cliffs and the rim of Red Canyon. The property is at an altitude of about 4500 feet and has relatively mild winters, but hot, dry summers with infrequent occurrences of heavy rainfall.

HISTORY AND PRODUCTION

The North Markey group of 28 claims, in the Red Canyon area of San Juan County, were originally located in 1951 as part of a much larger group of claims covering most of the Shinarump outcrops in the area. The claims were assigned to the Anaconda Copper Mining Company who undertook a limited exploration program in 1951 and 1952. In 1953, Anaconda shipped copper-uranium ore from the Markey mine and, in 1954, transferred title to E. H. Eakland, Jr.

There has been no past or present production from the subject group of claims. Anaconda Copper Company formerly operated a small mine, known as the Markey mine, which is located about 300 feet southeast of the North Markey claims (see figure 2). Total production from this mine, which is now abandoned, was 1,214 tons of ore averaging 0.20 percent U_3O_8.

The nearest present production is from the Blue Lizard mine which is located approximately one-quarter mile northeast and across Red Canyon from the subject claim group. Total production from this mine, as of April 1, 1956, was 14,800 tons of ore averaging 0.24 percent U_3O_8 and 0.70 percent Cu.

OWNERSHIP AND EXTENT

The twenty-eight, unpatented lode mining claims comprising the North Markey Group are located as shown on figures 1 and 2. The claims were surveyed by compass-pace methods, showing the total area covered to be slightly more than 370 acres.

The claims were located in February 1951 by E. H. Eakland, Jr.; J. P. Rigg, Jr.; D. H. Wegner; and O. L. Jahnke. The claims were conveyed, in 1951, by an unrecorded deed to the Anaconda Copper Mining Company. By a quitclaim deed, executed in April 1954, title was transferred from the Anaconda Copper Mining Company to E. H. Eakland, Jr. No information is given on the transference of the property from Eakland to Red Man Uranium Company and it is assumed that Sterling Uranium Corporation acquired the property by means of the Agreement of Consolidation.

The 28 claims are recorded at the office of the County Clerk, San Juan County, Monticello, Utah as shown by Table I.

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U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SEPTEMBER 1956

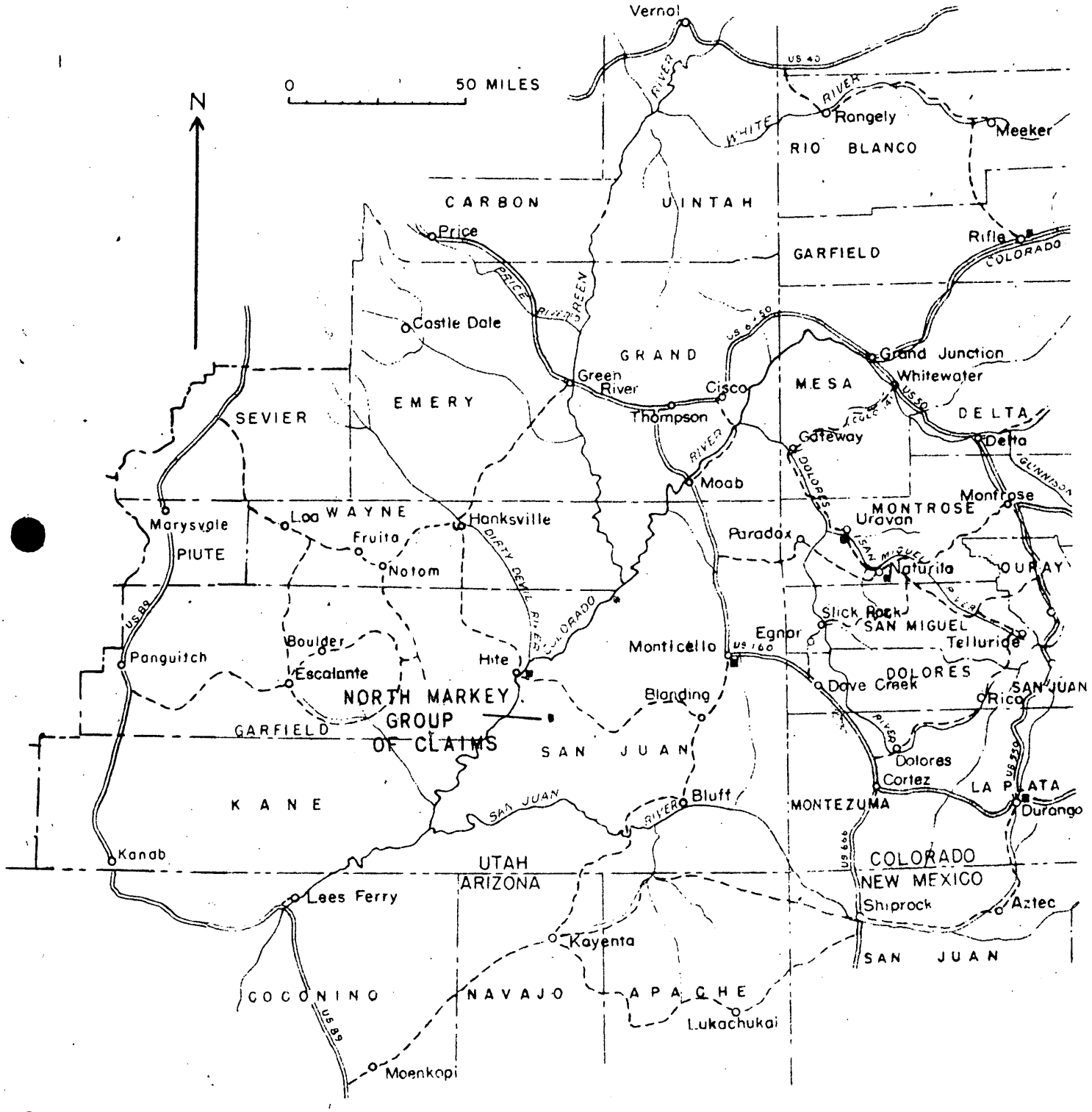

FIGURE 1.--INDEX MAP OF PART OF COLORADO PLATEAU REGION SHOWING LOCATION OF NORTH MARKEY GROUP OF CLAIMS, STERLING URANIUM CORPORATION, SAN JUAN COUNTY, UTAH.

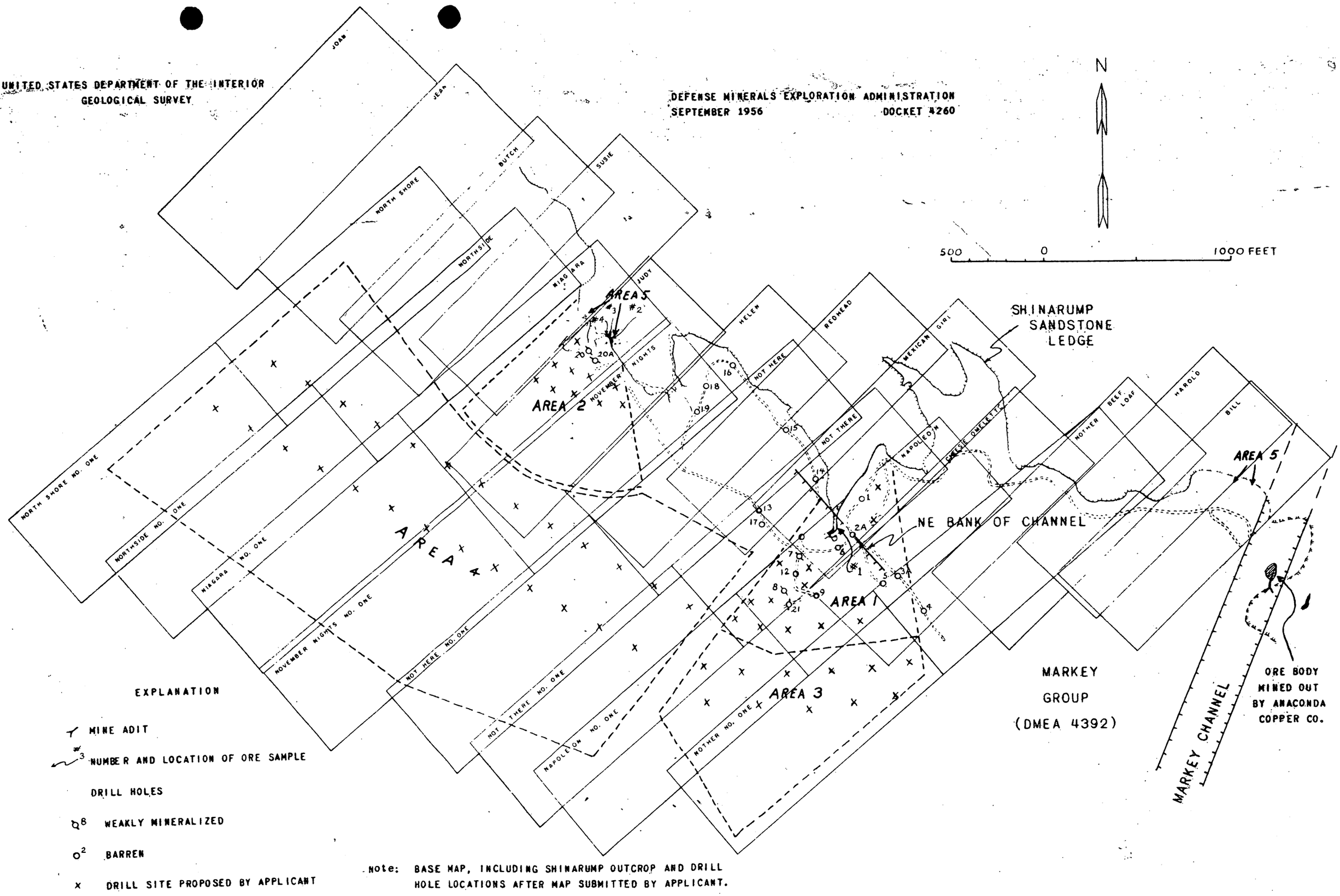

FIGURE 2.--MAP SHOWING DRILL HOLES, MARKEY CHANNEL AND SHINARUMP OUTCROP, NORTH MARKEY GROUP OF CLAIMS, STERLING URANIUM CORPORATION, SAN JUAN COUNTY, UTAH.

DMEA 4260

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Bill	2-26-51	R-2	448

PRESENT STATUS

Exploration and Development

During June, July, and August 1954, an exploration program was undertaken on the North Markey group of claims. The program was designed to explore a broad, flat, weakly mineralized channel exposed at the base of the Shinarump sandstone on the outcrop in the reentrant on the Redhead claim (figure 2).

During the period from June 29 through August 6, 1954, approximately 9,000 feet of new roads and drill sites were completed. During the period from July 19 through August 6, 1954, twenty-two holes were completed that totaled about 300 feet of core drilling and 1,072 feet of non-core drilling.

Mining Equipment and other Facilities

There is no mining equipment on the property at the present time. The necessary equipment for exploration would be furnished by the contractor doing the work. Drilling water can be obtained from a small creek located

in the bottom of Red Canyon and domestic water from wells in Fry Canyon and hauled to the property by truck. Project personnel would live in house-trailers near the area.

The nearest uranium ore buying station is located in White Canyon and is 55 miles distant from the North Markey claim group. The AEC uranium processing mill at Monticello, Utah, is 105 miles from the property.

Geology

The North Markey group is on the gently dipping west flank of the Monument upwarp. The lower Triassic Moenkopi formation is about 200 feet thick. The overlying upper Triassic Shinarump sandstone is about 30 feet thick on the property and forms a prominent ledge. The overlying Chinle formation is about 700 feet thick. The Wingate sandstone forms a sheer 400-foot cliff above the Chinle, in the southernmost part of the property.

Only the northeast bank of one channel is exposed in a gully on the Mexican Girl claim (see figure 2). About 5 feet of scour into the underlying Moenkopi was observed, and the flat base of this channel extends from the bottom of the bank for 100 feet southwest to the head of the gully. One small pod of mineralized conglomerate, 6 inches by 3 feet in cross-section, is exposed but otherwise the flat base of the channel is barren.

The applicant claims that a second channel exists on the Suzie claim (fig. 2), but the examining team could detect no scour into the Moenkopi where the channel was supposed to exist.

The Markey channel, which is possibly the southerly extension of the Blue Lizard channel, is almost entirely off the applicant's claim to the east (fig. 2).

Ore Deposits

The drilling, as shown on figure 2, was concentrated mainly in the area of the Redhead and Mexican Girl claims in an attempt to find uranium mineralization of ore grade in a northwest-trending shallow Shinarump channel (5 feet deep) apparently underlying the property. The results of the drilling are summarized in table 1. Of twenty holes drilled in the channel area, three holes, (nos. 7, 8, and 21) penetrated weakly mineralized sandstone (table 1) but were not of ore grade. Sample No. 1 (table 2) taken on the outcrop assayed only 0.07 percent of U_3O_8, although high in copper.

Holes 20 and 20A were drilled on the Judy claim (fig. 2) to test the area back of the mineralized outcrop on the rim. Both holes were weakly mineralized in the lower ten feet of the Shinarump formation and averaged about 0.04 eU_3O_8. Three channel samples across 1-1/2 feet on the rim assayed 0.01 to 0.07 percent of U_3O_8 (table 2). Mineralization of this magnitude in the absence of a channel does not in the opinion of the examining team indicate the possibility of a singificant discovery of uranium ore in the Red Canyon area.

The nearby Markey mine (fig. 2) is on the east side of the Markey channel, the west side of which crosses less than 100 feet of the subject claim group in the easternmost part. However, prior drilling, both private and Government, has indicated that the west side of the Markey channel is essentially barren.

Table 1.--Drill hole data, North Markey Group.

Drill hole	Total depth (feet)	Radiometric anomaly footage From	To	Radiometric anomaly thickness (feet)	Grade reported by applicant Percent eU_3O_8	Depth Shinarump-Moenkopi contact (feet)
1	42	35	36	1.0	0.02	38
2A	44				Barren	35
3A	77				Barren	56
4	88				Barren	77
5	72	37	39	2.0	0.02	66.5
		64	67	3.0	0.02	
6	52				Barren	50
7	70	48	51	3.0	0.04*	63
8	80	52½	61½	9.0	0.03*	77
9	82				Barren	?
10	60				Barren	58
11	88				Barren	82
12	79				Barren*	67.3
13	52	Not bottomed				?
14	47	34	34½	0.5	0.02	46
15	52				Barren	50
16	44	30	31	1.0	0.02*	43
17	112	97	100	3.0	0.02*	111
18	63	38	41	3.0	0.02*	59
19	55				Barren*	50
20	50	40½	43	2.5	0.05*	48.5
		46	47	1.0	0.02	
20A	50	39½	43½	4.0	0.04	49
21	84	64	65	1.0	0.05*	?

* Disseminated chalcopyrite or copper oxides.

Table 2.--Assays of ore samples, North Markey Group (for location see figure 2)

Sample No.	Thickness sampled	Percent U_3O_8	Percent Copper
1	?	0.07	4.04
2	1.5	0.03	1.11
3	1.5	0.01	1.50
4	1.5	0.07	0.27

Ore Reserves

Exploration and development to date has not indicated any commercial grade ore reserves on the property. The nearby Markey Mine apparently mined all its known reserves in producing 1,214 tons of 0.20 percent U_3O_8 ore. The AEC estimates a reserve of 6,000 tons of copper-uranium ore averaging 0.26 percent U_3O_8 and 0.70 percent Cu in the Blud Lizard Mine, one of the larger producers in the Red Canyon area.

Proposed Exploration

The applicant proposes a program of core and non-core drilling combined with a limited amount of rim stripping to explore for channel indications and boundaries and to test the channels for copper-uranium mineralization. The claim group is divided into five areas in which work is proposed by the applicant. Areas 1, 2, 3, and 4 would be explored with 55 drill holes, core and non-core, while exploration of area 5 would entail rim stripping of the Shinarump outcrop in the area of company drill hole no. 20 on the Judy and Susie claims, and rim stripping at the north end of the Harold and Bill claims.

A summary of the estimated cost of the applicant's proposed program is shown below:

Independent Contracts--Drilling:

Area	No. of holes	Average depth feet	Average cost per foot	Total Footage	Total Cost
1	10	200	$3.00	2,000	$6000.00
2	10	150	3.00	1,500	4500.00
3	10	300	3.25	3,000	9750.00
4	25	400	3.50	10,000	35000.00
Total	55			16,500	$55250.00

Bulldozing: (Based on D-6 Cat at $12.00 per hour)

Area 1	125 hours	$1,500.00
Area 2	90 hours	1,080.00
Area 3	125 hours	1,500.00
Area 4	300 hours	3,600.00
Area 5	100 hours	1,200.00
Total	740 hours	$8,880.00

(An alternate proposal on bulldozing costs is offered by the operator in which the applicant uses equipment owned by the company. The total price would amount to about the same as the above costs.)

Total independent contracts $64,130.00

Labor, supervision, and consultants	
One geologic consultant--3 months at $1,500 per month	$4,500.00
One driller (to assist in rim stripping)--2 months at $500.00 per month	1,000.00
Supervising mining superintendent--2 months at $600.00 per month	1,200.00
Secretarial work	200.00
Total Labor, supervision, and consultants	$6,900.00
Operating materials and supplies	
Dynamite, blasting caps, bits, steel, gasoline, oil, butane, etc.	
Total operating materials and supplies	$2,304.00
Operating equipment	
1 light plant (purchased)	375.00
200' air hose drilling line (purchased)	216.00
Model 105 air compressor--2 months at $100 per month	200.00
Jack Hammer--2 months at $75 per month	150.00
300 or 500 gallon water tank--3 months at $150 per month	450.00
Total operating equipment	$1,391.00
Rehabilitation and repairs	
One bunk and cook house	560.00
Outhouse and shower	150.00
Total rehabilitation and repairs	$710.00

Contingencies	
Transportation of compressor, jackhammer, and water tank	$310.00
Total contingencies	$310.00
Estimated total cost of project	$76,745.00
Government participation at 75 percent	$57,558.75

Inasmuch as the examining team is going to recommend denial of the application, no modifications of the applicant's proposal are offered.

CONCLUSIONS AND RECOMMENDATIONS

The one observed channel bank on the North Markey group is only 5 feet in height as compared with 15 to 20 feet on the through-going Blue Lizard-?-Markey Channel. Assays of 4 channel samples on the outcrop and radiometric assays of about 20 drill holes indicate no sandstone of ore grade. The shallow channel scour of only 5 feet is not indicative of the presence of an ore body in the Red Canyon area. Further, the low grade assays of many outcrop samples and drill holes is not encouraging.

Because of the shallow or complete lack of channel scours combined with weak mineralization, it is recommended that the application of Sterling Uranium Corporation for DMEA assistance be denied.

10/1/56 gla

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

224 New Customhouse
Denver 2, Colorado

September 28, 1956

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OCT - 1 1956

Memorandum

To: Secretary to the Operating Committee

From: DMEA Field Team, Region III

Subject: Joint Report of Examination Docket DMEA 4260 (Uranium)
Sterling Uranium Corporation (North Markey Claim Group)
San Juan County, Utah

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

The examiners concur that significant amounts of uranium ore would not result from an exploration project on this property. They recommend that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

W. M. TRAVER

W. M. Traver
Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE

10-3-56
(date)

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SEP 28 1956

MINERAL DEPOSITS
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DEPARTMENT OF THE INTERIOR
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REGION III
DENVER, COLORADO

UNITED STATES DEPARTMENT OF THE INTERIOR
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GRAND JUNCTION, COLORADO

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September 25, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman EnH
J. F. Shaw JFS/ask

From: J. William Hasler

Subject: Transmittal of joint engineering and geologic report, DMEA docket 4260, Sterling Uranium Corporation (North Markey group of claims), San Juan County, Utah

The Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah, made application to the Defense Minerals Exploration Administration to explore for uranium on the North Markey group of claims in the Red Canyon area in southeastern Utah. The application was referred to the field and an examination was made August 21, 1956, by an examining team consisting of F. M. Byers, Jr., U. S. Geological Survey, and H. F. Robertson, U. S. Bureau of Mines.

Development work on the property consists of 22 holes concentrated in the north central part of the group. Five of the holes were weakly mineralized, but none was sufficiently thick or contained enough uranium to indicate ore. There has been no production from the North Markey group of claims.

The applicant proposed to explore an area that appears to be an extension of the Blue Lizard channel which has had a considerable amount of production. However, the data obtained to date, and results of the field examination, do not support this idea. The exploration program proposed by the applicant would include holes ranging in depth from 150 to 400 feet and is not justified by the potential size and number of ore bodies that may exist on the property. The examining team, therefore, recommends denial of the application. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission geologists at the White Canyon AEC camp were consulted relative to the appraisal of the subject property.

Enclosed are the brochure and the required number (12) of maps for inclusion in the joint engineering and geologic report.

J. William Hasler
J. William Hasler,
Geologist

JWH/mlr
Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

10-3-56
(date)

FOR UNITED STATES GOVERNMENT USE ONLY

TRANSMITTED
SEP 28 1956
SEP 28 1956

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

RECEIVED
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DMEA 4260

Sterling Uranium Corp.

North Markey claims

San Juan County, Utah

Uranium

Joint Engineering and Geologic Report

By

H. F. Robertson
Bureau of Mines

F. M. Byers
Geological Survey

September 1956

Reviewed by
DMEA OPERATING COMMITTEE

10-3-56
(date)

DMEA 4260

STERLING URANIUM CORP.

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INTRODUCTION

Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah, made application on April 9, 1956, to the Defense Minerals Exploration Administration to explore for uranium on the North Markey group of claims in the Red Canyon area. The application, DMEA 4260, requested Government participation in drilling 55 holes containing about 16,500 feet of core and noncore footage and about 100 hours of rim stripping at an estimated total cost of $75,695.00.

The claims were examined on August 21, 1956 by a DMEA examining team consisting of F. M. Byers, USGS, and H. F. Robertson, USBM.

The property consists of 28 unpatented lode claims on the southeast side of Red Canyon approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. The North Markey group covers parts of section 13, T. 37 S., R. 14 E., and section 18, T. 37 S., R. 15 E., Salt Lake Base Meridian, San Juan County, Utah.

Development work on the property consists of 22 holes concentrated in the north central part of the claim group. Five of the holes were weakly mineralized but none were sufficiently thick or contained enough uranium to indicate ore. There has been no production from the North Markey group of claims.

The rocks exposed in the vicinity of the claim group, in ascending order are the Moenkopi formation, Shinarump conglomerate, Chinle formation, and the Wingate formation, all of Triassic age. All major uranium deposits in the White Canyon-Red Canyon area occur in channel type sediments within the Shinarump formation. The channels usually occur at the base of the Shinarump conglomerate and usually show some channel scour into the underlying Moenkopi formation.

The applicant submitted an assay report of four samples taken from channel exposures on the property. The samples were assayed for uranium and copper and indicate the presence of small amounts of both metals. The examining team inspected the areas sampled and noted that the mineralized material occurred as very thin seams and did not specifically indicate that ore bodies of significant size might be present.

The supposition that the property overlies an extension of the Blue Lizard channel and would be similarly mineralized cannot be supported by the available data.

The exploration program proposed by the applicant would include holes ranging in depth from 150 to 400 feet and is not justified by the potential size and number of ore bodies which may exist on the property.

The examining team, therefore, recommends denial of the application.

ACKNOWLEDGEMENTS

The examining team was accompanied by Robert M. Anderson, geologist, who represented the applicant.

Atomic Energy Commission personnel at the Natural Bridges Camp, White Canyon, Utah, were consulted for information about the subject area.

LOCATION, TOPOGRAPHY, AND CLIMATE

The North Markey group of claims lie in an unsurveyed area on the southeast side of Red Canyon, approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. Projection of existing land lines into the area indicates the claim group covers parts of section 13, T. 37 S., R. 14 E. and section 18, T. 37 S., R. 15 E., Salt Lake Base Meridian.

The Red Canyon area lies in west-central San Juan County, in the southeast corner of Utah. The area of the North Markey group can be reached by traveling about three miles south of Blanding, Utah, on Highway 47; thence westerly for 38 miles on a graveled access road to a junction with Highway 95; thence 8 miles west of the junction and about one-half mile beyond the entrance to the Natural Bridges National Monument to an improved dirt road which heads southwesterly; thence 11 miles to a fork in the road; thence 14 miles out the right-hand fork into Red Canyon and the North Markey group of claims. The Posey and Blue Lizard mines are also in the same area. The property is about 270 miles from Grand Junction, Colorado, the nearest major supply center.

The claims lie on a steeply sloping bench between the vertical Wingate cliffs and the rim of Red Canyon. The property is at an altitude of about 4500 feet and has relatively mild winters, but hot, dry summers with infrequent occurrences of heavy rainfall.

HISTORY AND PRODUCTION

The North Markey group of 28 claims, in the Red Canyon area of San Juan County, were originally located in 1951 as part of a much larger group of claims covering most of the Shinarump outcrops in the area. The claims were assigned to the Anaconda Copper Mining Company who undertook a limited exploration program in 1951 and 1952. In 1953, Anaconda shipped copper-uranium ore from the Markey mine and, in 1954, transferred title to E. H. Eakland, Jr.

There has been no past or present production from the subject group of claims. Anaconda Copper Company formerly operated a small mine, known as the Markey mine, which is located about 300 feet southeast of the North Markey claims (see figure 2). Total production from this mine, which is now abandoned, was 1,214 tons of ore averaging 0.20 percent U_3O_8.

The nearest present production is from the Blue Lizard mine which is located approximately one-quarter mile northeast and across Red Canyon from the subject claim group. Total production from this mine, as of April 1, 1956, was 14,800 tons of ore averaging 0.24 percent U_3O_8 and 0.70 percent Cu.

OWNERSHIP AND EXTENT

The twenty-eight, unpatented lode mining claims comprising the North Markey Group are located as shown on figures 1 and 2. The claims were surveyed by compass-pace methods, showing the total area covered to be slightly more than 370 acres.

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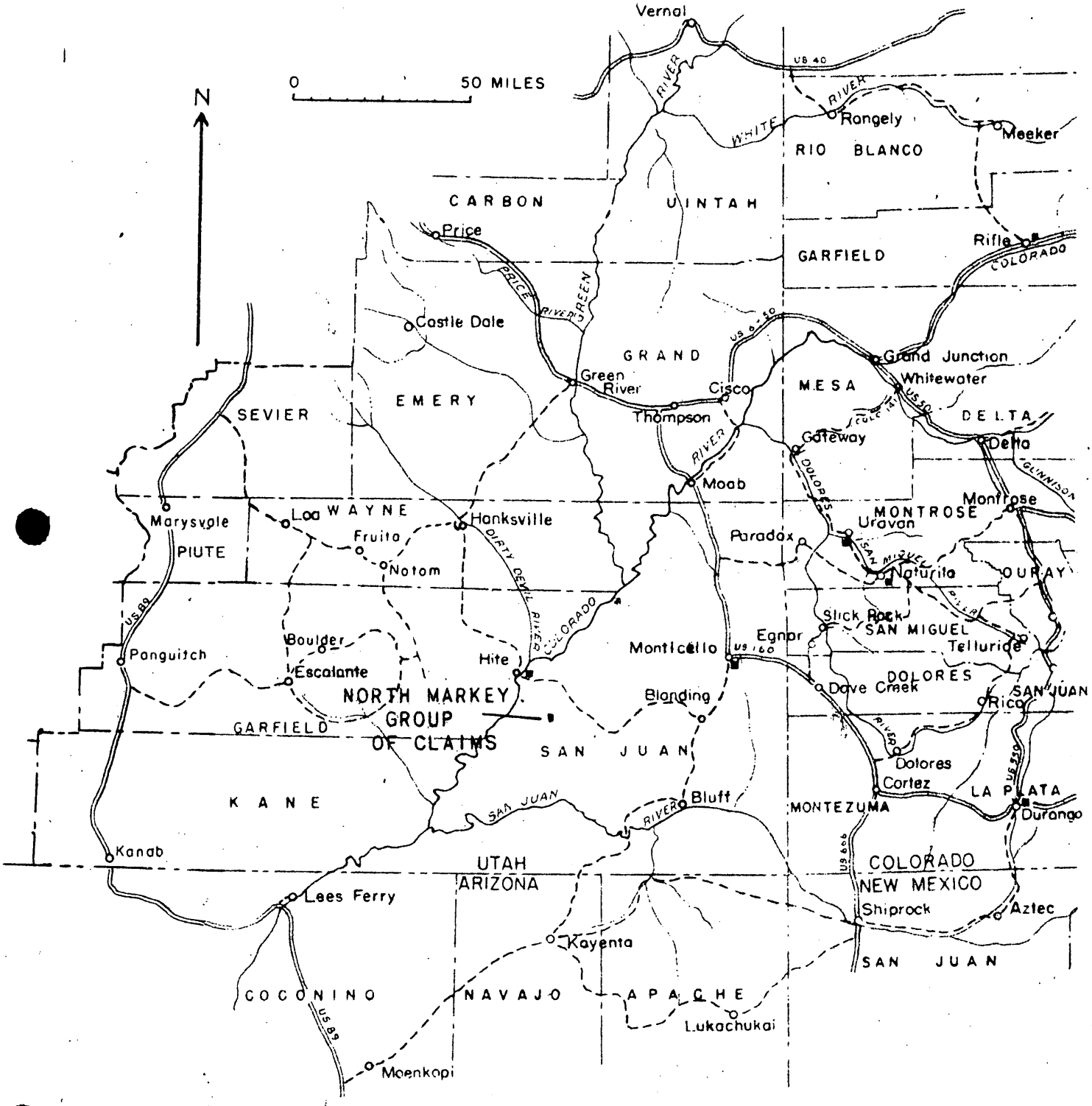

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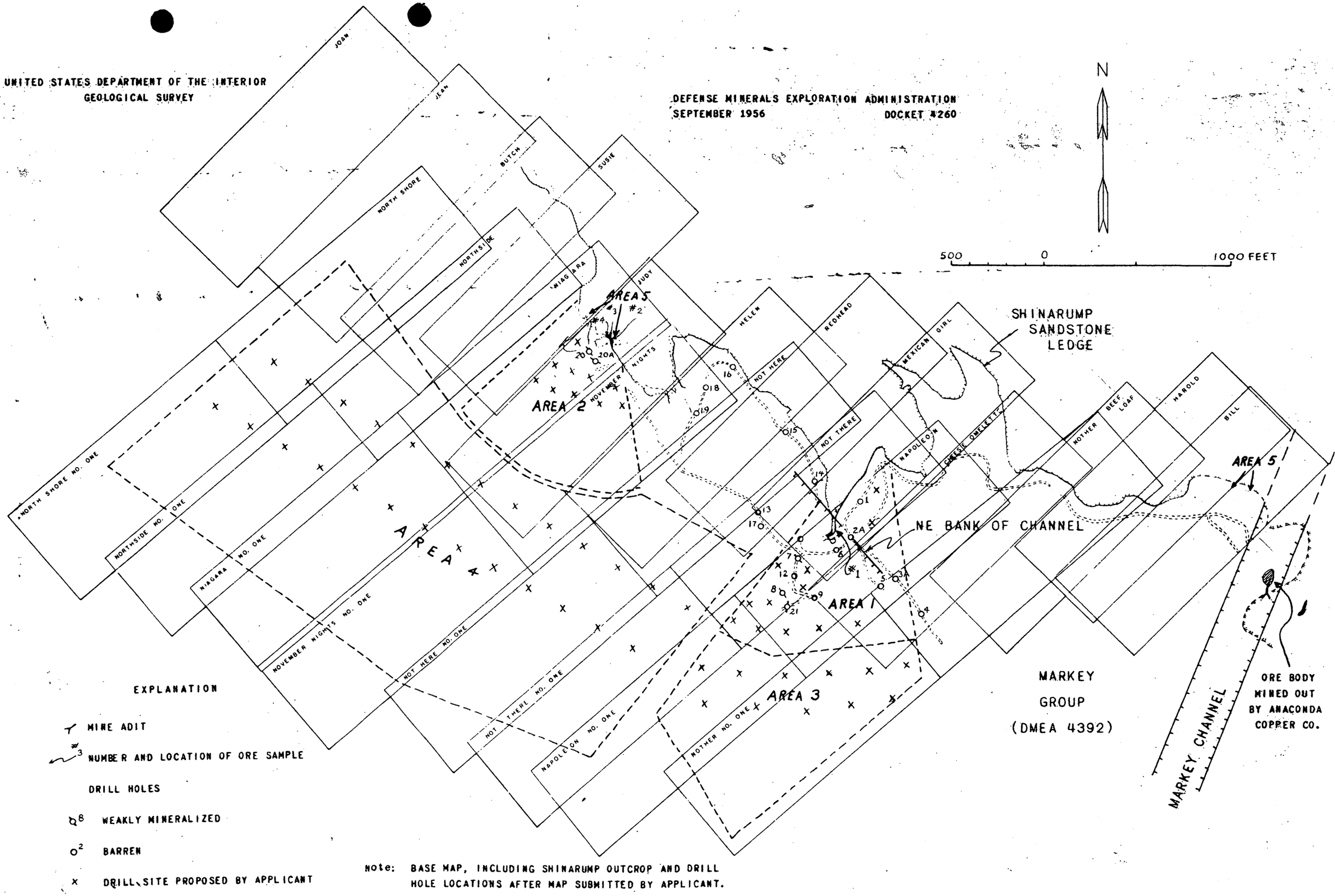

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Ore Deposits

The drilling, as shown on figure 2, was concentrated mainly in the area of the Redhead and Mexican Girl claims in an attempt to find uranium mineralization of ore grade in a northwest-trending shallow Shinarump channel (5 feet deep) apparently underlying the property. The results of the drilling are summarized in table 1. Of twenty holes drilled in the channel area, three holes, (nos. 7, 8, and 21) penetrated weakly mineralized sandstone (table 1) but were not of ore grade. Sample No. 1 (table 2) taken on the outcrop assayed only 0.07 percent of U_3O_8, although high in copper.

Holes 20 and 20A were drilled on the Judy claim (fig. 2) to test the area back of the mineralized outcrop on the rim. Both holes were weakly mineralized in the lower ten feet of the Shinarump formation and averaged about 0.04 eU_3O_8. Three channel samples across 1-1/2 feet on the rim assayed 0.01 to 0.07 percent of U_3O_8 (table 2). Mineralization of this magnitude in the absence of a channel does not in the opinion of the examining team indicate the possibility of a singificant discovery of uranium ore in the Red Canyon area.

The nearby Markey mine (fig. 2) is on the east side of the Markey channel, the west side of which crosses less than 100 feet of the subject claim group in the easternmost part. However, prior drilling, both private and Government, has indicated that the west side of the Markey channel is essentially barren.

Table 1.--Drill hole data, North Markey Group.

Drill hole	Total depth (feet)	Radiometric anomaly footage From	To	Radiometric anomaly thickness (feet)	Grade reported by applicant Percent eU_3O_8	Depth Shinarump-Moenkopi contact (feet)
1	42	35 -	36	1.0	0.02	38
2A	44				Barren	35
3A	77				Barren	56
4	88				Barren	77
5	72	37 -	39	2.0	0.02	66.5
		64 -	67	3.0	0.02	
6	52				Barren	50
7	70	48 -	51	3.0	0.04*	63
8	80	52½ -	61½	9.0	0.03*	77
9	82				Barren	?
10	60				Barren	58
11	88				Barren	82
12	79				Barren*	67.3
13	52	Not bottomed				?
14	47	34 -	34½	0.5	0.02	46
15	52				Barren	50
16	44	30 -	31	1.0	0.02*	43
17	112	97 -	100	3.0	0.02*	111
18	63	38 -	41	3.0	0.02*	59
19	55				Barren*	50
20	50	40½ -	43	2.5	0.05*	48.5
		46 -	47	1.0	0.02	
20A	50	39½ -	43½	4.0	0.04	49
21	84	64 -	65	1.0	0.05*	?

* Disseminated chalcopyrite or copper oxides.

Table 2.--Assays of ore samples, North Markey Group (for location see figure 2)

Sample No.	Thickness sampled	Percent U_3O_8	Percent Copper
1	?	0.07	4.04
2	1.5	0.03	1.11
3	1.5	0.01	1.50
4	1.5	0.07	0.27

Ore Reserves

Exploration and development to date has not indicated any commercial grade ore reserves on the property. The nearby Markey Mine apparently mined all its known reserves in producing 1,214 tons of 0.20 percent U_3O_8 ore. The AEC estimates a reserve of 6,000 tons of copper-uranium ore averaging 0.26 percent U_3O_8 and 0.70 percent Cu in the Blud Lizard Mine, one of the larger producers in the Red Canyon area.

Proposed Exploration

The applicant proposes a program of core and non-core drilling combined with a limited amount of rim stripping to explore for channel indications and boundaries and to test the channels for copper-uranium mineralization. The claim group is divided into five areas in which work is proposed by the applicant. Areas 1, 2, 3, and 4 would be explored with 55 drill holes, core and non-core, while exploration of area 5 would entail rim stripping of the Shinarump outcrop in the area of company drill hole no. 20 on the Judy and Susie claims, and rim stripping at the north end of the Harold and Bill claims.

A summary of the estimated cost of the applicant's proposed program is shown below:

Independent Contracts--Drilling:

Area	No. of holes	Average depth feet	Average cost per foot	Total Footage	Total Cost
1	10	200	$3.00	2,000	$6000.00
2	10	150	3.00	1,500	4500.00
3	10	300	3.25	3,000	9750.00
4	25	400	3.50	10,000	35000.00
Total	55			16,500	$55250.00

Bulldozing: (Based on D-6 Cat at $12.00 per hour)

Area 1	125 hours	$1,500.00
Area 2	90 hours	1,080.00
Area 3	125 hours	1,500.00
Area 4	300 hours	3,600.00
Area 5	100 hours	1,200.00
Total	740 hours	$8,880.00

(An alternate proposal on bulldozing costs is offered by the operator in which the applicant uses equipment owned by the company. The total price would amount to about the same as the above costs.)

Total independent contracts $64,130.00

Labor, supervision, and consultants	
One geologic consultant--3 months at $1,500 per month	$4,500.00
One driller (to assist in rim stripping)--2 months at $500.00 per month	1,000.00
Supervising mining superintendent--2 months at $600.00 per month	1,200.00
Secretarial work	200.00
Total Labor, supervision, and consultants	$6,900.00
Operating materials and supplies	
Dynamite, blasting caps, bits, steel, gasoline, oil, butane, etc.	
Total operating materials and supplies	$2,304.00
Operating equipment	
1 light plant (purchased)	375.00
200' air hose drilling line (purchased)	216.00
Model 105 air compressor--2 months at $100 per month	200.00
Jack Hammer--2 months at $75 per month	150.00
300 or 500 gallon water tank--3 months at $150 per month	450.00
Total operating equipment	$1,391.00
Rehabilitation and repairs	
One bunk and cook house	560.00
Outhouse and shower	150.00
Total rehabilitation and repairs	$710.00

Contingencies	
Transportation of compressor, jackhammer, and water tank	$310.00
Total contingencies	$310.00
Estimated total cost of project	$76,745.00
Government participation at 75 percent	~~$57,558.75~~ 56,808.75

Inasmuch as the examining team is going to recommend denial of the application, no modifications of the applicant's proposal are offered.

CONCLUSIONS AND RECOMMENDATIONS

The one observed channel bank on the North Markey group is only 5 feet in height as compared with 15 to 20 feet on the through-going Blue Lizard-?-Markey Channel. Assays of 4 channel samples on the outcrop and radiometric assays of about 20 drill holes indicate no sandstone of ore grade. The shallow channel scour of only 5 feet is not indicative of the presence of an ore body in the Red Canyon area. Further, the low grade assays of many outcrop samples and drill holes is not encouraging.

Because of the shallow or complete lack of channel scours combined with weak mineralization, it is recommended that the application of Sterling Uranium Corporation for DMEA assistance be denied.

9/21/56 gla

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

RECEIVED
SEP 21 1956

224 New Customhouse
Denver 2, Colorado

September 17, 1956

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4260 (Uranium) Sterling Uranium Corporation (North Markey claim group) San Juan County, Utah

This responds to your letter of September 10, 1956 on the subject docket.

The field advises that the Report of Examination is in preparation, and you may expect to receive the report by October 1, 1956.

W. M. Traver

W. M. Traver

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

224 New Customhouse
Denver 2, Colorado

September 17, 1956

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W. M. TRAVER

W. M. Traver

urname copy

F L Knouse 700
Ellis
Selfridge
Fehlman

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

SEP 1 0 1956

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

Re: Docket No. DMEA-4260 (Uranium)
Sterling Uranium Corporation
North Markey Claim Group
San Juan County, Utah

Dear Mr. Traver:

We have had several inquiries from Senator Magnuson's office concerning the status of the subject application.

Please advise when we may expect to receive the Field Team's report on the proposed project.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

APPROVED:

Frank D. Lamb (FDL)
Member, Bureau of Mines

Thor H. Kiilsgaard (THK)
Member, Geological Survey

FLKnouse/gla
9-7-56

cc to: Admr.'s Reading File
Operating Committee
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700, Mr. Knouse

P.C.S.

June 6, 1956

Memorandum

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

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4260 (Uranium), Sterling Uranium Corporation, (North Markey claim group), San Juan County, Utah

The application on DMEA 4260, Sterling Uranium Corporation, in the amount of $75,695.00 was received in this office on June 6.

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

John F. Shaw

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

RECEIVED
JUN 1 1956

June 6, 1956

Memorandum

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

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4260 (Uranium), Sterling Uranium Corporation, (North Markey claim group), San Juan County, Utah

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John F. Shaw

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

6-7-56

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

RECEIVED
JUN - 7 1956

June 4, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: J. F. Shaw (2) (With brochure)
J. W. Kealer (With copy of additional information)

From: Field Team, Region III

Subject: DMEA Docket 4260 (Uranium) Sterling Uranium Corporation, (North Mackey Claim Group), San Juan County, Utah

Enclosed is the subject application in the amount of $75,695.00. A field examination and suitable report are requested.

Enclosed for your information is a copy of a letter from the Chairman, Operating Committee dated June 1, 1956 with attached memoranda of review of the application by J. E. Crawford and H. R. Nelson.

One copy of supplementary information from the Applicant is enclosed with the brochure.

Please note that the application lists claims Mother and Mother No. 1, whereas the map shows claims Mother and Mother No. 1. Please clarify. The map submitted with the application shows the proposed drill hole within 50 feet of the outside boundary of Mother No. 1 claim, and rim stripping to the outside boundary of the Bill claim. Your recommended program should not include work which is closer than 100 feet from any of the property boundaries. In the event that you should recommend a drilling program, please ask the Applicant to obtain bids from three drilling contractors.

Please return the brochure with the Report of Examination.

Enclosure

DMEA Field Team, Region III

W. M. TRAVER,

WMC:ab

By W. M. Traver
Executive Officer

cc: Chair. Op. Comm. (2)
Docket 4260
Marshman
Chron.

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

RECEIVED
JUN - 7 1956

June 4, 1956

22h New Customhouse
Denver 2, Colorado

Memorandum

To: J. F. Shaw (2) (With brochure)
J. W. Bunler (With copy of additional information)

From: Field Team, Region III

Subject: DMEA Docket 4860 (Uranium) Sterling Uranium Corporation, (North Mesteny Claim Group), San Juan County, Utah

Enclosed is the subject application in the amount of $75,695.00. A field examination and suitable report are requested.

Enclosed for your information is a copy of a letter from the Chairman, Operating Committee dated June 1, 1956 with attached memoranda of review of the application by J. E. Crawford and H. K. Nelson.

One copy of supplementary information from the Applicant is enclosed with the brochure.

Please note that the application lists claims Mother and Mother No. 1, whereas the map shows claims Mother and Mother No. 1. Please clarify. The map submitted with the application shows the proposed drill hole within 50 feet of the outside boundary of Mother No. 1 claim, and rim stripping to the outside boundary of the Bill claim. Your recommended program should not include work which is closer than 100 feet from any of the property boundaries. In the event that you should recommend a drilling program, please ask the Applicant to obtain bids from three drilling contractors.

Please return the brochure with the Report of Examination.

Enclosure

DMEA Field Team, Region III

HMC:ab

W. M. TRAVER,

By W. M. Traver
Executive Officer

cc: Chair. Op. Comm. (2)
Docket 4860
Kershman
Chron.

700

FILE COPY
Surname:
J L Krome
Ellis
Morgan Fox
F Fellows

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

JUN - 1 1956

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

Re: Docket No. DMEA-4260 (Uranium)
Sterling Uranium Corporation
North Markey Claim Group
San Juan County, Utah

Dear Mr. Traver:

The captioned application is referred to your office for a field examination and report on the proposed project. One copy of the application was retained by your office.

Enclosed are copies of memoranda, dated May 1 and 18, 1956, from Mr. John E. Crawford, USBM, and Mr. N. E. Nelson, USGS, respectively, relating to the proposed project. In addition, two copies of supplementary information from the Applicant are enclosed, consisting of a letter, dated May 22, 1956; "Supplement to Geologic Report," dated May 15, 1956, by Mr. R. M. Anderson; Assay Certificate, Four Corners Laboratory, Inc.; an "Agreement of Consolidation," fourteen pages; and one map, entitled "North Markey Group Red Canyon District San Juan County Utah."

If the Field Team recommends an exploration program, we will require, in addition to the usual information, the following:

1. Nine copies of a map showing mineralized exposures, with sample locations and assay values (shown on Applicant's map, and any additional samples taken by the examining team); holes drilled by Applicant; and recommended work, all in relation to the boundaries of the claims.

2. Bids from three contractors, if drilling is recommended and to be done by an independent contractor, should be furnished.

3. The application lists claims Nether and Nother No. One, whereas the map shows claims Mother and Mother No. One. Please clarify.

R.C.H.

Please note that the enclosed Applicant's map shows a proposed drill hole within 50 feet of the outside boundary of Mother No. One claim, and rim stripping to the outside boundary of the Bill claim. Your recommended program should not include work which is closer than 100 feet from the outside boundary of the property.

Sincerely yours,

W. S. Martin

ACTING Chairman, Operating Committee (JHB)

Enclosures

APPROVED:

/s/ Robert W. Geehan (JHB)

Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)

Member, Geological Survey

FLKnouse/gla/iam 5-31-56

cc to: Docket
Code 700
Mr. Knouse
Admr.'s Reading File
Operating Committee

Messrs.: JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHested, Rm. 3210, GSA

700

FILE COPY
Surname:

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

JUN - 1 1956

Mr. Gordon L. Weggeland, Vice President
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Re: Docket No. DMEA-4260 (Uranium)
North Markey Claim Group
San Juan County, Utah

Dear Mr. Weggeland:

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.

Sincerely yours,

G. O. Mittendorf

Administrator

FLKnouse/izm 5-31-56
cc to: Docket
Code 700
Mr. Knouse
Admr.'s Reading File
~~Operating Committee~~
DMEA Field Team, Region III (2)

Sterling Uranium Corporation

402 BOSTON BUILDING PHONE 4-1282

May 22, 1956

RECEIVED
MAY 28 1956

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

Re: Docket No. DMEA - 4260 (Uranium)
North Markey Claim Group
San Juan County, Utah

Gentlemen:

In accordance with your request of April 25, 1956 for clarification of information in reference to our application for Government aid to explore the subject property, we are enclosing herewith four copies of an Agreement of Consolidation to form Sterling Uranium Corporation which should give you the necessary information to clarify your paragraphs #1 and #2.

For your paragraph #3 we are enclosing herewith four copies of the following documents:

(a) A supplement to geological report by Robert M. Anderson.

(b) Signed copies of chemical assay reports of samples taken.

(c) Photostatic copies of map of subject claims.

We trust that the enclosures will enable you to continue processing our application.

Thank you for your kind consideration in this matter.

Very truly yours,

STERLING URANIUM CORPORATION

BY Gordon L. Weggeland,
Vice President

GLW:sw

Enclosures

see 2 copies map in packet

ROBERT M. ANDERSON
GEOLOGIST
Box 301
Blanding, Utah
May 15, 1956

RECEIVED
MAY 28 1956

SUPPLEMENT TO GEOLOGIC REPORT

Mineralized channel exposed in re-entrant on Redhead-Mexican Girl Claims.

This channel which occurs at the base of the Shinarump formation contains uranium and copper mineralization. In outcrop this channel is approximately 200 feet wide and shows at least eight feet of scower into the underlying Moenkopi formation. On outcrop the uranium-copper mineralization generally occurs in the lower few feet of the channel, with a trace of mineralization extending down into the upper one feet of the Moenkopi mudstone.

Mineralized channel exposed in outcrop on the Suzie Claim.

Approximately 30 feet of the east edge of this channel is exposed in outcrop on the Suzie Claim. This channel extends to the west beneath a tallus slope which is shown on the accompanying map. Uranium-copper mineralization occurs in the lower two feet of this channel.

Robert M. Anderson
Robert M. Anderson

RMA/ma

Box 301
Blanding, Utah
May 15, 1956

RECEIVED
MAY 28 1956

SUPPLEMENT TO GEOLOGIC REPORT

Mineralized channel exposed in re-entrant on Redhead-Mexican Girl Claims.

This channel which occurs at the base of the Chinarump formation contains uranium and copper mineralization. In outcrop this channel is approximately 220 feet wide and shows at least eight feet of scower into the underlying Moenkopi formation. On outcrop the uranium-copper mineralization generally occurs in the lower few feet of the channel, with a trace of mineralization extending down into the upper one feet of the Moenkopi mudstone.

Mineralized channel exposed in outcrop on the Gusie Claim.

Approximately 30 feet of the east edge of this channel is exposed in outcrop on the Gusie Claim. This channel extends to the west beneath a talus slope which is shown on the accompanying map. Uranium-copper mineralization occurs in the lower two feet of this channel.

Robert M. Anderson
Robert M. Anderson

RMA/ma

Telephone 705

P. O. Box 487

Four Corners Laboratory, Inc.

Assayers and Chemists

CORTEZ, COLORADO

RECEIVED
MAY 28 1956

RECEIVED: 5/14/56

SUBMITTED BY: Sterling Uranium Corp.
522 Boston Bldg.
Salt Lake City, Utah

DATE May 14, 1956

LABORATORY SAMPLE NUMBER	Sample Marking	Uranium % as U_3O_8		Vanadium	Lime	Copper
	North Marky Group	Chemical	Radiometric*	% as V_2O_5	% as $CaCO_3$	% as Cu
#1586	#1 Red Head Mexican Claim J Channel	0.07%				4.04%
#1587	#2 Suzie Claim Channel from 1½' above contact to contact	0.03%				1.11%
#1588	#3 Suzie Claim Channel from 1½' above contact to contact	0.01%				1.50%
#1589	#4 East Side Channel on Suzie Claim 1½' above contact to contact	0.07%				0.27%

* The radiation detected is expressed as equivalent to Uranium as % U_3O_8

Cortez Sentinel Form No. 4975

RESPECTFULLY SUBMITTED

FOUR CORNERS LABORATORY, INC.

BY Peter T. Schuyler

Peter T. Schuyler

js

Telephone 705

P. O. Box 487

Four Corners Laboratory, Inc.

Assayers and Chemists
CORTEZ, COLORADO

RECEIVED
MAY 8 4 1956

RECEIVED: 5/14/56

SUBMITTED BY: Sterling Uranium Corp.
522 Boston Bldg.
Salt Lake City, Utah

DATE May 14, 1956

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		Chemical	Radiometric*	% as V_2O_5	% as $CaCO_3$	% as Cu
	North Marky Group					
#1586	#1 Red Head Mexican Claim J Channel	0.07%				4.04%
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#1589	#4 East Side Channel on Suzie Claim 1½' above contact to contact	0.07%				0.<7%

* The radiation detected is expressed as equivalent to Uranium as % U_3O_8

Cortez Sentinel Form No. 4975

RESPECTFULLY SUBMITTED

FOUR CORNERS LABORATORY, INC.

BY Peter T. Schuyler

Peter T. Schuyler

js

RECEIVED
MAY 28 1966

AGREEMENT OF CONSOLIDATION

by and between

ATOMIC URANIUM INC.
and
RED MAN URANIUM COMPANY
and
TRANS WORLD URANIUM CORP.
and
UTAH-NATIONAL URANIUM MINING CORPORATION

to form

STERLING URANIUM CORPORATION

-oOo-

AGREEMENT OF CONSOLIDATION

THIS AGREEMENT OF CONSOLIDATION made and entered into this 12th day of January, 1955, by and between ATOMIC URANIUM INC., a corporation, RED MAN URANIUM COMPANY, a corporation, TRANS WORLD URANIUM CORP., a corporation, and UTAH-NATIONAL URANIUM MINING CORPORATION, a corporation, all organized and existing under the laws of the State of Utah, hereinafter collectively called the Constituent Companies;

W I T N E S S E T H :

WHEREAS, The Board of Directors of each of the Constituent Companies deems it advisable that the four corporations consolidate to form a new corporation (hereinafter referred to as the Consolidated Company) to be governed by the laws of the State of Utah, such consolidation to be effected pursuant to Section 16-5-1, Utah Code Annotated, 1953; and,

WHEREAS, Atomic Uranium Inc., has an authorized capital stock consisting of five million (5,000,000) shares, par value one (1¢) per share, of which three million (3,000,000) shares are issued and outstanding; and,

WHEREAS, Red Man Uranium Company has an authorized capital stock consisting of ten million (10,000,000) shares, par value two (2¢) per share, of which seven million sixty eight thousand (7,068,000) shares are issued and outstanding; and,

WHEREAS, Trans World Uranium Corp. has an authorized capital stock consisting of five million (5,000,000) shares, par value one (1¢) cent per share, of which one million two hundred twenty three thousand (1,223,000) shares are issued and outstanding; and,

WHEREAS, Utah-National Uranium Mining Corporation has an authorized capital stock consisting of three million (3,000,000) shares, par value one (1¢) cent per share, of which seven hundred twenty-two thousand eight hundred eighty (722,880) shares are issued and outstanding; and,

WHEREAS, the name of the Company will be STERLING URANIUM CORPORATION;

NOW, THEREFORE, in consideration of the premises and of the mutual agreements, promises, covenents and grants herein contained, the parties hereto, in accordance with the laws of the State of Utah, agree that ATOMIC URANIUM INC., RED MAN URANIUM COMPANY, TRANS WORLD URANIUM CORP., and UTAH-NATIONAL URANIUM MINING CORPORATION consolidate with each other to form STERLING URANIUM CORPORATION, a Utah corporation, and hereby agree upon and prescribe the terms and conditions of said consolidation and the manner of carrying the same into effect as follows:

PARAGRAPH I.

The Consolidated Company shall be a new corporation organized under the laws of the State of Utah and shall be governed by the laws of said State. Its corporate name shall be STERLING URANIUM CORPORATION.

The separate existences of ATOMIC URANIUM INC., RED MAN URANIUM COMPANY, TRANS WORLD URANIUM CORP., and UTAH-NATIONAL URANIUM MINING CORPORATION shall cease as of the effective time of this consolidation, except insofar as they may be continued by law or in order to carry out the purposes of this agreement of consolidation.

PARAGRAPH II.

The Certificate of Incorporation of the Consolidated Company, as a new corporation incorporated under the laws of the State of Utah, is as follows:

ARTICLE I.

NAME

The name of the corporation is:

STERLING URANIUM CORPORATION.

ARTICLE II.

PLACE OF BUSINESS

The principal place of business shall be at Salt Lake City, Utah, in which city it is organized, and the term for which the corporation is to exist is one hundred (100) years from the date of filing these Articles of Consolidation in the office of the Secretary of State of the State of Utah. The place of its general business shall be at Salt Lake City, Utah, but the corporation may conduct its business in other States, territories, and possessions of the United States, and in foreign countries, and may have one office or more than one office, and keep the books of the company outside of the State of Utah, except as may be otherwise provided by law.

ARTICLE III.

PURPOSE

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

a. To carry on the business of mining, milling, concentrating, converting, smelting, treating by any process now known or which may hereafter be developed, preparing for market, manufacturing, buying, selling, exchanging and otherwise producing and dealing in gold, silver, copper, lead, zinc, brass, iron, steel, uranium, vanadium, and all kinds of ores, metals and minerals and products and by-products thereof of every kind and description, and, generally, and without limitation as to amount, to buy

sell, locate, exchange, lease, acquire and deal in lands, mines and mineral rights and claims, transportation systems and improvements upon real estate of every kind, and to conduct all business appertaining thereto; to purchase, lease, or otherwise acquire and dispose of mining rights, timber rights, oil and gas rights, mines, mills, works, building, laboratories, plants, machinery, tools, jigs, and dies, and other properties whatsoever which this corporation may from time to time find to be for its advantage and purposes; to mine and market any mineral or other product that may be found in or on such lands, and to explore, work, exercise, develop, or turn to account the same; to own, construct, or purchase all water, water rights, and water works, including power sites, mill sites, dam sites, reservoir and reservoir sites, ditch, canals, and pipe lines, and all other property that may be necessary or convenient for the purpose or purposes of the company; to pledge, mortgage, deliver, trade, and hypothecate all kinds of real and personal property and to do all things necessary and usual by and with mining, as provided by law and the custom of mining.

b. To mine, dig for, or otherwise obtain from the earth, petroleum, rock or carbon oils, natural gas, other volatile mineral substances and salt; to manufacture, regine, prepare for market, buy, sell and transport the same in the crude or refined condition; to acquire for these purposes gas and oil lands, lease-holds and other interests in real estate.

c. To guarantee, purchase, hold, sell, assign, transfer, mortgage, pledge or otherwise dispose of the shares of the capital stock of, or any bonds, securities or evidence of indebtedness created by any other corporation or corporations of this State, or any other State or government, and, while owner of such stock to exercise all the rights, powers and privileges of ownership, including the right to vote thereon.

d. To borrow money and contract debts, when necessary for the transaction of its business, or for the exercise of its corporate rights, privileges, or franchises, or for any other

lawful purpose of its incorporation; to issue bonds, promissory notes, bills of exchange, debentures, and other obligations and evidences of indebtedness, payable at specified time or times, or payable upon the happening of a specified event or events, whether secured by mortgage, pledge, or otherwise, or unsecured, for money borrowed, or in payment for property purchased, or acquired, or for any other lawful objects.

e. To purchase, hold, sell and transfer shares of its own capital stock; provided, that the corporation shall not use its funds or property for the purchase of its own shares of capital stock when such use would cause any impairment of the capital of the corporation, except as is provided by the Statutes of Utah; and provided further, that shares of its own capital stock belonging to the corporation shall not be voted upon, directly or indirectly, nor counted as outstanding, for the purpose of any stockholders' quorum or vote.

f. To conduct business, have one or more offices, and hold, purchase, mortgage and convey real and personal property in this State, and in any of the several States, territories, possessions and dependencies of the United States, the District of Columbia, and any foreign countries.

g. To do all and everything necessary and proper for the accomplishment of the objects enumeraged in its certificate or articles of incorporation, or any amendment thereof, or necessary or incidental to the protection and benefit of the corporation, and, in general, to carry on any lawful business necessary or incidental to the attainment of the objects of the corporation, whether or not such business is similar in nature to the objects set forth in the certificate or articles of incorporation of this corporation, or any amendment thereof.

h. And in general, to do and perform such acts and things and transact such business not inconsistent with law in any part of the world, as the Board of Directors may deem for the advantage of the corporation.

ARTICLE IV.

CAPITAL STOCK

The limit of the capital stock of the corporation shall be Two Million Five Hundred Thousand ($2,500,000.00) Dollars, divided into Ten Million (10,000,000) shares of capital common stock of the par value of twenty-five (25¢) cents per share. The capital stock shall be non-assessable. The authorized but unissued stock may be sold or disposed of by the Board of Directors at such time and on such terms or conditions that the Board of Directors may deem expedient.

ARTICLE V.

MANAGEMENT

The affairs of the company shall be managed by a Board of Directors of not less than three (3) nor more than twenty-five (25) members, which number may be changed from time to time to not less than three (3) nor more than twenty-five (25) by resolution of the Board of Directors. Each director shall hold not less than one thousand (1,000) shares of the stock of the company in order to be eligible to hold office of director. The directors shall elect a President, one or more Vice-Presidents, a Secretary and a Treasurer for the company who need not be directors of the company and such other officers and agents as they deem necessary in the management and conduct of the company's business. Any one person may hold two or more offices at the same time, except the office of President and Vice-President. Any officer or director may resign by giving notice, in writing, to the Board of Directors, or he may be removed in the manner provided for by the laws of the State of Utah. One-fourth (1/4) of the members of the Board of Directors shall constitute a quorum for the transaction of business, which number, however, shall not be less than three (3). The Board of Directors shall have the general control and management of the property, business and affairs of the corporation but they may delegate certain duties in respect thereto to the various officers of the corporation or to the various committees of the Board of Directors in case they choose so to do. Meetings

of the Directors may be held at Salt Lake City, Utah, and at such other place within or without the State of Utah as the directors, by resolution or by-laws, may designate. The names of the officers and directors to serve until the first general election are as follows:

John A. Chambers	President and Director
Gordon L. Weggeland	Vice-President and Director
Charles E. Hicks	Vice-President and Director
Louis D. Tannenbaum	Secretary and Director
William B. Feinberg	Treasurer and Director

ARTICLE VI.

AMENDMENTS

These Articles of Consolidation may be amended in any respect at any stockholders' meeting called for that purpose. Notice of such meeting shall be given by mailing or delivering to each stockholder of record, at least ten (10) days before such meeting, directed to his or her address as shown by the company's books, a written or printed notice thereof. The stock represented at the meeting, whatever the amount, shall constitute a quorum, and the question of amendment shall be decided by a majority of the votes cast.

ARTICLE VII.

LIABILITY

The private property of the stockholders shall not be liable for the obligations of the corporation.

ARTICLE VIII.

PRE-EMPTIVE RIGHTS

No holder of any stock of this corporation shall be entitled as of right to purchase or subscribe for any part of any stock of the corporation authorized herein or of any additional stock of any class to be issued by reason of any increase of the authorized capital stock of the corporation, or of any bonds, certificates of indebtedness, debentures or other securities convertible into stock of the corporation, but any stock authorized herein or any such additional authorized issue of any stock or of

securities convertible into stock may be issued and disposed of by the Board of Directors to such persons, firms, corporations or associations, and upon such terms and conditions as the Board of Directors may in their discretion determine, without offering any thereof on the same terms or on any terms to the stockholders then of record or to any class of stockholders.

ARTICLE IX.

INDEMNITY

The corporation shall have power to indemnify any and all of its directors or officers or former directors or officers or any person who may have served at its request as a director or officer of another corporation in which it owns shares of capital stock or of which it is a creditor against expenses actually and necessarily incurred by them in connection with the defense of any action, suit or proceeding in which they, or any of them, are made parties, or a party, by reason of being or having been directors or officers or a director or officer of the corporation, or of such other corporation, except in relation to matters as to which any such director or officer or former director or officer or person shall be adjudged in such action, suit or proceeding to be liable for negligence or misconduct in the performance of duty. Such indemnification shall not be deemed exclusive of any other rights to which those indemnified may be entitled, under any by-law, agreement, vote of stockholders, or otherwise.

PARAGRAPH III.

Manner of converting shares of Constituent Companies into shares of Consolidated Company immediately upon the consolidation becoming effective shall be as follows:

a. Every eight and one-third (8 1/3) issued and outstanding shares of capital stock, par value one (1¢) cent per share, of Atomic Uranium Inc., shall be converted into one (1) share of capital stock, par value twenty-five (25¢) cents per share of Sterling Uranium Corporation.

b. Every ten (10) issued and outstanding shares of capital stock, par value two (2¢) per share, of Red Man Uranium

Company, shall be converted into one (1) share of capital stock, par value twenty-five (25¢) cents per share of Sterling Uranium Corporation.

c. Every one (1) issued and outstanding share of capital stock, par value one (1¢) cent per share, of Trans World Uranium Corp., shall be converted into one (1) share of capital stock, par value twenty-five (25¢) per share of Sterling Uranium Corporation.

d. Every one (1) issued and outstanding share of capital stock, par value one (1¢) cent per share, of Utah-National Uranium Mining Corporation, shall be converted into one (1) share of capital stock, par value twenty-five (25¢) per share of Sterling Uranium Corporation.

e. Holders of certificates for shares of capital stock in the corporations consisting the Constituent Companies shall cease to have any rights as stockholders of said corporations, and the holders thereof, upon presentation and surrender of their certificates to the Sterling Uranium Corporation or the transfer agent for the capital stock of Sterling Uranium Corporation, shall be entitled to receive in exchange for their certificates shares of capital stock of Sterling Uranium Corporation at the rates provided in sections "a", "b", "c", "d", and "e" of this Paragraph.

No certificates for fractional shares shall be issued, but in lieu thereof adjustments for fractions (amounts less than one (1) share) will be made by payments of sums of cash equal to the value based upon the price of three (3¢) cents per share for Atomic Uranium Inc., two and one-half (2½¢) cents per share for Red Man Uranium Company, twenty-five (25¢) cents per share for Trans World Uranium Corp., and twenty-five (25¢) cents per share for Utah-National Uranium Mining Corporation.

PARAGRAPH IV.

On or after the effective time of this merger and consolidation:

a. The property assets consisting of mining claims, machinery, leases and all properties, both real and personal, and

all and every interest of the Constituent Companies shall be the property of the Sterling Uranium Corporation, and the Constituent Companies shall forthwith cause such properties and assets to be transferred and conveyed to the Sterling Uranium Corporation by proper conveyance, vesting thereby all of the interests and assets of said Constituent Companies in Sterling Uranium Corporation.

b. After the Constituent Companies have conveyed to Sterling Uranium Corporation their assets, said Constituent Companies shall cease.

c. Sterling Uranium Corporation assumes all of the debts, liabilities and contracts of the Constituent Companies, and is to pay off and extinguish all debts and liabilities of every kind and nature of each of the Constituent Companies.

d. In the event that the stockholders of one of the Constituent Companies do not approve this agreement, but the agreement is approved by the other three Constituent Companies, then in that event this agreement shall bind only those companies approving the same.

This agreement shall be submitted to the stockholders of each of the corporations, parties hereto, as provided by law, and shall take effect and be the agreement of said corporations upon adoption of majority vote of each of said corporations as provided by the laws of the State of Utah, and binding upon the parties hereinafter provided.

GIVEN under our hands and seals the day and year first above written.

ATOMIC URANIUM INC.

By (s) C. E. Hicks
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

RED MAN URANIUM COMPANY

By (s) Gordon Weggeland
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

TRANS WORLD URANIUM CORP.

By (s) John A. Chambers
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

UTAH-NATIONAL URANIUM MINING
CORPORATION

By (s) Richard L. McGillis
President

(Corporate Seal)
ATTEST:

(s) William B. Feinberg
Secretary

-: C E R T I F I C A T E :-

STATE OF UTAH)
: ss.
County of Salt Lake)

We, CHARLES E. HICKS and LOUIS D. TANNENBAUM, President and Secretary respectively of Atomic Uranium Inc., and GORDON L. WEGGELAND and LOUIS D. TANNENBAUM, President and Secretary respectively of Red Man Uranium Company, and JOHN A. CHAMBERS and LOUIS D. TANNENBAUM, President and Secretary respectively of Trans World Uranium Corp., and RICHARD L. McGILLIS and WILLIAM B. FEINBERG, President and Secretary respectively of Utah-National Uranium Mining Corporation, all corporations created and organized under the laws of the State of Utah, do HEREBY CERTIFY:

That at a special meeting of the stockholders of said corporations regularly held, pursuant to notice given in accordance with the requirements of the laws of the State of Utah, at 345 State Street, Room 109, Salt Lake City, Utah, on the 15th day of February, 1955, at which meeting a majority of all of the outstanding stock of said corporations, to-wit: Atomic Uranium Inc., Red Man Uranium Company, Trans World Uranium Corp., and Utah-National Uranium Mining Corporation, was represented by the holders thereof in person and by proxy, unanimously voted, passed and adopted resolutions approving and ratifying the agreement of consolidation made between the corporations aforesaid by the Board of Directors on January 12, 1955.

GIVEN under our hands and the seals of said corporations this 18th day of February, 1955.

ATOMIC URANIUM INC.

By (s) Charles E. Hicks
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

RED MAN URANIUM COMPANY

By (s) Gordon L. Weggeland
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

TRANS WORLD URANIUM CORP.

By (s) John A. Chambers

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

UTAH-NATIONAL URANIUM MINING
CORPORATION

By (s) Richard L. McGillis

(Corporate Seal)
ATTEST:

(s) William B. Feinberg
Secretary

STATE OF UTAH)
: ss
County of Salt Lake)

C. E. HICKS, LOUIS D. TANNENBAUM, GORDON L. WEGGELAND, JOHN A. CHAMBERS, RICHARD L. McGILLIS and WILLIAM B. FEINBERG, being each first duly sworn, upon oath depose and say: That Charles E. Hicks and Louis D. Tannenbaum are respectively the President and Secretary of Atomic Uranium Inc., and that Gordon L. Weggeland and Louis D. Tannenbaum are respectively the President and Secretary of Red Man Uranium Company, and that John A. Chambers and Louis D. Tannenbaum are respectively the President and Secretary of Trans World Uranium Corp., and that Richard L. McGillis and William B. Feinberg are respectively the President and Secretary of Utah-National Uranium Mining Corporation, all corporations of the State of Utah; that they have read the foregoing Certificate, know the contents thereof, and that the facts therein stated and set forth are true.

(s) Charles E. Hicks
Charles E. Hicks

(s) John A. Chambers
John A. Chambers

(s) Louis D. Tannenbaum
Louis D. Tannenbaum

(s) Richard L. McGillis
Richard L. McGillis

(s) Gordon L. Weggeland
Gordon L. Weggeland

(s) William B. Feinberg
William B. Feinberg

Subscribed and sworn to before me this 28th day of February, 1955.

(s) Dawn Baker
Notary Public, Residing at
Salt Lake City, Utah

(Notary Seal)
My Commission Expires:

Sept. 23, 1958

RECEIVED
MAY 28 1956

AGREEMENT OF CONSOLIDATION

by and between

ATOMIC URANIUM INC.
and
RED MAN URANIUM COMPANY
and
TRANS WORLD URANIUM CORP.
and
UTAH-NATIONAL URANIUM MINING CORPORATION

to form

STERLING URANIUM CORPORATION

-oOo-

AGREEMENT OF CONSOLIDATION

THIS AGREEMENT OF CONSOLIDATION made and entered into this 12th day of January, 1955, by and between ATOMIC URANIUM INC., a corporation, RED MAN URANIUM COMPANY, a corporation, TRANS WORLD URANIUM CORP., a corporation, and UTAH-NATIONAL URANIUM MINING CORPORATION, a corporation, all organized and existing under the laws of the State of Utah, hereinafter collectively called the Constituent Companies;

W I T N E S S E T H :

WHEREAS, The Board of Directors of each of the Constituent Companies deems it advisable that the four corporations consolidate to form a new corporation (hereinafter referred to as the Consolidated Company) to be governed by the laws of the State of Utah, such consolidation to be effected pursuant to Section 16-5-1, Utah Code Annotated, 1953; and,

WHEREAS, Atomic Uranium Inc., has an authorized capital stock consisting of five million (5,000,000) shares, par value one (1¢) per share, of which three million (3,000,000) shares are issued and outstanding; and,

WHEREAS, Red Man Uranium Company has an authorized capital stock consisting of ten million (10,000,000) shares, par value two (2¢) per share, of which seven million sixty eight thousand (7,068,000) shares are issued and outstanding; and,

WHEREAS, Trans World Uranium Corp. has an authorized capital stock consisting of five million (5,000,000) shares, par value one (1¢) cent per share, of which one million two hundred twenty three thousand (1,223,000) shares are issued and outstanding; and,

WHEREAS, Utah-National Uranium Mining Corporation has an authorized capital stock consisting of three million (3,000,000) shares, par value one (1¢) cent per share, of which seven hundred twenty-two thousand eight hundred eighty (722,880) shares are issued and outstanding; and,

WHEREAS, the name of the Company will be STERLING URANIUM CORPORATION;

NOW, THEREFORE, in consideration of the premises and of the mutual agreements, promises, covenents and grants herein contained, the parties hereto, in accordance with the laws of the State of Utah, agree that ATOMIC URANIUM INC., RED MAN URANIUM COMPANY, TRANS WORLD URANIUM CORP., and UTAH-NATIONAL URANIUM MINING CORPORATION consolidate with each other to form STERLING URANIUM CORPORATION, a Utah corporation, and hereby agree upon and prescribe the terms and conditions of said consolidation and the manner of carrying the same into effect as follows:

PARAGRAPH I.

The Consolidated Company shall be a new corporation organized under the laws of the State of Utah and shall be governed by the laws of said State. Its corporate name shall be STERLING URANIUM CORPORATION.

The separate existences of ATOMIC URANIUM INC., RED MAN URANIUM COMPANY, TRANS WORLD URANIUM CORP., and UTAH-NATIONAL URANIUM MINING CORPORATION shall cease as of the effective time of this consolidation, except insofar as they may be continued by law or in order to carry out the purposes of this agreement of consolidation.

PARAGRAPH II.

The Certificate of Incorporation of the Consolidated Company, as a new corporation incorporated under the laws of the State of Utah, is as follows:

ARTICLE I.

NAME

The name of the corporation is:

STERLING URANIUM CORPORATION.

ARTICLE II.

PLACE OF BUSINESS

The principal place of business shall be at Salt Lake City, Utah, in which city it is organized, and the term for which the corporation is to exist is one hundred (100) years from the date of filing these Articles of Consolidation in the office of the Secretary of State of the State of Utah. The place of its general business shall be at Salt Lake City, Utah, but the corporation may conduct its business in other States, territories, and possessions of the United States, and in foreign countries, and may have one office or more than one office, and keep the books of the company outside of the State of Utah, except as may be otherwise provided by law.

ARTICLE III.

PURPOSE

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

a. To carry on the business of mining, milling, concentrating, converting, smelting, treating by any process now known or which may hereafter be developed, preparing for market, manufacturing, buying, selling, exchanging and otherwise producing and dealing in gold, silver, copper, lead, zinc, brass, iron, steel, uranium, vanadium, and all kinds of ores, metals and minerals and products and by-products thereof of every kind and description, and, generally, and without limitation as to amount, to buy

sell, locate, exchange, lease, acquire and deal in lands, mines and mineral rights and claims, transportation systems and improvements upon real estate of every kind, and to conduct all business appertaining thereto; to purchase, lease, or otherwise acquire and dispose of mining rights, timber rights, oil and gas rights, mines, mills, works, building, laboratories, plants, machinery, tools, jigs, and dies, and other properties whatsoever which this corporation may from time to time find to be for its advantage and purposes; to mine and market any mineral or other product that may be found in or on such lands, and to explore, work, exercise, develop, or turn to account the same; to own, construct, or purchase all water, water rights, and water works, including power sites, mill sites, dam sites, reservoir and reservoir sites, ditch, canals, and pipe lines, and all other property that may be necessary or convenient for the purpose or purposes of the company; to pledge, mortgage, deliver, trade, and hypothecate all kinds of real and personal property and to do all things necessary and usual by and with mining, as provided by law and the custom of mining.

b. To mine, dig for, or otherwise obtain from the earth, petroleum, rock or carbon oils, natural gas, other volatile mineral substances and salt; to manufacture, regine, prepare for market, buy, sell and transport the same in the crude or refined condition; to acquire for these purposes gas and oil lands, lease-holds and other interests in real estate.

c. To guarantee, purchase, hold, sell, assign, transfer, mortgage, pledge or otherwise dispose of the shares of the capital stock of, or any bonds, securities or evidence of indebtedness created by any other corporation or corporations of this State, or any other State or government, and, while owner of such stock to exercise all the rights, powers and privileges of ownership, including the right to vote thereon.

d. To borrow money and contract debts, when necessary for the transaction of its business, or for the exercise of its corporate rights, privileges, or franchises, or for any other

lawful purpose of its incorporation; to issue bonds, promissory notes, bills of exchange, debentures, and other obligations and evidences of indebtedness, payable at specified time or times, or payable upon the happening of a specified event or events, whether secured by mortgage, pledge, or otherwise, or unsecured, for money borrowed, or in payment for property purchased, or acquired, or for any other lawful objects.

e. To purchase, hold, sell and transfer shares of its own capital stock; provided, that the corporation shall not use its funds or property for the purchase of its own shares of capital stock when such use would cause any impairment of the capital of the corporation, except as is provided by the Statutes of Utah; and provided further, that shares of its own capital stock belonging to the corporation shall not be voted upon, directly or indirectly, nor counted as outstanding, for the purpose of any stockholders' quorum or vote.

f. To conduct business, have one or more offices, and hold, purchase, mortgage and convey real and personal property in this State, and in any of the several States, territories, possessions and dependencies of the United States, the District of Columbia, and any foreign countries.

g. To do all and everything necessary and proper for the accomplishment of the objects enumeraged in its certificate or articles of incorporation, or any amendment thereof, or necessary or incidental to the protection and benefit of the corporation, and, in general, to carry on any lawful business necessary or incidental to the attainment of the objects of the corporation, whether or not such business is similar in nature to the objects set forth in the certificate or articles of incorporation of this corporation, or any amendment thereof.

h. And in general, to do and perform such acts and things and transact such business not inconsistent with law in any part of the world, as the Board of Directors may deem for the advantage of the corporation.

ARTICLE IV.

CAPITAL STOCK

The limit of the capital stock of the corporation shall be Two Million Five Hundred Thousand ($2,500,000.00) Dollars, divided into Ten Million (10,000,000) shares of capital common stock of the par value of twenty-five (25¢) cents per share. The capital stock shall be non-assessable. The authorized but unissued stock may be sold or disposed of by the Board of Directors at such time and on such terms or conditions that the Board of Directors may deem expedient.

ARTICLE V.

MANAGEMENT

The affairs of the company shall be managed by a Board of Directors of not less than three (3) nor more than twenty-five (25) members, which number may be changed from time to time to not less than three (3) nor more than twenty-five (25) by resolution of the Board of Directors. Each director shall hold not less than one thousand (1,000) shares of the stock of the company in order to be eligible to hold office of director. The directors shall elect a President, one or more Vice-Presidents, a Secretary and a Treasurer for the company who need not be directors of the company and such other officers and agents as they deem necessary in the management and conduct of the company's business. Any one person may hold two or more offices at the same time, except the office of President and Vice-President. Any officer or director may resign by giving notice, in writing, to the Board of Directors, or he may be removed in the manner provided for by the laws of the State of Utah. One-fourth (1/4) of the members of the Board of Directors shall constitute a quorum for the transaction of business, which number, however, shall not be less than three (3). The Board of Directors shall have the general control and management of the property, business and affairs of the corporation but they may delegate certain duties in respect thereto to the various officers of the corporation or to the various committees of the Board of Directors in case they choose so to do. Meetings

of the Directors may be held at Salt Lake City, Utah, and at such other place within or without the State of Utah as the directors, by resolution or by-laws, may designate. The names of the officers and directors to serve until the first general election are as follows:

John A. Chambers	President and Director
Gordon L. Weggeland	Vice-President and Director
Charles E. Hicks	Vice-President and Director
Louis D. Tannenbaum	Secretary and Director
William B. Feinberg	Treasurer and Director

ARTICLE VI.

AMENDMENTS

These Articles of Consolidation may be amended in any respect at any stockholders' meeting called for that purpose. Notice of such meeting shall be given by mailing or delivering to each stockholder of record, at least ten (10) days before such meeting, directed to his or her address as shown by the company's books, a written or printed notice thereof. The stock represented at the meeting, whatever the amount, shall constitute a quorum, and the question of amendment shall be decided by a majority of the votes cast.

ARTICLE VII.

LIABILITY

The private property of the stockholders shall not be liable for the obligations of the corporation.

ARTICLE VIII.

PRE-EMPTIVE RIGHTS

No holder of any stock of this corporation shall be entitled as of right to purchase or subscribe for any part of any stock of the corporation authorized herein or of any additional stock of any class to be issued by reason of any increase of the authorized capital stock of the corporation, or of any bonds, certificates of indebtedness, debentures or other securities convertible into stock of the corporation, but any stock authorized herein or any such additional authorized issue of any stock or of

securities convertible into stock may be issued and disposed of by the Board of Directors to such persons, firms, corporations or associations, and upon such terms and conditions as the Board of Directors may in their discretion determine, without offering any ther of on the same terms or on any terms to the stockholders then of record or to any class of stockholders.

ARTICLE IX.

INDEMNITY

The corporation shall have power to indemnify any and all of its directors or officers or former directors or officers or any person who may have served at its request as a director or officer of another corporation in which it owns shares of capital stock or of which it is a creditor against expenses actually and necessarily incurred by them in connection with the defense of any action, suit or proceeding in which they, or any of them, are made parties, or a party, by reason of being or having been directors or officers or a director or officer of the corporation, or of such other corporation, except in relation to matters as to which any such director or officer or former director or officer or person shall be adjudged in such action, suit or proceeding to be liable for negligence or misconduct in the performance of duty. Such indemnification shall not be deemed exclusive of any other rights to which those indemnified may be entitled, under any by-law, agreement, vote of stockholders, or otherwise.

PARAGRAPH III.

Manner of converting shares of Constituent Companies into shares of Consolidated Company immediately upon the consolidation becoming effective shall be as follows:

a. Every eight and one-third (8 1/3) issued and outstanding shares of capital stock, par value one (1¢) cent per share, of Atomic Uranium Inc., shall be converted into one (1) share of capital stock, par value twenty-five (25¢) cents per share of Sterling Uranium Corporation.

b. Every ten (10) issued and outstanding shares of capital stock, par value two (2¢) per share, of Red Man Uranium

Company, shall be converted into one (1) share of capital stock, par value twenty-five (25¢) cents per share of Sterling Uranium Corporation.

c. Every one (1) issued and outstanding share of capital stock, par value one (1¢) cent per share, of Trans World Uranium Corp., shall be converted into one (1) share of capital stock, par value twenty-five (25¢) per share of Sterling Uranium Corporation.

d. Every one (1) issued and outstanding share of capital stock, par value one (1¢) cent per share, of Utah-National Uranium Mining Corporation, shall be converted into one (1) share of capital stock, par value twenty-five (25¢) per share of Sterling Uranium Corporation.

e. Holders of certificates for shares of capital stock in the corporations consisting the Constituent Companies shall cease to have any rights as stockholders of said corporations, and the holders thereof, upon presentation and surrender of their certificates to the Sterling Uranium Corporation or the transfer agent for the capital stock of Sterling Uranium Corporation, shall be entitled to receive in exchange for their certificates shares of capital stock of Sterling Uranium Corporation at the rates provided in sections "a", "b", "c", "d", and "e" of this Paragraph.

No certificates for fractional shares shall be issued, but in lieu thereof adjustments for fractions (amounts less than one (1) share) will be made by payments of sums of cash equal to the value based upon the price of three (3¢) cents per share for Atomic Uranium Inc., two and one-half (2½¢) cents per share for Red Man Uranium Company, twenty-five (25¢) cents per share for Trans World Uranium Corp., and twenty-five (25¢) cents per share for Utah-National Uranium Mining Corporation.

PARAGRAPH IV.

On or after the effective time of this merger and consolidation:

a. The property assets consisting of mining claims, machinery, leases and all properties, both real and personal, and

all and every interest of the Constituent Companies shall be the property of the Sterling Uranium Corporation, and the Constituent Companies shall forthwith cause such properties and assets to be transferred and conveyed to the Sterling Uranium Corporation by proper conveyance, vesting thereby all of the interests and assets of said Constituent Companies in Sterling Uranium Corporation.

b. After the Constituent Companies have conveyed to Sterling Uranium Corporation their assets, said Constituent Companies shall cease.

c. Sterling Uranium Corporation assumes all of the debts, liabilities and contracts of the Constituent Companies, and is to pay off and extinguish all debts and liabilities of every kind and nature of each of the Constituent Companies.

d. In the event that the stockholders of one of the Constituent Companies do not approve this agreement, but the agreement is approved by the other three Constituent Companies, then in that event this agreement shall bind only those companies approving the same.

This agreement shall be submitted to the stockholders of each of the corporations, parties hereto, as provided by law, and shall take effect and be the agreement of said corporations upon adoption of majority vote of each of said corporations as provided by the laws of the State of Utah, and binding upon the parties hereinafter provided.

GIVEN under our hands and seals the day and year first above written.

ATOMIC URANIUM INC.

By (s) C. E. Hicks
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

RED MAN URANIUM COMPANY

By (s) Gordon Weggeland
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

TRANS WORLD URANIUM CORP.

By (s) John A. Chambers
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

UTAH-NATIONAL URANIUM MINING
CORPORATION

By (s) Richard L. McGillis
President

(Corporate Seal)
ATTEST:

(s) William B. Feinberg
Secretary

-: C E R T I F I C A T E :-

STATE OF UTAH)
: ss.
County of Salt Lake)

We, CHARLES E. HICKS and LOUIS D. TANNENBAUM, President and Secretary respectively of Atomic Uranium Inc., and GORDON L. WEGGELAND and LOUIS D. TANNENBAUM, President and Secretary respectively of Red Man Uranium Company, and JOHN A.CHAMBERS and LOUIS D. TANNENBAUM, President and Secretary respectively of Trans World Uranium Corp., and RICHARD L. McGILLIS and WILLIAM B. FEINBERG, President and Secretary respectively of Utah-National Uranium Mining Corporation, all corporations created and orgenized under the laws of the State of Utah, do HEREBY CERTIFY:

That at a special meeting of the stockholders of said corporations regularly held, pursuant to notice given in accordance with the requirements of the laws of the State of Utah, at 345 State Street, Room 109, Salt Lake City, Utah, on the 15th day of February, 1955, at which meeting a majority of all of the outstanding stock of said corporations, to-wit: Atomic Uranium Inc., Red Man Uranium Company, Trans World Uranium Corp., and Utah-National Uranium Mining Corporation, was represented by the holders thereof in person and by proxy, unanimously voted, passed and adopted resolutions approving and ratifying the agreement of consolidation made between the corporations aforesaid by the Board of Directors on January 12, 1955.

GIVEN under our hands and the seals of said corporations this 18th day of February, 1955.

ATOMIC URANIUM INC.

By (s) Charles E. Hicks
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

RED MAN URANIUM COMPANY

By (s) Gordon L. Weggeland
President

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

TRANS WORLD URANIUM CORP.

By (s) John A. Chambers

(Corporate Seal)
ATTEST:

(s) Louis D. Tannenbaum
Secretary

UTAH-NATIONAL URANIUM MINING
CORPORATION

By (s) Richard L. McGillis

(Corporate Seal)
ATTEST:

(s) William B. Feinberg
Secretary

STATE OF UTAH)
: ss
County of Salt Lake)

C. E. HICKS, LOUIS D. TANNENBAUM, GORDON L. WEGGELAND, JOHN A. CHAMBERS, RICHARD L. McGILLIS and WILLIAM B. FEINBERG, being each first duly sworn, upon oath depose and say: That Charles E. Hicks and Louis D. Tannenbaum are respectively the President and Secretary of Atomic Uranium Inc., and that Gordon L. Weggeland and Louis D. Tannenbaum are respectively the President and Secretary of Red Man Uranium Company, and that John A. Chambers and Louis D. Tannenbaum are respectively the President and Secretary of Trans World Uranium Corp., and that Richard L. McGillis and William B. Feinberg are respectively the President and Secretary of Utah-National Uranium Mining Corporation, all corporations of the State of Utah; that they have read the foregoing Certificate, know the contents thereof, and that the facts therein stated and set forth are true.

(s) Charles E. Hicks
Charles E. Hicks

(s) John A. Chambers
John A. Chambers

(s) Louis D. Tannenbaum
Louis D. Tannenbaum

(s) Richard L. McGillis
Richard L. McGillis

(s) Gordon L. Weggeland
Gordon L. Weggeland

(s) William B. Feinberg
William B. Feinberg

Subscribed and sworn to before me this 28th day of February, 1955.

(s) Dawn Baker
Notary Public, Residing at
Salt Lake City, Utah

(Notary Seal)
My Commission Expires:

Sept. 23, 1958

700

FILE COPY
Surname:
[illegible]

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

MAY 24 1956

Mr. Gordon L. Weggeland, Vice President
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Re: Docket No. DMEA-4260 (Uranium)
North Markey Claim Group
San Juan County, Utah

Dear Mr. Weggeland:

Reference is made to our letter dated April 25, 1955, relating to the captioned docket.

Action on your application is pending receipt of the information requested in the above-mentioned letter. If you are no longer interested in the processing of this application, please advise us.

Sincerely yours,

F. L. Knouse, Acting Chief
Rare and Miscellaneous
Metals Division

FLKnouse/izm 5-24-56

cc to: Docket
Code 700
Mr. Knouse
Admr.'s Reading File
DMEA Field Team, Reg. III (2)
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

5-18-56

IN REPLY REFER TO:

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

RECEIVED
MAY 18 1956

May 18, 1956

Re: DMEA 4260
Sterling Uranium Corp.
North Markey Group
San Juan Co., Utah
$75,695.00 - Uranium

Memorandum

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

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

Subject: Review of application.

The representatives of the U. S. Geological Survey and the Bureau of Mines at Grand Junction consider the referenced property worthy of a field examination and so recommend.

The applicant requests assistance in exploring by further drilling a broad mineralized Shinarump-Moenkopi channel. Twelve holes have been drilled in the general vicinity of the projected channel. Four holes showed low-grade uranium mineralization over thicknesses of 0.5 to 3.5 feet. The 4 holes are from 175 to 400 feet 'back' from the rim in which the channel is said to show. An inferred southwesterly-trending channel, 150-160 feet wide, can be inscribed within unmineralized holes. The 4 mineralized holes would fall within the channel, also a long exposure of Shinarump outcrop showing "both low-grade copper and uranium mineralization."

The logs of the 4 holes in the supposed channel give little support to the channel theory, the highest radiometric reading being 0.10 in hole #21 at 64.5 feet. Hole 7 shows 0.08 at 49.5 feet, No. 8 0.05 at 54 and 54.5 feet, and No. 12 specks of chalcopyrite in core from 62-67.3 feet but no radioactivity.

In view of the production of mines in the vicinity, I concur with the recommendation of the Grand Junction office.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

RECEIVED
MAY 18 1956

May 18, 1956

Re: DMEA 4260
Sterling Uranium Corp.
North Marmy Group
San Juan Co., Utah
$75,695.00 - Uranium

Memorandum

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In view of the production of mines in the vicinity, I concur with the recommendation of the Grand Junction office.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-5/18/56
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641; J. O. Hosted, 3210

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

5-2-56

May 1, 1956

Memorandum

To: Ernest William Ellis, DMEA Docket
Uranium Commodity Committee

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

Subject: Application for Assistance, DMEA Docket 4260, Sterling Uranium Corporation, San Juan County, Utah

I have reviewed the attached application, DMEA Docket 4260, Sterling Uranium Corporation, San Juan County, Utah, dated April 9, 1956 and received in this office April 26, 1956. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

It is indicated in the application that a broad mineralized channel is exposed in a Shinarump outcrop on the Redhead claim. Twelve of 21 exploratory holes drilled were located near the outcrop and 4 of the holes were found to be mineralized (.06 - .11 percent U_3O_8) An outcrop of the Shinarump on the Susie claim contained copper-uranium mineralization, and one hole drilled on the claim cut 4 feet of mineralization (.03 - .07 percent U_3O_8.)

On the North Markey group of claims, it is reported that mineralized channels are also exposed in the Shinarump conglomerate.

The proposed program would allow for further exploratory drilling on the Redhead and Susie claims and some initial investigation of the North Markey group. Some rim-stripping in the vicinity of the hole drilled on the Susie claim is deemed advisable by the applicant.

We concur that the application should be referred to the Field Team for review and possible property examination, and that the Field Team consult with Mr. Ernest Gordon, Atomic Energy Commission, Grand Junction, Colorado.

RECEIVED
MAY 2 - 1956

John E Crawford
John E. Crawford

Attachment

4-26-56

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

RECEIVED
APR 2 6 1956

April 24, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA 4260 (Uranium) Sterling Uranium Corporation, (North Markey group), San Juan County, Utah

Enclosed are the original and three copies of a memorandum of review of the subject application by members of the Grand Junction office, DMEA.

They recommend that a field examination is in order, and we concur in this recommendation.

DMEA Field Team, Region III

By W. M. Traver
Executive Officer

Enclosures

MINERAL DEPOSITS
DMEA
RECEIVED
APR 20 1956

IN REPLY REFER TO:

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

RECEIVED
APR 20 1956
GEOLOGICAL SURVEY
DENVER, COLORADO

DMEA
Date Rec'd.
APR 23 1956
BUREAU OF MINES
Denver, Colorado

April 19, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

From: J. William Hasler
M. H. Salsbury

Subject: Sterling Uranium Corporation (Uranium), North Markey group, San Juan County, Utah.

The Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah, has applied to the Defense Minerals Exploration Administration for aid in exploring for uranium on the North Markey group of claims in Red Canyon area of the White Canyon Mining District, San Juan County, Utah. The application has been referred to this office for recommendation relative to the necessity of a field examination.

The Markey mine, which lies a few hundred feet east of the subject group of claims, has produced a total of 1,214 tons of uranium ore that averaged 0.20 percent U_3O_8.

The Blue Lizzard mine, which lies approximately one-fourth mile northeast and across Red Canyon from the Sterling's North Markey mine group, has produced 14,000 tons of 0.23 percent U_3O_8 and has an estimated reserve of 6,630 tons of 0.26 percent U_3O_8 and 0.70 percent copper. The North Markey group covers the center portion of a broad Shinarump outcrop which appears to have a northwesterly trend. Thickness of the unit ranges from 25 to 40 feet. Channel scour, filled with scours of conglomerate and wood fragments, are exposed in several places. Some copper mineralization is confined to the lower portion of the Shinarump sandstone.

It is recommended that the property be examined in the field because of its relation to producing properties and a rather favorable thickness of Shinarump conglomerate in the claim area. We will retain our copy of the application pending recommendations from Washington.

M H Salsbury
FW J. William Hasler,
U. S. Geological Survey

M H Salsbury
M. H. Salsbury
U. S. Bureau of Mines

JWH/mlr

MINERAL DEPOSITS
DMEA
IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 300
Grand Junction, Colorado

RECEIVED APR 20 1956
APR 26 1956 U. S. GEOLOGICAL SURVEY DENVER, COLORADO

April 19, 1956

DMEA Date Rec'd APR 23 1956
BUREAU OF MINES Denver, Colorado

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

From: J. William Hasler
M. H. Salsbury

Subject: Sterling Uranium Corporation (Uranium), North Markey group, San Juan County, Utah.

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The Blue Lizzard mine, which lies approximately one-fourth mile northeast and across Red Canyon from the Sterling's North Markey mine group, has produced 14,000 tons of 0.23 percent U_3O_8 and has an estimated reserve of 6,630 tons of 0.25 percent U_3O_8 and 0.40 percent copper. The North Markey group covers the center portion of a broad Shinarump outcrop which appears to have a northwesterly trend. Thickness of the unit ranges from 25 to 40 feet. Channel scour, filled with scours of conglomerate and wood fragments, are exposed in several places. Some copper mineralization is confined to the lower portion of the Shinarump sandstone.

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M. H. Salsbury
J. William Hasler,
U. S. Geological Survey

M. H. Salsbury
M. H. Salsbury
U. S. Bureau of Mines

JWH/mlr

4/24/56

RECEIVED
APR 26 1956

April 24, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA 4260 (Uranium) Sterling Uranium Corporation, (North Markey group), San Juan County, Utah

Enclosed are the original and three copies of a memorandum of review of the subject application by members of the Grand Junction office, DMEA.

They recommend that a field examination is in order, and we concur in this recommendation.

DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

MINERAL DEPOSITS
DMEA
RECEIVED
APR 20 1956
GEOLOGICAL SURVEY
DENVER, COLORADO

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 350
Grand Junction, Colorado

RECEIVED
APR 20 1956

April 19, 1956

DMEA
Date Rec'd.
APR 23 1956
BUREAU OF MINES
Denver, Colorado

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

From: J. William Hasler
M. H. Salsbury

Subject: Sterling Uranium Corporation (Uranium), North Markey group, San Juan County, Utah.

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J. William Hasler,
U. S. Geological Survey

M. H. Salsbury
U. S. Bureau of Mines

JWH/mlr

Surname copy

700

J L Krown
Nutterday

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

Mr. Gordon L. Weggeland, Vice President
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Re: Docket No. DMEA-4260 (Uranium)
North Markey Claim Group
San Juan County, Utah

Dear Mr. Weggeland:

This is with reference to your application for Government aid to explore the subject property.

In order that we may continue to process your application, please clarify and furnish the following:

1. The Applicant's name is listed in the application as the Sterling Uranium Corporation. Please advise the name of the State in which it was incorporated or organized.

2. It is not clear if the Applicant (Sterling Uranium Corporation) is the owner of the 28 unpatented claims listed in the application, since the attached "Summary Report of Initial Drilling Program North Markey Group of Claims" states these claims are owned by the Redman Uranium Company. If the Applicant is not the sole owner of these claims, but owns the Redman Uranium Company who own the claims, we will require evidence that they are controlled by the Applicant by furnishing us a copy of a lease (from Redman), option to purchase, assignment, or other instrument.

3. On a map or sketch, drawn to scale, of the claims listed in the application (a tie in to a section corner will be helpful), show the following: (a) location and extent of the mineralized exposures described in the application; (b) where samples were taken, with their chemical analyses, and certified copies of assay certificates; (c) drill holes shown on the map submitted with the application; and (d) locations of proposed drill holes and rim stripping. In addition, please furnish a narrative description of each mineralized exposure, i.e., length, width, and mineralization.

C

You should furnish four copies of the above information to enable us to continue processing your application with a minimum of delay.

Sincerely yours,

F. L. Knouse
Acting Chief
Rare and Miscellaneous
Metals Division

FLKnouse/gla
4-25-56
cc to: Admr.'s Reading File
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700, Mr. Knouse
DMEA Field Team, Region III (2)

April 18, 1956
Subject: DMEA-4260
Re: Exploration Assistance
North Markey Group

Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Gentlemen:

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

Your application has been assigned Docket Number DMEA-4260 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

April 18, 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 - 4260 Sterling Uranium Corporation

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

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

RECEIVED
APR 19 1956

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Application for DMEA Aid (Uranium), Sterling Uranium Corporation, (North Markey group), San Juan County, Utah

Enclosed are two copies of the subject application in the amount of $75,695.00. One copy of the application is being forwarded to the Grand Junction office, DMEA for their review and recommendations concerning the advisability of making a field examination, and one copy of the application is being retained in our file.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

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

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: J. W. Hasler

From: Field Team, Region III

Subject: Application for DMEA Aid (Uranium), Sterling Uranium Corporation, (North Markey group), San Juan County, Utah

Enclosed is the subject application in the amount of $75,695.00.

Will you please discuss this application with the Bureau of Mines representative in the Grand Junction office and the AEC and forward this office 9 copies of your joint recommendations.

DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

HMC:ab

cc: Sec. Op. Comm. (2)
Docket
Harshman
Shaw (2)
Chron.

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

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: J. W. Hasler

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DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

WMC:ab

cc: Sec. Op. Comm. (2)
Docket
Harshman
Shaw (2)
Chron.

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

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Mr. Louis D. Tannenbaum, Secretary
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

Re: Application for DMEA Aid, (Uranium), (North Markey group), San Juan County, Utah

Dear Mr. Tannenbaum:

This will acknowledge receipt of your letter dated April 12, 1956 and the four copies of the captioned application for DMEA aid.

Your application is being forwarded the Washington office, DMEA, for further processing and should additional information be necessary, you will be advised.

Very truly yours,

W. M. TRAVER

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

HMC:ab

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

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

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Mr. Louis D. Tannenbaum, Secretary
Sterling Uranium Corporation
522 Boston Building
Salt Lake City, Utah

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Very truly yours,

W. M. TRAVER

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

HMC:ab

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

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DMEA
Date Rec'd.
APR 13 1956

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

BUREAU OF MINES
Denver, Colorado

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. DMEA-4260
Metal or Mineral Uranium
Date Received 4-18-56
Estimated Cost $75,695.00
Participation (Government %) $75,745.00

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: STERLING URANIUM CORPORATION, 522 Boston Building, Salt Lake City, Utah

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract The North Markey Group covers parts of section 13, T. 37, S., R. 14 E and Section 18, T. 37 S., R. 15 E, S.L.B. & M, San Juan County, Utah

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

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

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

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

(*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.

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

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

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

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

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

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

(*c*) The work will start within 60 days and be completed within 9 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.

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

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

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

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

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

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

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

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

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

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

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

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

[X] Money and/or [X] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper. See alternate proposal. Paragraph 6-(a)

CERTIFICATION

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

Dated April 9, 1956

STERLING URANIUM CORPORATION
(Applicant)

By [signature]
Vice-President

ATTEST:
[signature]
Secretary

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

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

1. (a) Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah

(b) A Utah corporation.

(c) Gordon L. Weggeland, Vice-President, (Acting President)
39 Exchange Place
Salt Lake City, Utah

C. E. Hicks, Vice-President
130 South 13th East Street
Salt Lake City, Utah

3. (b) North Markey Group

(c) Owner

(e) None

(f)

Claim Name	Recording Information Date	Number	Book	Page
Harold	2-26-51	B-9076	R-2	454
Beef Loaf	2-26-51	B-9075	R-2	455
Cheese Omelette	2-26-51	B-9074	R-2	454
Mexican Girl	2-26-51	B-9073	R-2	454
Redhead	2-26-51	B-9058	R-2	449
Helen	2-26-51	B-9059	R-2	449
Judy	2-26-51	B-9060	R-2	450
Susie	2-26-51	B-9061	R-2	450
Butch	2-26-51	B-9062	R-2	450
Jean	2-26-51	B-9063	R-2	451
Joan	2-26-51	B-9064	R-2	451

(f) Continued
Page Two

Claim Name	Recording Information			
	Date	Number	Book	Page
North Shore	3-21-51	B-9705	R-2	634
North Shore No. One	3-21-51	B-9704	R-2	634
Northside	3-21-51	B-9703	R-2	633
Northside No. One	3-21-51	B-9702	R-2	633
Niagara	3-21-51	B-9701	R-2	633
Niagara No. One	3-21-51	B-9700	R-2	632
November Nights	3-21-51	B-9699	R-2	632
November Nights No. One	3-21-51	B-9698	R-2	632
Not Here	3-21-51	B-9697	R-2	631
Not Here No. One	3-21-51	B-9696	R-2	631
Not There	3-21-51	B-9695	R-2	631
Not There No. One	3-21-51	B-9694	R-2	630
Napoleon	3-21-51	B-9693	R-2	630
Napoleon No. One	3-21-51	B-9692	R-2	630
Nother	3-21-51	B-9691	R-2	629
Nother No. One	3-21-51	B-9690	R-2	629
Bill	2-26-51	B-9055	R-2	448

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RM. 322, BOLTON BLDG.
SALT LAKE CITY, UTAH

4a An initial exploratory drilling program was conducted by Redman Uranium Company, a wholly owned subsidiary of Sterling Uranium Corp. during June, July, and August, 1954. This program consisted of the drilling of 21 holes for a total footage of 1372 feet and of the construction of access roads and drill sites.

A summary report of this drilling program by E. H. Eakland, Jr., of Salt Lake City, Utah, as well as his report of the location map is included with this report.

No mine workings exist on the Sterling-Redman property. However, directly east of the claims underground workings of the former Anaconda Copper Company's Markey mine can be easily reached by access roads. These workings are completely accessable for underground inspection.

4b No past or present production from the Sterling-Markey group.

4c The oldest strata exposed in the vicinity of the Markey group is the Moenkopi formation of middle and lower Triassic Age. This is in turn overlain by the Shinarump conglomerate and Chinle formation of Triassic Age, and the Windgate sandstone of upper Triassic Age. The flat-lying Moenkopi and Shinarump formations are well exposed along the south rim of Red Canyon. The north boundary of the Markey claims roughly coincides with the outcrop of the Shinarump formation. South of the rim exposures of Shinarump conglomerate the major portion of the Markey claims are covered by incompetent shale and mudstone of the Chinle formation and Talus deposits consisting of Chinle and Windgate debris.

All major uranium deposits discovered to date in the White Canyon-Red Canyon area occur in channel type sediments within the Shinarump formation. These mineralized channels are tabular type deposits. The channels generally occur at the base of the Shinarump conglomerate and usually show some channel scour into the underlying Moenkopi formation.

Productive History of the area

Anaconda Copper Company formerly operated a small mine, known as the Markey mine, which is located several hundred feet east of the Sterling-North Markey claims. The nearest present production is from the Blue Lizard mine which is located approximately one quarter of a mile northeast and across Red Canyon from the Sterling-North Markey group.

STERLING URANIUM CORPORATION
RM. 522 BOSTON BLDG.
SALT LAKE CITY, UTAH

This mine is one of the major uranium producers of the White Canyon district. The Shinarump channel exposed in the Blue Lizard mine is from 450 to 500 feet wide and up to 30 feet thick. The trend of this channel is to the southwest directly toward the Ste ling Uranium Corp. claims.

Reasons for Proposed Exploration

Area 1: A broad mineralized channel is exposed in the Shinarump outcrop at the north end of the Redhead claim. This channel, which shows up to six feet of scour into the underlying Moenkopi formation contains both low-grade copper and uranium mineralization on the outcrop. Twelve exploratory holes have been drilled in the vicinity of this channel. Four of these holes showed uranium mineralization .06-.11% U_3O_8 in thickness ranging from 0.5 feet to 3.5 feet. All four mineralized holes were in a southwest trend from the channel's outcrop. As these four holes show appreciable mineralization and are located within a relatively short distance from the Shinarump outcrop, further exploratory drilling is warranted along this channel. An increase in mineralization would be expected toward the south and southwest where the Shinarump is overlain by thicker overburden.

Area 2: Hole No. 20 on the Susie claim in cores abundant carbonaceous material and a four foot zone containing moderate copper mineralization and low grade .03-.07% U_3O_8. The Shinarump outcrop on the Susie claim shows low grade copper and uranium mineralization. Only one hole was in this entire area. Because of the degree of mineralization encountered in this one hole and mineralization present in the outcrop, additional drilling should be done in this area.

Area 3: Complete testing of the mineralized Redhead claim channel to the south along trend established from initial drilling to be performed in program phase described under caption area No. 1.

Area 4: Drilling of central and south portion of the North Markey group. The occurrance of well-developed mineralized channels exposed along the Shinarump outcrop both within the Markey group and in the immediate vicinity of these claims indicate that the large untested area lying in the central and southern portions of the Markey group warrants exploratory drilling.

Area 5: In addition to the areas listed above which warrant exploratory drilling, a limited amount of rim stripping is also advisable. In the area of hole No. 20 rim stripping will help delineate the copper and uranium mineralization in the Shinarump outcrop which is only partially exposed. Near the east end of the Markey group rim stripping will aid in determining the west edge of the channel whose eastern edge is already exposed in the Anaconda-Markey mine.

4d The North Markey group may be reached from Blanding, Utah via maintained, improved gravel and dirt roads. The route is as follows: proceed south from Blanding, Utah, on highway 95 to Natural Bridges National Monument, a distance of approximately 50 miles, then turn to the southwest off highway 95 onto the Red Canyon road. Proceed on into Red Canyon for a distance of approximately 26 miles to the Blue Lizard Mine. The north Markey group lies directly to the southwest across Red Canyon from the Blue Lizard Mine.

The North Markey claims and drill sites can be reached by bulldozed access roads from the Red Canyon road.

The distance from the Markey claims to the A.E.C. White Canyon ore buying station is 55 miles. The distance to the A.E.C. Monticello Uranium Processing Mill is 105 miles. Mining supplies are available at Blanding, Utah approximately 80 miles from the claims. Residence for several of Sterling Uranium Corp.'s supervisory personnel is at the present time at Blanding, Utah.

4e Ample manpower, materials, supplies, and equipment for the proposed exploration program are available in the Blanding-Monticello, Utah area. Numerous drilling contractors are headquartered in this area. Drilling water can be obtained from the creek located in the bottom of Red Canyon.

5b The proposed work has been previously outlined in paragraph 4e, while the type of work, amount of footage to be drilled, and the approximate cost of the work in each area are tabulated in paragraph 6a through 6h. The individual areas in which work is proposed are shown on the accompanying map which shows the outline of the North Markey group of claims in relation to the Chinarump outcrop and previously drilled exploration holes. The proposed work is as follows:

Area 1,	approximately	10	exploration holes.
Area 2,	"	10	"
Area 3,	"	10	"
Area 4,	"	25	"
Area 5,	Rim stripping of the Chinarump outcrop in the area of hole No. 20 on the Susie claim, and rim stripping at the north end of the Harold and Bill claims.		

5d Sterling Uranium Corp. or its subsidiaries, has been engaged in the uranium industry since 1954. The company has mined and shipped from its Monument Valley Tract No. 2 North, Apache County, Arizona, through the period August, 1954, to December, 1955, 7,702.10 tons of Vanadium-uranium ore. January and

STERLING MINING CORPORATION
RM. 522, BOSTON BLDG.
SALT LAKE CITY, UTAH

February shipments of ore from Tract No. North totaled 1,140 tons. Since October, 1955, it has also shipped approximately 800 tons of Vanadium-uranium ore from its John Lee lease located near Red Mesa Trading Post, Apache County, Arizona.

During this period the company has also engaged in extensive exploratory drilling programs on the following properties: Monument Valley Tract No. 1 North, Jack Rinhorn Tracts No. 2 and 3, Apache County, Arizona, and John Lee claims, Apache County, Arizona. A preliminary drilling program has also been undertaken on the Sterling-Hoeman North Monkey group in San Juan County, Utah.

Supervisory personnel on the proposed operation would be:
Robert M. Anderson, full time geologist for the past year. Prior to employment with Sterling he was an independent consulting geologist in petroleum and exploration for three years, with offices in Great Falls and Cut Bank, Montana.

Leland Shumway, mining superintendent for Sterling, who has been actively engaged in Vanadium-uranium mining on the Colorado plateau since 1935.

ESTIMATE OF COSTS

6a Independent Contracts

Footage Drilled

	Footage	Cost	
Area 1 (mineralized area of holes 7,8,12,21) 10 holes, average depth 200' (average price $3.00/ft)	2,000'	$ 6,000.	
Area 2 (area, hole 20) 10 holes, average depth 150'	1,500'	4,500.	
Area 3 (complete testing of Red-head claim channel) 10 holes, average depth 300' (average price $3.25/ft)	3,000'	9,750.	
Area 4 (drilling on central & south portion of claims) 25 holes, average depth 400' (average price $3.50/ft)	10,000'	35,000.	
TOTAL	16,500'	$ 55,250.	$55,250.00

Bulldozer Work: Figures based on D-6 Cat at $12.00/hr.

Area 1	125 hours	$ 1,500.	
Area 2	90 hours	1,080.	
Area 3	125 hours	1,500.	
Area 4	300 hours	3,600.	
Area 5	100 hours	1,200.	
TOTAL	740 hours	$ 8,880.	$ 8,880.00

These figures are based on D-6 Caterpillar bulldozer. If D-8 is contracted, price would range from $16.00 to $18.00 per hour, with number of work hours reduced proportional to increase in size of dozer. Total price of job would be approximately the same.

Alternate Proposal

Sterling Uranium Corporation owns and is currently using in its Monument Valley Tract No. 1 North open pit mining operation one new D-6 Caterpillar angle dozer, and one used D-8 U-dozer. If, at the time of execution

of proposed exploration project, one of these dozers can be spared from the Monument Valley operation its use, in place of contract equipment, will be a saving in money to the project. It would also save some probably standby time costs not figured in the contract schedule.

It is desired by the applicant that provision be made in the DMEA contract allowing substitution of one of Sterling's bulldozers for contract dozer if one of the two listed is free for use.

Cost of D-6 bulldozer if supplied by operator

D-6 caterpillar angle dozer, 5 months old value, $16,000.		
Use: allowance, 3 months at $1500/month		$ 4,500.
Operator: 246 hrs/mo. $2.50/hr; time and a half for overtime; $722.50/mo.	3 months	2,167.50
Diesel: 3500 gallons		750.
Oil and grease:		250.
Transportation on & off project		400.
TOTAL		$ 8,067.50

6b Labor, Supervision, Consultants

One geologic consultant 3 months at $1500/month (if company geologist available for use on this project, cost would be less than this figure, but would include transportation, and living expenses.)	$ 4,500.
One driller to operate jack hammer during period of rim stripping. 2 months at $500/month	1,000.
Provision for portion of Sterling's mining superintendent's salary if his services are necessary on project, especially during rim stripping, of if no geologist is available for part of this project. Allowable up to $600/mo for up to 2 months.	1,200.
Secretarial work in relation to this project including final reports and reproductions	200.
	$ 6,900.00 $6,900.00

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6c Rim Stripping

Operating materials and supplies

3 ton blasting powder		$ 1,200.	
1000 electric caps		200.	
100 hard faced bits		155.	
Gasoline for pickup truck: drilling use, water hauling, supplies etc., and light plant consumption, 1000gals.			
Gas for 105 compressor, 400 "		420.	
Drill steel			
2 starters	$ 8.00		
2 4' steel	16.00		
2 6' steel	48.00		
2 8' steel	32.00		
2 10' steel	40.00		
2 12' steel	48.00		
Total	$192.00	192.	
Jack hapmer oil, 15 gallons		22.	
Compressor oil		25.	
Grease-compressor, etc.		5.	
Butane (including rental of 250 gal tank)		55.	
Delivery service on gasoline tank		30.	
TOTAL		$ 2,304.00	$ 2,304.00

6d Operating Equipment

To be purchased		
one light plant, 1500 watt	$ 375.	
200' air hose drilling line	216.	
Furnished by Operator		
one 105 compressor (2 months) suggested use allowance	200.	
one Jack Hammer (2 months) suggested use allowance	150.	
one 300 gal. or 500 gal. water tank	0.	
one pickup truck, 3 months at $150/mo	450.	
TOTAL	$ 1,391.00	$ 1,391.00

Note: See Independent contracts-bulldozer work. If one of Sterling Uranium Corp.'s bulldozers is used, suggested use allowance on either dozer, is $1500/mo, plus operating costs as listed.

6f Road improvement or repair of existing roads covered under bulldozer contract.

6f Rehabilitation and Repairs

One bunk and cook house, with household equipment

owned by Sterling to be moved on to job. House is on panels at Monument Valley mine. Cost of erection and repair after move $ 125.

Cost of possible additional utilities, stove, sink, pipe connections	75.
Trucking on to project (155 miles)	155.
Cost of dismantling into panels or shoring up for move	50.
Trucking off project	155.
Building of outhouse and shower, including transportation of materials	150.
TOTAL	$ ~~660.00~~ 710 $ ~~660.00~~ 710.00

6g Detailed list of cost of repairs and maintenance of operating equipment impractical before operation. Therefore, suggested use-rental of: 105 compressor and Jackhammer to include all necessary repairs. Cost of maintenance such as grease and oil already listed under 6e.

If operator's bulldozer is used in place of contractor dozer, suggest use-rental to include all necessary repairs.

6h Contingencies

Transportation on and off job of 105 compressor, Jackhammer, water tank to be furnished by operator at standard trucking rate of $1.00 per mile.

One way

Transportation on to project from Monument Valley Erect No. 1 North, Apache County, Arizona, 155 miles. $ 155.

Transportation off project 155.

TOTAL	$ 310.00 $ 310.00

ESTIMATED TOTAL COST OF PROJECT $ 75,~~635~~ 745.00

If a portion of this drilling program indicates that further exploration could be best accomplished by underground drifting, it is the desire of the operator to be allowed to allot the remaining funds available under this contract to such underground drifting at a price of $30 per foot of drift.

Robert M. Anderson
ROBERT M. ANDERSON
GEOLOGIST

SUMMARY REPORT OF
INITIAL DRILLING PROGRAM
NORTH MARKEY GROUP OF CLAIMS

REDMAN URANIUM COMPANY

RECEIVED
APR 13 1955

Red Canyon Area
White Canyon District

San Juan County
Utah

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INTRODUCTION

During June, July and August, 1954, a preliminary drilling campaign was undertaken on the North Markey group of claims belonging to the Redman Uranium Company of Sale Lake City, Utah. The drilling and necessary road and drill site construction was contracted by Russell Andersen of Aztec, New Mexico, on a cost-plus basis. Development and supervision of the drilling program was the responsibility of E. H. Eakland, Jr., consulting geologist of Salt Lake City, Utah.

This drilling program was designed to explore a broad, flat mineralized "channel" exposed at the base of the Shinarump sandstone on the outcrop in the reentrant on the Redhead claim. This channel has a relief of about 10 feet, has an irregular width of 200 feet plus and contains low-grade copper and uranium mineralization on the outcrop. The thickness of the Shinarump sandstone is in excess of thirty feet, having a probably maximum of forty-five feet.

WORK ACCOMPLISHED

During the period from June 29 through August 6, 1954, approximately 9,000 feet of new roads and drill site locations were completed. In addition, the contractor's bull-dozer spent four days working on existing roads and two days excavating and repairing storage pits for drill water in the bottom of Red Canyon.

During the period from July 19 through August 6, 1954, a total of 1372 feet of new hole was drilled, divided into approximately 300 feet of coring and 1072 feet of uncored drill hole. The footage was divided into twenty-one individual holes with an average depth of 65 feet. Actual hole depth varied from 42 feet to 112 feet.

Costs covering this initial phase of the drilling were as follows:

ITEM	COST	COST/FT.
Supervision		
Drilling - Cash		
Drilling - Stock		
Road Construction		

RESULTS OF DRILLING

The drilling, as shown on the accompanying map (1'' = 200') was concentrated in the area of the Redhead and Mexican Girl claims in an attempt to find uranium mineralization of ore grade in a broad, flat channel that trends approximately N 20° W. Of the 20 holes drilled in the channel area, four holes (#'s 7, 8, 12 and 21) showed appreciable mineralization (.08-.11% U_3O_8 in thicknesses ranging from 0.5 feet to 3.5 feet) but the mineralization indicated by the Gieger probe and exposed in the drill core is neither sufficiently thick nor high-grade to represent ore.

On the Susie claim, hole #20 was drilled to test the continuity of low-grade copper and uranium mineralization exposed on the outcrop. The core showed abundant carbonaceous material and a four-foot zone containing moderate copper mineralization and low-grade (.03-.07%) uranium.

CONCLUSIONS

Additional drilling on the North Markey group of claims is recommended. Of the original 200 feet of drilling covered by the agreement

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with Russell Andersen, 700 feet of drilling has not yet been used.

The drilling should be designed to (1) further explore the mineralized area of Holes 7, 8, 12 and 21, to (2) explore the area of Hole 20 for continuation of the known mineralization and to (3) complete testing the mineralized "Redhead" channel along the trend to the southeast and across the width to the southwest.

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REDMAN URANIUM COMPANY

NORTH MARKEY GROUP OF CLAIMS
DRILL HOLE RECORDS

Hole No. 1

Date drilled: 7-19-54 Date probed: 7-27-54
Depth drilled: 42' Depth probed: 40'

Shinarump-Moencopi contact at 38'
Probe results--1.0' very weak mineralization at 35-36'

Depth	Radiometric Reading
0-30'	0.00-0.01
31'	0.01
32	0.02
33	0.01
34	0.01
35	0.03
36	0.02
37	0.01
38	0.00
39	0.00
40	0.00

Hole No. 2

Date drilled: 7-19-54 Date probed: 7-24-54
Depth drilled: 42' Depth probed: 33'

This hole was drilled during the period when the counter and probe were giving considerable trouble due to a leaking probe. By the time the equipment was operating satisfactorily, the lower portion of the hole had collapsed and Hole No. 2A was drilled at approximately the same location.

Hole No. 2A

Date drilled: 7-26-54 Date probed: 7-27-54
Depth drilled: 44' Depth probed: 44'

Shinarump-Moencopi contact at 35'
Probe results--Barren hole

Depth	Radiometric Reading	Depth	Radiometric Reading
0-20'	0.00-0.01	32'	0.01
21'	0.00	33	0.01
22	0.01	34	0.01
23	0.01	35	0.00
24	0.03 ---	36	0.00
25	0.01	37	0.01
26	0.00	38	0.00
27	0.01	39	0.00
28	0.01	40	0.00
29	0.01	41	0.00
30	0.00	42	0.00
31	0.00	43	0.00
		44	0.00

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Hole No. 3

Date drilled: 7-20-54 Date probed: -----
Depth drilled: 62' Depth probed: -----

This hole had to be abondoned for the same reason as that given for Hole No. 2. Hole No. 3A was drilled at the same locality.

Hole No. 3A

Date drilled: 7-27-54 Date probed: 7-27-54
Depth drilled: 77' Depth probed: 75'
Feet cored: 35' (42'-77')

Shinarump-Moencopi contact at 56'
Probe results: Barren hole.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00-0.01	61-75'	0.00
51'	0.00		
52	0.01		
53	0.01		
54	0.00		
55	0.01		
56	0.02 ---		
57	0.01		
58	0.00		
59	0.01		
60	0.00		

Lower 14' of Shinarump is white, glassy, medium to coarse-grained ss, weakly stained by iron oxide.

Hole No. 4

Date drilled: 7-24-54 Date probed: 7-27-54
Depth drilled: 88' Depth probed: 88'
Feet cored: Attempted to core from 62-77', but no recovery
77-88' (all Moencopi mudstone)

Probe results: Glen Powell (driller) probed this hole and reported no mineralization.

Hole No. 5

Date drilled: 7-26-54 Date probed: 7-26-54
Depth drilled: 72' Depth probed: 72'
Feet cored: 40' (32'-72') Recovery: 38'

Shinarump-Moencopi contact at 66.5'
Probe results: Very weak mineralization at contact zone.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-33'	0.00-0.01	63'	0.01
34'	0.01	64	0.02
35	0.00	65	0.02
36	0.01	66	0.03
37	0.03	67	0.02
38	0.02	68	0.01
39	0.02	69	0.00
40	0.01	70-72'	0.00
41-62	0.00-0.01		

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Hole No. 5 (con.)

Core results: 27.5' core (32-60') of reddish, fine-grained ss with thin shale partings. @ 38', 1-foot zone with thin seams of radioactive carbonaceous material, veinlets of gypsum and micaceous partings.
5' of whitish ss and fine conglomerate from 60-65'. Weak iron oxides in disseminated spots.
5.5' of reddish, Moencopi mudstones with 8'' zone just below contact which is bleached to light gray-green.

Hole No. 6

Date drilled: 7-26-54
Depth drilled: 52'
Feet cored: 30' (22'-52')

Date probed: 7-26-54
Depth probed: 52'

Shinarump-Moencopi contact at 50'
Probe results: No radioactivity in hole. Core shows copper stains in lower 6''.

Hole No. 7

Date drilled: 7-28-54
Depth drilled: 70'
Feet cored: 28' (42-70')

Date probed: 7-28-54
Depth probed: 68'

Hole collared in shale, in sandstone from 28' to 63'.

Shinarump-Moencopi contact at 63'.
Probe results: Trace mineralization at contact (63') and weak radioactivity from 48-51'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-45'	0.00-0.01	56'	0.01
46'	0.00	57	0.00
47	0.01	58	0.00
48	0.02	59	0.01
49	0.05	60	0.00
49.5	0.08 ---	61	0.01
50	0.03	62	0.01
51	0.02	63	0.02
52	0.01	64	0.00
53	0.00	65	0.00
54	0.01	66	0.00
55	0.01	67-68	0.00

Core results: Disseminated specks of chalcopyrite and pyrite from 50-63'.
49-50': Diss. chalcopyrite and radioactive carbonaceous seams with thin parting of micaceous ss.

Hole No. 8

Date drilled:
Depth drilled: 80'
Feet cored: 18' (62-80')

Date probed: 7-31-54
Depth probed: 72'

Hole collared in shale, in sandstone from 32' to 77'.

Shinarump-Moencopi contact at 77'.
Probe results: Zones of weak radioactivity from 53-63'.
Core results: Core shows thin seams of carbonaceous material from 53-63'. At 65', 2'' with carbon, weak copper stain and cobalt stain.

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Hole No. 8 (con.)

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00-0.01	62'	0.01
51'	0.01	62.5	0.02
52	0.01	63	0.01
52.5	0.02	64	0.01
53	0.04	64.5	0.01
53.5	0.03	65	0.01
54	0.05	65.5	0.01
54.5	0.05	66	0.01
55	0.02	66.5	0.02
55.5	0.02	67	0.01
56	0.03	68	0.00
56.5	0.04	69-72'	0.00
57	0.05		
57.5	0.04		
58	0.02		
58.5	0.04		
59	0.04		
59.5	0.02		
60	0.01		
61	0.02		
61.5	0.03		

Hole No. 9

Date drilled: Date probed: -----
Depth drilled: 82' Depth probed: -----
Feet cored: 20' (62-82')
Hole collared in shale, in sandstone from 32' on

Shinarump-Moencopi contact at -----

Probe results: Hole not probed as upper part collapsed on last run. Good core recovery. No mineralization in core.

Hole No. 10

Date drilled: Date probed: -----
Depth drilled: 60' Depth probed: -----
Feet cored: 18' (42-60')
Hole collared in shaly sandstone, in sandstone from 30-58'.
Shinarump-Moencopi contact at 58'.
Probe results: Hole not probed as it caved. Good core recovery, but no mineralization in core. Thin seams of carbonaceous material from 47-49'.

Hole No. 11

Date drilled: 7-31-54 Date probed: 7-31-54
Depth drilled: 88' Depth probed: 85'
Feet cored: 6' (82-88' --all Moencopi)
Hole collared in shale, in sandstone from 52-82'.
Shinarump-Moencopi contact at 82'.
Probe results: No radioactivity.

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Hole No. 12

Date drilled: 7-31-54 Date probed: 7-31-54
Depth drilled: 79' Depth probed: 79'
Feet cored:
Shinarump-Moencopi contact at 67.3'
Probe results: No radioactivity
Core results: Diss. specks chalcopyrite in core from 62-67.3'.

Hole No. 13

Date drilled: 8-1-54 Date probed: -----
Depth drilled: 52' Depth probed: -----
Feet cored: None

Lost circulation while still in Chinlee shales and abandoned hole.

Hole No. 14

Date drilled: 8-1-54 Date probed: 8-4-54
Depth drilled: 47' Depth probed: 47'
Feet cored:
Shinarump-Moencopi contact at 46'
Probe results: Trace radioactivity at 34.5'
Core results: Specks CuO_x from 44' to 46', in lower 6'' of white ss.
Lt. brown ss above 44'.
Conglomeratic ss with carbon++, pyrite+, iron oxide+ at 34-35'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-30'	0.00-0.01	38'	0.01
30'	0.00	39	0.01
31	0.01	40	0.02
32	0.01	41	0.02
33	0.01	42	0.01
34	0.02	43	0.01
34.5	0.03	44	0.01
35	0.01	45	0.00
36	0.01	46	0.00
37	0.00	47	0.00

Hole No. 15

Date drilled: 8/3-4/56 Date probed: 8-4-56
Depth drilled: 52' Depth probed: 32'
Feet cored: 22' (30-52')
Shinarump-Moencopi contact at 50'.
Probe results: No radioactivity from 0 to 32'. Hole caved below that point, but good core recovery.
Core results: No appreciable radioactivity. From 30-48.5', fine-grained to medium-grained sandstone with weak iron oxide. 48.5-49.5', silty sandstone with thin, carbonaceous laminae, muscovite and CuO_x+. 49.5-50.5', white, glassy sandstone with muscovite+.

Hole No. 16

Date drilled: 8-4-56 Date probed: 8-4-56
Depth drilled: 44' Depth probed: 44'
Feet cored: 10' (34-44')
Shinarump-Moencopi contact at 43'.
Probe results: No appreciable radioactivity
Core results: Bottom 1.5' of Trs has chalcopyrite, copper oxides+, FeO_x+.
Trace of copper in lower 4'.

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Hole No. 16 (con.)

Depth	Radiometric Reading	Depth	Radiometric Reading
0-29'	0.00-0.01		
30	0.02		
31	0.02		
32	0.01		
33	0.01		
34	0.02		
35-45'	0.00-0.01		

Hole No. 17

Date drilled: 8-4-56 Date probed: 8-4-56
Depth drilled: 112' Depth probed: 100'
Feet cored: 13' (99-112')
Probe results: Weak radioactivity at 99-100'. Hole caved below this point.
Core results: At 99', thin carbonaceous seams with iron oxides.
From 99' to 110', wkly disseminated chalcopyrite.
At 106.5', 2'' with chalcopyrite//, carbon./, muscovite/.
Shinarump-Moenscopi contact at 111'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00	94'	0.00
75-50'	0.00-0.02	95	0.01
80-75	0.00-0.02	96	0.01
80-87	0.00	97	0.02
88	0.01	98	0.02
89	0.00	99	0.02-0.05
90	0.00	100	0.03
91	0.01		
92	0.01		
93	0.03		

Core is gray to reddish gray sandstone, white in lower one foot.

Hole No. 18

Date Drilled 8-5-54 Date probed: 8-5-54
Depth drilled: 63' Depth probed: 63'
Feet cored: 19' (44-63')
Shinarump-Moenscopi contact at 59'.
Probe results: No appreciable radioactivity.
Core results: From 58-58.5', 6'' with strong copper oxides, carbon, and gypsum. Specks copper oxides, iron oxides from 48-58.5'.

Depth	Radiometric Reading
0-37'	0.00-0.01
38'	0.02
39	0.04
40	0.02
41	0.02
42	0.01
43	0.02
44-48	0.00-0.01
49-50	0.02
	0.00-0.01

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Hole No. 19

Date drilled: 8-5-54 Date probed: 8-6-54
Depth Drilled: 55' Depth probed: 34'
Feet cored: 9' (46-55')
Probe results: Radiometric readings from 0-34' ran 0.00 to 0.01. Below 34', the hole had caved.
Core results: Shinarump-Moenkopi contact at 50'. Lower 4' of Trs was lt. brown, porous, conglomeratic sandstone with weak copper oxide from 46' to 49.5'.

Hole No. 20

Date drilled: 8-5-54 Date probed: 8-6-54
Depth drilled: 50' Depth probed: 50'
Feet cored: None
Probe results: Weak radioactivity from 40 to 43'.
Shinarump-Moenkopi contact at 48.5'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-35'	0.00-0.01	42.5'	0.07
36'	0.01	43'	0.03
37	0.02	44	0.01
38	0.01	45	0.01
39	0.02	46	0.02
40	0.01	47	0.02
40.5	0.06	48	0.01
41	0.05	49	0.00
42	0.05	50	0.01

Hole No. 20A

Date drilled: 8-6-54 Date probed: 8-6-54
Depth drilled: 50' Depth probed: 50'
Feet cored: 9' (41-50')
Probe results: Weak radioactivity from 49 to 44'.
Core results: 41-46', fine-grained, light gray ss.
46-48', conglomeratic ss with iron oxides/, carbon/.
Shinarump-Moenkopi contact at 49'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-37'	0.00	43'	0.07
38'	0.01	43.5	0.03
39	0.01	44	0.00
39.5	0.02	45	0.00
40	0.03	46	0.01
40.5	0.05	47	0.01
41	0.04	48	0.01
41.5	0.04	49	0.01
42	0.04	50	0.00
42.5	0.04		

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Hole No. 21

Date drilled: 8-6-54 Date probed: 8-6-54
Depth drilled: 84' Depth probed: 84'
Feet cored:
Shinarump-Moencopi contact at:
Probe results: Moderate radioactivity at 64.5'.
Core results. White, medium-grained ss with scattered specks chalcopyrite. Occasional, thin seams of carbonaceous material and muscovite.

Depth	Radiometric Reading
0-63'	0.00-0.01
64	0.04
64.5	0.10
65	0.02
66	0.01
67-84'	0.00

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REPORT ON THE

NORTH MARKEY GROUP
RED CANYON DISTRICT

RECEIVED
APR 18 1956

San Juan County
Utah

April, 1954
Elmer Strand

Introduction

The North Markey Group of twenty-eight (28) claims, in the Red Canyon District of San Juan County, southeastern Utah, were originally located in 1951 as part of a much larger group of claims covering most of the Shinarump formation outcrops in the area. The claims were assigned to the Anaconda Copper Mining Company which undertook a very limited exploration program in 1951 and 1952, looking for a continuation or a repitition of the copper-uranium orebodies then being developed at The Happy Jack, Fry 4 and Posey mines. The exploration work was termintaed in 1952. In 1953, Anaconda shipped copper-uranium ore from the Markey Mine, which adjoins the southeast end of the North Markey Group, to the A.E.C. mill at Monticello, Utah.

Underground development at the Happy Jack Mine, fifteen miles north of the North Markey Group, has proved the existance of the largest known, copper-uranium orebody on the Colorado Plateau. Exploration drilling by the U.S. Atomic Energy Commission and private companies has shown the presence of important, but undeveloped, orebodies in the area extending from the Fry 4 Mine to the southwesterly into Red Canyon. This area lies eight to ten miles east of the North Markey Group. Exploratory drilling and underground development at the Blue Lizzard Mine, just across Red Canyon from the North Markey Group, and at the Posey Mine, one mile to the southeast, indicates commercial reserves at both properties.

The Atomic Energy Commission has a geologicand drill camp at the Markey Mine, servicing two core drills working on the property of the Posey Mine. This camp is under the direct supervision of the main A.E.C. camp in Fry Canyon.

LOCATION

As shown on the accompanying map of the Red Canyon District, the North Markey Group lies in an unsurveyed area on the southeast side of Red Canyon, approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. Projection of existing survey lines into the area indicates the North Markey Group covers parts of section 13, T. 37, S., R. 14 E and Section 18, T. 37 S., R. 15 E, S.L.B. & M.

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The Red Canyon District lies in west-central San Juan Couhhy, in the southeast corner of Utah, approximately four hundred miles, by road, southeast of Salt Lake City. Blanding and Monticello, the nearest sources of supply, are 70 and 90 miles, respectively, by road, east of Red Canyon.

ACCESSIBILITY

The area of the North Markey Group can be reached, over good, improved dirt roads, from Blanding, Utah, the end of the paved portion of State Highway 47. About three miles south of Blanding, on Highway 47, a new road runs westerly across Cottonwood Wash and Comb Wash to State Highway 95, a distance of thirty-eight miles from Blanding. Highway 95 is the old road from Blanding to the White Canyon-Red Canyon area via Elk Ridge, a slower, longer road which is frequently impassable during the winter months.

Eight miles west of the junction of the Comb Wash road and Highway 95 and approximately one-half mile beyond the entrance to the Natural Bridges National Monument, an improved dirt road, marked"Skelly Oil Company", turns southwesterly. Highway 95 continues northwesterly into White Canyon, Fry Canyon and on to the village of Hite, on the Colorado River.

Eleven miles beyond the junction at the Natural Bridges, the Skelly road forks, the left-hand fork running southwesterly to Clay Hills Divide and the right-hand fork winding northwesterly into Red Canyon. The Posey and Blue Lizzard mines and the North Markey Group are approximately fourteen miles beyond this junction, on the right-hand fork.

Except for brief periods during summer rainstorms, the entire road is passable throughout the year. Driving time from Blanding to Red Canyon is about two and one-half hours.

POWER, WATER,TIMBER, ETC.

Commercial power is not available beyond Blanding. Diesel-generated power is universally used at camps in both Red and White Canyons.

Timber and mine supplies are hauled from Monticello, Utah, by ore trucks on their return trips, for $8.00-$10.00 per ton. During the summer months, unfinished lumber is available at Blanding and at the sawmill on Elk Ridge.

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Water is not plentiful in the Red Canyon drainage. Warm Springs, shown on the district map, flows 50-100 G.P.M. throughout the year. In 1951, a road was completed from the Posey Mine to Warm Springs and the mouth of Red Canyon. This road is now impassable beyond the North Markey Group because of boulder accumulations along the canyon floor, but could be easily repaired. The drills now being operated in the Red Canyon area obtain water from shallow, bed-rock sumps, but this source cannot be relied upon during the hot summer months. Domestic water, for camp and culinary use, is usually hauled in from Blanding by supply or ore trucks. Ample water, of good quality, could be developed with a 200 to 300 foot well in the bottom of Red Canyon. This well would tap the Cedar Mesa sandstone, a known aquifer producing water for the A.E.C. camp in Fry Canyon.

Transportation of supplies and ore can be contracted with any of the numerous local firms or individuals operating in the area. The ore haul is normally contracted for at $ 0.08 per ton-mile, $ 0.06 of which is repaid to the shipper by the Atomic Energy Commission as an ore haulage allowance.

At an elevation of 4500 feet, the area of the North Markey Group has relatively mild winters, but hot, dry summers punctuated by torrential rainstorms. Snow is uncommon, except in generally severe winters. Summer temperatures frequently rise above 100'.

PROPERTY AND OWNERSHIP

The twenty-eight, unpatented lode mining claims comprising the North Marky Group are shown on the accompanying claim map. The claims were surveyed by compass-pace methods, showing the total area covered to be slightly more than 370 acres.

The claims wre located in February, 1951 by E.H. Bakland, Jr,; J.P. Rigg, Jr.; D.H. Wegner and O.L. Jahnke. The claims were conveyed, in 1951, by an unrecorded deed to the Anaconda Copper Mining Company which has performed the necessary annual assessment work for the year 1952-1953. Proof of Annual Labor for 1952-1953 was recorded at Monticello, the coutny seat for San Juan County. By a quitclaim deed, executed in April, 1954 title was transfered from the Anaconda Copper Mining Company to E.H. Bakland, Jr., of 2254 South Twentieth East Street, Salt Lake City, Utah

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GENERAL GEOLOGY

The Red Canyon District covers an area of Triassic and Jurassic sediments with a gentle, monoclinal dip to the southwest. The nearest igneous rocks are the intrusive stocks of the Henry Mountains, approximately fifteen miles to the northwest, and of the Abajo Mountains, some forty-five miles to the east.

Structurally the area is not complex. A north-trending, west-dipping fault with a normal displacement of about thirty feet crosses Red Canyon about two miles west of the North Markey Group. A conjugate system of joint cracks, one set striking northwest and the other northeast, with little or no displacement, is persistent throughout the area. No direct connection has been established between the copper-uranium mineralization and the structural features in the Red Canyon area.

The oldest sediments exposed in the Red Canyon drainage are the white, cross-bedded, calcareous, fine to coarse-grained sandstones of the Cedar Mesa member of the Permian Cutler Formation. Exposures are limited to a few isolated spots in the bottom of Red Canyon. No appreciable thickness is exposed; but, from exposures in White Canyon, the Cedar Mesa sandstone is known to be several hundred feet thick. The writer is unaware of any mineralized outcrops in the Cedar Mesa sandstone in the Red Canyon-White Canyon area, but, further north in the Indian Creek drainage, uranium mineralization has been found in the White Rim sandstone, the stratigraphic equivalent of the Cedar Mesa sandstone.

Overlying the Cedar Mesa sandstone and, in most places, forming the floor and lower walls of Red Canyon is the basal Triassic Moenkopi Formation, a thick (150-200 feet) unit of alternating, red-brown, silty sandstones and mudstones. Red Canyon was presumably named for the characteristic red walls of the Moenkopi Formation in contrast to the white walls of White Canyon, formed in the underlying Cedar Mesa sandstone.

Overlying the Moenkopi mudstones is a discontinuous unit of white sandstone with a basal conglomerate facies, known as the Shinarump formation. The unit, when present, outcrops as a five to forty-foot cliff or ledge, capping cliffs of Moenkopi mudstones, and as broad benches from which the softer, overlying formations have been eroded. The Shinarump formation occurs in broad (two to three miles wide) belts generally trending northerly to northwesterly across the area. In the center of these belts, the Shinarump reaches a maximum thickness of forty to fifty feet; then pinching, irregularly, to a few feet on the edges. In the central part of Red Canyon, the Shinarump formation is missing, reappearing again in the lower part of Red Canyon.

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The contact between the Moenkopi mudstones and the overlying Shinarump sandstone is an irregular, erosional surface, having a relief of a few inches up to twenty feet. The channels scoured in the Moenkopi muds by the streams depositing the Shinarump sediments are the loci of all of the important uranium orebodies in the general area.

Overlying the Shinarump and, in areas were the Shinarump unit is missing, the Moenkopi are variegated shales and intercalated brown conglomeratic sandstones of the Chinle Formation, probably five hundred feet thick. The Chinle Formation has the peculiar trait of slumpimg, in large, coherent masses, sliding out over the Shinarump benches and obscuring the outcrop of the Shinarump ledges. The Chinle formation is not known to contain mineralized outcrops in the Red Canyon area, but this may be a result of the lack of systematic prospecting. Weak anamalies have been reported on Jacob's Chair, in the White Canyon area, and elsewhere on the Plateau the sandstone units of the Chinle formation are important producers(Mi Vida Mine and other properties in the Lisbon Valley area produce from a sandstone unit in the Chinle formation.

Overlying the Chinle shales are the vertical, fluted, red sandstone walls of the Wingate Formation, capped by the purple-red Kayenta silty sandstones. A few, residual knobs of white,aeolian, cross-bedded Navajo sandstone occur on the higher plateaux, capping the Kayenta Formation.

Geology OF THE NORTH MARKEY GROUP

The North Markey Group covers the central portion of a broad belt of Shinarump outcrops which appears to have a general northwesterly trend. Thicknesses of the unit vary from twenty-five to forty feet, but the lower contact with the Moenkopi mudstones is not well exposed, being frequently obscured or covered by talus and landslide debris. Channel scours, filled with coarse conglomerate and carbonized vegetal fragments are exposed in several places, especially in embayments in the Shinarump outcrop were the contact is well exposed. In contrast to the general northerly trend of the belt of Shinarump sediments, the scours appear to have an east-west or southeasterly trend, roughly normal to the trend of the belt.

MINERALIZATION

The copper-uranium mineralization in Red Canyon is confined to the lower portion of the Shinarump sandstone. The mineralization may extend up to ten feet or more above the base,but,if present, it is always present at the base.Deposition of secondary minerals of copper and uranium may extend

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down several inches into the Moenkop mudstones.

Primary copper minerals, chalcopyrite and chalcocite, occur as replacements of carbonized wood fragments and as interstitial filling of the sandstone. On the outcrop, the primary minerals have been oxidized to malachite and azurite and, occasionally, the instable sulfate, chalcanthite. The iron disulfide, pyrite, is prevalent underground and the resultant hydrous oxide, limonite, is present everywhere, in the minor amounts, near the lower contact of the Shinarump sandstone. Uraninite or pitchblende has been identified underground at the Happy Jack, Fry 4 and Markey Mine, but the predominant mineral on the outcrop is a yellow-secondary mineral, possibly uranophane. Secondary erythrite (pink cobalt "bloom") and an unidentified silver mineral are minor accessory minerals.

In the North Markey Group, copper minerals occur more or less continuously along the base of the Shinarump formation where it is exposed. The copper mineralization varies from traces of malachite to massive replacement of carbonized wood fragments, probably assaying in excess of 30% copper. On the Suzie Claim, at the edge of an area covered by landslide debris, the lower two feet of the Shinarump contains disseminated malachite and azurite, assaying 0.45-1.25% copper.

Uranium mineralization occurs with the copper mineralization at the outcrop on the Suzie Claim, mentioned above, and elsewhere weak anomalies have been noted in channel scours.

EXPLORARION TECHNIQUES

Exploration for copper-uranium orebodies in the general area usually takes one ot more of the following three forms, excluding foot-prospecting with Geiger counter.

(1) Stripping the outcrop with a bull-dozer to expose the lower Shinarump contact. Depending in the size of dozer used, the contract price ranges from $65 to $100 per day, including operator. A qualified operator can stripfrom one to several thousand feet of outcrop per day. A miner, with jack-hammer and compressor available, usually works with the bull-dozer to remove rock slabs beyond the capacity of the bull-dozer.

(2) Surface drilling is used to explore for hidden orebodies and to follow channel trends prior to underground explorarion. Drill depths in the North Markey area will vary from fifty to three hundred feet, depending on the hole location. Drilling is usually contracted, prices ranging from $2.50 to $3.00 per foot, Drilling techniques developed

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in the area consist of drilling through the Chinle debris, when necessary, with a plug bit using air as a circulating medium, then coring the Shinarump formation with a diamond bit using water as a circulating medium. Mineralized core is split and assayed and the holes are usually probed with a Geiger counter probe.

(3) Underground drifts and cross-cuts are used to explore mineralized outcrops and mineralization cored during drilling. A normal, 5' x 6' drift should cost $12.00 to $15.00 per foot. The Shinarump stands well and little or no timber is required, except in broad stopes.

CONCLUSIONS

The North Markey Group of twenty-eight claims covers an area of 370 acres of Shinarump sandstone containing, at the base of the outcrop, discontinuous areas of copper and some uranium mineralization. The mineralization is generally thin, but widespread. The presence of the widespread mineralization and of the sandstone-filled scours with carbonized wood fragments, the locus of known orebodies in the general Red Canyon-White Canyon region, indicates the possibility of finding commercial orebodies of copper and uranium within the boundaries of the North Markey Group. An exploration program, combining stripping of the outcrop and preliminary drilling on a grid system, prior to detailed drilling or underground exploration, appears warranted.

Respectfully submitted,

Elmer Strand

36 W. Sunset Ave.
Salt Lake City, Utah
April 26, 1954

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

April 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Application for DMEA Aid (Uranium), Sterling Uranium Corporation, (North Markey group), San Juan County, Utah

Enclosed are two copies of the subject application in the amount of $75,695.00. One copy of the application is being forwarded to the Grand Junction office, DMEA for their review and recommendations concerning the advisability of making a field examination, and one copy of the application is being retained in our file.

DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

DMEA
Date Rec'd.
APR 13 1956
BUREAU OF MINES
Denver, Colorado

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved
Budget Bureau No. 42-R035.2.

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. DMEA-4260
Metal or Mineral Uranium
Date Received 4-18-56
Estimated Cost $75,695.00
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: STERLING URANIUM CORPORATION, 522 Boston Building, Salt Lake City, Utah

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract The North Markey Group covers parts of section 13, T. 37 S., R. 14 E and Section 18, T. 37 S., R. 15 E, S.L.B. & M, San Juan County, Utah

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

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

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

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

(*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.

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

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

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

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

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

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

(*c*) The work will start within 60 days and be completed within 9 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.

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

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

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

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

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

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

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

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

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

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

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

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

[X] Money and/or [X] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper. See alternate proposal. Paragraph 6-(a)

CERTIFICATION

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

Dated April 9, 1956

STERLING URANIUM CORPORATION
(Applicant)

By [signature]
Vice-President

ATTEST:
[signature]
Secretary

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

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1. (a) Sterling Uranium Corporation, 522 Boston Building, Salt Lake City, Utah

   (b) A Utah corporation.

   (c) Gordon L. Weggeland, Vice-President, (Acting President)
   39 Exchange Place
   Salt Lake City, Utah

   C. E. Hicks, Vice-President
   130 South 13th East Street
   Salt Lake City, Utah

3. (b) North Markey Group

   (c) Owner

   (e) None

   (f)

Claim Name	Recording Information			
	Date	Number	Book	Page
Herold	2-26-51	B-9076	R-2	454
Beef Loaf	2-26-51	B-9075	R-2	455
Cheese Omelette	2-26-51	B-9074	R-2	454
Mexican Girl	2-26-51	B-9073	R-2	454
Redhead	2-26-51	B-9058	R-2	449
Helen	2-26-51	B-9059	R-2	449
Judy	2-26-51	B-9060	R-2	450
Susie	2-26-51	B-9061	R-2	450
Butch	2-26-51	B-9062	R-2	450
Jean	2-26-51	B-9063	R-2	451
Joan	2-26-51	B-9064	R-2	451

(f) Continued
Page Two

Claim Name	Recording Information Date	Number	Book	Page
North Shore	3-21-51	B-9705	R-2	634
North Shore No. One	3-21-51	B-9704	R-2	634
Northside	3-21-51	B-9703	R-2	633
Northside No. One	3-21-51	B-9702	R-2	633
Niagara	3-21-51	B-9701	R-2	633
Niagara No. One	3-21-51	B-9700	R-2	632
November Nights	3-21-51	B-9699	R-2	632
November Nights No. One	3-21-51	B-9698	R-2	632
Not Here	3-21-51	B-9697	R-2	631
Not Here No. One	3-21-51	B-9696	R-2	631
Not There	3-21-51	B-9695	R-2	631
Not There No. One	3-21-51	B-9694	R-2	630
Napoleon	3-21-51	B-9693	R-2	630
Napoleon No. One	3-21-51	B-9692	R-2	630
Nother	3-21-51	B-9691	R-2	629
Nother No. One	3-21-51	B-9690	R-2	629
Bill	2-26-51	B-9055	R-2	448

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4a An initial exploratory drilling program was conducted by Redman Uranium Company, a wholly owned subsidiary of Sterling Uranium Corp. during June, July, and August, 1954. This program consisted of the drilling of 21 holes for a total footage of 1372 feet and of the construction of access roads and drill sites.

A summary report of this drilling program by E. H. Eakland, Jr., of Salt Lake City, Utah, as well as his report of the location map is included with this report.

No mine workings exist on the Sterling-Redman property. However, directly east of the claims underground workings of the former Anaconda Copper Company's Markey mine can be easily reached by access roads. These workings are completely accessable for underground inspection.

4b No past or present production from the Sterling-Markey group.

4c The oldest strata exposed in the vicinity of the Markey group is the Moenkopi formation of middle and lower Triassic Age. This is in turn overlain by the Shinarump conglomerate and Chinle formation of Triassic Age, and the Windgate sandstone of upper Triassic Age. The flat-lying Moenkopi and Shinarump formations are well exposed along the south rim of Red Canyon. The north boundary of the Markey claims roughly coincides with the outcrop of the Shinarump formation. South of the rim exposures of Shinarump conglomerate the major portion of the Markey claims are covered by incompetent shale and mudstone of the Chinle formation and Talus deposits consisting of Chinle and Windgate debris.

All major uranium deposits discovered to date in the White Canyon-Red Canyon area occur in channel type sediments within the Shinarump formation. These mineralized channels are tabular type deposits. The channels generally occur at the base of the Shinarump conglomerate and usually show some channel scour into the underlying Moenkopi formation.

<u>Productive History of the area</u>

Anaconda Copper Company formerly operated a small mine, known as the Markey mine, which is located several hundred feet east of the Sterling-North Markey claims. The nearest present production is from the Blue Lizard mine which is located approximately one quarter of a mile northeast and across Red Canyon from the Sterling-North Markey group.

This mine is one of the major uranium producers of the White Canyon district. The Shinarump channel exposed in the Blue Lizard mine is from 450 to 500 feet wide and up to 20 feet thick. The trend of this channel is to the southwest directly toward the Ste ling Uranium Corp. claims.

Reasons for Proposed Exploration

Area 1: A broad mineralized channel is exposed in the Shinarump outcrop at the north end of the Redhead claim. This channel, which shows up to six feet of scour into the underlying Moenkopi formation contains both low-grade copper and uranium mineralization on the outcrop. Twelve exploratory holes have been drilled in the vicinity of this channel. Four of these holes showed uranium mineralization .06-.11% U_3O_8 in thickness ranging from 0.5 feet to 3.5 feet. All four mineralized holes were in a southwest trend from the channel's outcrop. As these four holes show appreciable mineralization and are located within a relatively short distance from the Shinarump outcrop, further exploratory drilling is warranted along this channel. An increase in mineralization would be expected toward the south and southwest where the Shinarump is overlain by thicker overburden.

Area 2: Hole No. 20 on the Susie claim in cores abundant carbonaceous material and a four foot zone containing moderate copper mineralization and low grade .03-.07% U_3O_8. The Shinarump outcrop on the Susie claim shows low grade copper and uranium mineralization. Only one hole was in this entire area. Because of the degree of mineralization encountered in this one hole and mineralization present in the outcrop, additional drilling should be done in this area.

Area 3: Complete testing of the mineralized Redhead claim channel to the south along trend established from initial drilling to be performed in program phase described under caption area No. 1.

Area 4: Drilling of central and south portion of the North Markey group. The occurrance of well-developed mineralized channels exposed along the Shinarump outcrop both within the Markey group and in the immediate vicinity of these claims indicate that the large untested area lying in the central and southern portions of the Markey group warrants exploratory drilling.

Area 5: In addition to the areas listed above which warrant exploratory drilling, a limited amount of rim stripping is also advisable. In the area of hole No. 20 rim stripping will help delineate the copper and uranium mineralization in the Shinarump outcrop which is only partially exposed. Near the east end of the Markey group rim stripping will aid in determining the west edge of the channel whose eastern edge is already exposed in the Anaconda-Markey mine.

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4d The North Markey group may be reached from Blanding, Utah via maintained, improved gravel and dirt roads. The route is as follows: proceed south from Blanding, Utah, on highway 95 to Natural Bridges National Monument, a distance of approximately 50 miles, then turn to the southwest off highway 95 onto the Red Canyon road. Proceed on into Red Canyon for a distance of approximately 26 miles to the Blue Lizard Mine. The north Markey group lies directly to the southwest across Red Canyon from the Blue Lizard Mine.

The North Markey claims and drill sites can be reached by bulldozed access roads from the Red Canyon road.

The distance from the Markey claims to the A.E.C. White Canyon ore buying station is 55 miles. The distance to the A.E.C. Monticello Uranium Processing Mill is 105 miles. Mining supplies are available at Blanding, Utah approximately 80 miles from the claims. Residence for several of Sterling Uranium Corp.'s supervisory personnel is at the present time at Blanding, Utah.

4e Ample manpower, materials, supplies, and equipment for the proposed exploration program are available in the Blanding-Monticello, Utah area. Numerous drilling contractors are headquartered in this area. Drilling water can be obtained from the creek located in the bottom of Red Canyon.

5b The proposed work has been previously outlined in paragraph 4e, while the type of work, amount of footage to be drilled, and the approximate cost of the work in each area are tabulated in paragraph 6a through 6h. The individual areas in which work is proposed are shown on the accompanying map which shows the outline of the North Markey group of claims in relation to the Shinarump outcrop and previously drilled exploration holes. The proposed work is as follows:

Area 1,	approximately	10	exploration holes.
Area 2,	"	10	"
Area 3,	"	10	"
Area 4,	"	25	"
Area 5,	Rim stripping of the Shinarump outcrop in the area of hole No. 20 on the Susie claim, and rim stripping at the north end of the Harold and Bill claims.		

5d Sterling Uranium Corp. or its subsidiaries, has been engaged in the uranium industry since 1954. The company has mined and shipped from its Monument Valley Tract No. 2 North, Apache County, Arizona, through the period August, 1954, to December, 1955, 7,702.10 tons of Vanadium-uranium ore. January and

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February shipments of ore from Tract No.2 North totaled 1,140 tons. Since October, 1955, it has also shipped approximately 800 tons of Vanadium-uranium ore from its John Kee lease located near Red Mesa Trading Post, Apache County, Arizona.

During this period the company has also engaged in extensive exploratory drilling programs on the following properties: Monument Valley Tract No. 1 North, Jack Tinhorn Tracts No. 2 and 3, Apache County, Arizona, and John Kee claims, Apache County, Arizona. A preliminary drilling program has also been undertaken on the Sterling-Reeman North Markey group in San Juan County, Utah.

Supervisory personnel on the proposed operation would be:
Robert M. Anderson, full time geologist for the past year. Prior to employment with Sterling he was an independent consulting geologist in petroleum and exploration for three years, with offices in Great Falls and Cut Bank, Montana.

Leland Shumway, mining superintendent for Sterling, who has been actively engaged in Vanadium-uranium mining on the Colorado plateau since 1935.

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ESTIMATE OF COSTS

6a Independent Contracts

Footage Drilled

	Footage	Cost	
Area 1 (mineralized area of holes 7,8,12,21) 10 holes, average depth 200' (average price $3.00/ft)	2,000'	$ 6,000.	
Area 2 (area, hole 20) 10 holes, average depth 150'	1,500'	4,500.	
Area 3 (complete testing of Red-head claim channel) 10 holes, average depth 300' (average price $3.25/ft)	3,000'	9,750.	
Area 4 (drilling on central & south portion of claims) 25 holes, average depth 400' (average price $3.50/ft)	10,000'	35,000.	
TOTAL	16,500'	$ 55,250.	$55,250.00

Bulldozer Work: Figures based on D-6 Cat at $12.00/hr.

Area 1	125 hours	$ 1,500.	
Area 2	90 hours	1,080.	
Area 3	125 hours	1,500.	
Area 4	300 hours	3,600.	
Area 5	100 hours	1,200.	
TOTAL	740 hours	$ 8,880.	$ 8,880.00

These figures are based on D-6 Catorpillar bulldozer. If D-8 is contracted, price would range from $16.00 to $18.00 per hour, with number of work hours reduced proportional to increase in size of dozer. Total price of job would be approximately the same.

Alternate Proposal

Sterling Uranium Corporation owns and is currently using in its Monument Valley Tract No. 1 North open pit mining operation one new D-6 Caterpillar angle dozer, and one used D-8 U-dozer. If, at the time of execution

of proposed exploration project, one of these dozers can be spared from the Monument Valley operation its use, in place of contract equipment, will be a saving in money to the project. It would also save some probably standby time costs not figured in the contract schedule.

It is desired by the applicant that provision be made in the DMEA contract allowing substitution of one of Sterling's bulldozers for contract dozer if one of the two listed is free for use.

Cost of D-6 bulldozer if supplied by operator

D-6 caterpillar angle dozer, 5 months old value, $16,000.		
Use: allowance, 3 months at $1500/month		$ 4,500.
Operator: 246 hrs/mo. $2.50/hr; time and a half for overtime; $722.50/mo.	3 months	2,167.50
Diesel: 5500 gallons		750.
Oil and grease:		250.
Transportation on & off project		400.
TOTAL		$ 8,067.50

6b Labor, Supervision, Consultants

One geologic consultant 3 months at $1500/month (if company geologist available for use on this project, cost would be less than this figure, but would include transportation, and living expenses.)	$ 4,500.
One driller to operate jack hammer during period of rim stripping. 2 months at $500/month	1,000.
Provision for portion of Sterling's mining superintendent's salary if his services are necessary on project, especially during rim stripping, of if no geologist is available for part of this project. Allowable up to $600/mo for up to 2 months.	1,200.
Secretarial work in relation to this project including final reports and reproductions	200.
	$ 6,900.00

$6,900.00

6c Rim Stripping

Operating materials and supplies

3 ton blasting powder		$ 1,200.	
1000 electric caps		200.	
100 hard faced bits		155.	
Gasoline for pickup truck: drilling use, water hauling, supplies etc., and light plant consumption, 1000gals.			
Gas for 105 compressor, 400 "		420.	
Drill steel			
2 starters	$ 8.00		
2 4' steel	16.00		
4 6' steel	48.00		
2 8' steel	32.00		
2 10' steel	40.00		
2 12' steel	48.00		
Total	$192.00	192.	
Jack hammer oil, 15 gallons		22.	
Compressor oil		25.	
Grease-compressor, etc.		5.	
Butane (including rental of 250 gal tank)		55.	
Delivery service on gasoline tank		30.	
TOTAL		$ 2,304.00	$ 2,304.00

6d Operating Equipment

To be purchased		
one light plant, 1500 watt	$ 375.	
200' air hose drilling line	216.	
Furnished by Operator		
one 105 compressor (2 months) suggested use allowance	200.	
one Jack Hammer (2 months) suggested use allowance	150.	
one 300 gal. or 500 gal. water tank	0.	
one pickup truck, 3 months at $150/mo	450.	
TOTAL	$ 1,391.00	$ 1,391.00

Note: See Independent contracts-bulldozer work. If one of Sterling Uranium Corp.'s bulldozers is used, suggested use allowance on either dozer, is $1500/mo, plus operating costs as listed.

6e Road improvement or repair of existing roads covered under bulldozer contract.

6f Rehabilitation and Repairs

One bunk and cook house, with household equipment

owned by Sterling to be moved on to job. House is on panels at Monument Valley mine. Cost of erection and repair after move $ 125.

Cost of possible additional utilities, stove, sink, pipe connections	75.	
Trucking on to project (155 miles)	155.	
Cost of dismantling into panels or shoring up for move	50.	
Trucking off project	155.	
Building of outhouse and shower, including transportation of materials	150.	
TOTAL	$ 660.00	$ 660.00

6g Detailed list of cost of repairs and maintenance of operating equipment impractical before operation. Therefore, suggested use-rental of: 105 compressor and Jackhammer to include all necessary repairs. Cost of maintenance such as grease and oil already listed under 6c.

If operator's bulldozer is used in place of contractor dozer, suggest use-rental to include all necessary repairs.

6h Contingencies

Transportation on and off job of 105 compressor, Jackhammer, water tank to be furnished by operator at standard trucking rate of $1.00 per mile.

One way

Transportation on to project from Monument Valley Tract No. 1 North, Apache County, Arizona, 155 miles. $ 155.

Transportation off project 155.

TOTAL $ 310.00 $ 310.00

ESTIMATED TOTAL COST OF PROJECT $ 75,695.00

If a portion of this drilling program indicates that further exploration could be best accomplished by underground drifting, it is the desire of the operator to be allowed to allot the remaining funds available under this contract to such underground drifting at a price of $30 per foot of drift.

Robert M. Anderson
ROBERT M. ANDERSON
GEOLOGIST

SUMMARY REPORT OF
INITIAL DRILLING PROGRAM
NORTH MARKEY GROUP OF CLAIMS

REDMAN URANIUM COMPANY

Red Canyon Area
White Canyon District

San Juan County
Utah

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INTRODUCTION

During June, July and August, 1954, a preliminary drilling campaign was undertaken on the North Markey group of claims belonging to the Redman Uranium Company of Sale Lake City, Utah. The drilling and necessary road and drill site construction was contracted by Russell Andersen of Aztec, New Mexico, on a cost-plus basis. Development and supervision of the drilling program was the responsibility of E. H. Eakland, Jr., consulting geologist of Salt Lake City, Utah.

This drilling program was designed to explore a broad, flat mineralized "channel" exposed at the base of the Shinarump sandstone on the outcrop in the reentrant on the Redhead claim. This channel has a relief of about 10 feet, has an irregular width of 200 feet plus and contains low-grade copper and uranium mineralization on the outcrop. The thickness of the Shinarump sandstone is in excess of thirty feet, having a probably maximum of forty-five feet.

WORK ACCOMPLISHED

During the period from June 29 through August 6, 1954, approximately 9,000 feet of new roads and drill site locations were completed. In addition, the contractor's bull-dozer spent four days working on existing roads and two days excavating and repairing storage pits for drill water in the bottom of Red Canyon.

During the period from July 19 through August 6, 1954, a total of 1372 feet of new hole was drilled, divided into approximately 300 feet of coring and 1072 feet of uncored drill hole. The footage was divided into twenty-one individual holes with an average depth of 65 feet. Actual hole depth varied from 42 feet to 112 feet.

Costs covering this initial phase of the drilling were as follows:

ITEM	COST	COST/FT.
Supervision		
Drilling - Cash		
Drilling - Stock		
Road Construction		

RESULTS OF DRILLING

The drilling, as shown on the accompanying map (1'' = 200') was concentrated in the area of the Redhead and Mexican Girl claims in an attempt to find uranium mineralization of ore grade in a broad, flat channel that trends approximately N 20° W. Of the 20 holes drilled in the channel area, four holes (#'s 7, 8, 12 and 21) showed appreciable mineralization (.06-.11% U_3O_8 in thicknesses ranging from 0.5 feet to 3.5 feet) but the mineralization indicated by the Gieger probe and exposed in the drill core is neither sufficiently thick nor high-grade to represent ore.

On the Susie claim, hole #20 was drilled to test the continuity of low-grade copper and uranium mineralization exposed on the outcrop. The core showed abundant carbonaceous material and a four-foot zone containing moderate copper mineralization and low-grade (.03-.07%) uranium.

CONCLUSIONS

Additional drilling on the North Markey group of claims is recommended. Of the original 200 feet of drilling covered by the agreement

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with Russell Andersen, 700 feet of drilling has not yet been used.

The drilling should be designed to (1) further explore the mineralized area of Holes 7, 8, 12 and 21, to (2) explore the area of Hole 20 for continuation of the known mineralization and to (3) complete testing the mineralized "Redhead" channel along the trend to the southeast and across the width to the southwest.

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REDMAN URANIUM COMPANY

NORTH MARKEY GROUP OF CLAIMS
DRILL HOLE RECORDS

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Hole No. 1

Date drilled: 7-19-54 Date probed: 7-27-54
Depth drilled: 42' Depth probed: 40'

Shinarump-Moencopi contact at 38'
Probe results--1.0' very weak mineralization at 35-36'

Depth	Radiometric Reading
0-30'	0.00-0.01
31'	0.01
32	0.02
33	0.01
34	0.01
35	0.03
36	0.02
37	0.01
38	0.00
39	0.00
40	0.00

Hole No. 2

Date drilled: 7-19-54 Date probed: 7-24-54
Depth drilled: 42' Depth probed: 33'

This hole was drilled during the period when the counter and probe were giving considerable trouble due to a leaking probe. By the time the equipment was operating satisfactorily, the lower portion of the hole had collapsed and Hole No. 2A was drilled at approximately the same location.

Hole No. 2A

Date drilled: 7-26-54 Date probed: 7-27-54
Depth drilled: 44' Depth probed: 44'

Shinarump-Moencopi contact at 35'
Probe results--Barren hole

Depth	Radiometric Reading	Depth	Radiometric Reading
0-20'	0.00-0.01	32'	0.01
21'	0.00	33	0.01
22	0.01	34	0.01
23	0.01	35	0.00
24	0.03 ---	36	0.00
25	0.01	37	0.01
26	0.00	38	0.00
27	0.01	39	0.00
28	0.01	40	0.00
29	0.01	41	0.00
30	0.00	42	0.00
31	0.00	43	0.00
		44	0.00

Hole No. 3

Date drilled: 7-20-54 Date probed: -----
Depth drilled: 62' Depth probed: -----

This hole had to be abondoned for the same reason as that given for Hole No. 2. Hole No. 3A was drilled at the same locality.

Hole No. 3A

Date drilled: 7-27-54 Date probed: 7-27-54
Depth drilled: 77' Depth probed: 75'
Feet cored: 35' (42'-77')

Shinarump-Moencopi contact at 56'
Probe results: Barren hole.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00-0.01	61-75'	0.00
51'	0.00		
52	0.01		
53	0.01		
54	0.00		
55	0.01		
56	0.02 ---		
57	0.01		
58	0.00		
59	0.01		
60	0.00		

Lower 14' of Shinarump is white, glassy, medium to coarse-grained ss, weakly stained by iron oxide.

Hole No. 4

Date drilled: 7-24-54 Date probed: 7-27-54
Depth drilled: 88' Depth probed: 88'
Feet cored: Attempted to core from 62-77', but no recovery
77-88' (all Moencopi mudstone)

Probe results: Glen Powell (driller) probed this hole and reported no mineralization.

Hole No. 5

Date drilled: 7-26-54 Date probed: 7-26-54
Depth drilled: 72' Depth probed: 72'
Feet cored: 40' (32'-72') Recovery: 38'

Shinarump-Moencopi contact at 66.5'
Probe results: Very weak mineralization at contact zone.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-33'	0.00-0.01	63'	0.01
34'	0.01	64	0.02
35	0.00	65	0.02
36	0.01	66	0.03
37	0.03	67	0.02
38	0.02	68	0.01
39	0.02	69	0.00
40	0.01	70-72'	0.00
41-62	0.00-0.01		

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Hole No. 5 (con.)

Core results: 27.5' core (32-60') of reddish, fine-grained ss with thin shale partings. @ 38', 1-foot zone with thin seams of radioactive carbonaceous material, veinlets of gypsum and micaceous partings.
5' of whitish ss and fine conglomerate from 60-65'. Weak iron oxides in disseminated spots.
5.5' of reddish, Moencopi mudstones with 8'' zone just below contact which is bleached to light gray-green.

Hole No. 6

Date drilled: 7-26-54 Date probed: 7-26-54
Depth drilled: 52' Depth probed: 52'
Feet cored: 30' (22'-52')

Shinarump-Moencopi contact at 50'
Probe results: No radioactivity in hole. Core shows copper stains in lower 6''.

Hole No. 7

Date drilled: 7-28-54 Date probed: 7-28-54
Depth drilled: 70' Depth probed: 68'
Feet cored: 28' (42-70')
Hole collared in shale, in sandstone from 28' to 63'.

Shinarump-Moencopi contact at 63'.
Probe results: Trace mineralization at contact (63') and weak radioactivity from 48-51'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-45'	0.00-0.01	56'	0.01
46'	0.00	57	0.00
47	0.01	58	0.00
48	0.02	59	0.01
49	0.05	60	0.00
49.5	0.08 ---	61	0.01
50	0.03	62	0.01
51	0.02	63	0.02
52	0.01	64	0.00
53	0.00	65	0.00
54	0.01	66	0.00
55	0.01	67-68	0.00

Core results: Disseminated specks of chalcopyrite and pyrite from 50-63'.
49-50': Diss. chalcopyrite and radioactive carbonaceous seams with thin parting of micaceous ss.

Hole No. 8

Date drilled: Date probed: 7-31-54
Depth drilled: 80' Depth probed: 72'
Feet cored: 18' (62-80')
Hole collared in shale, in sandstone from 32' to 77'.

Shinarump-Moencopi contact at 77'.
Probe results: Zones of weak radioactivity from 53-63'.
Core results: Core shows thin seams of carbonaceous material from 53-63'. At 65', 2'' with carbon, weak copper stain and cobalt stain.

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Hole No. 8 (con.)

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00-0.01	62'	0.01
51'	0.01	62.5	0.02
52	0.01	63	0.01
52.5	0.02	64	0.01
53	0.04	64.5	0.01
53.5	0.03	65	0.01
54	0.05	65.5	0.01
54.5	0.05	66	0.01
55	0.02	66.5	0.02
55.5	0.02	67	0.01
56	0.03	68	0.00
56.5	0.04	69-72'	0.00
57	0.05		
57.5	0.04		
58	0.02		
58.5	0.04		
59	0.04		
59.5	0.02		
60	0.01		
61	0.02		
61.5	0.03		

Hole No. 9

Date drilled: Date probed: -----
Depth drilled: 82' Depth probed: -----
Feet cored: 20' (62-82')
Hole collared in shale, in sandstone from 32' on

Shinarump-Moencopi contact at -----

Probe results: Hole not probed as upper part collapsed on last run. Good core recovery. No mineralization in core.

Hole No. 10

Date drilled: Date probed: -----
Depth drilled: 60' Depth probed: -----
Feet cored: 18' (42-60')
Hole collared in shaly sandstone, in sandstone from 30-58'.
Shinarump-Moencopi contact at 58'.
Probe results: Hole not probed as it caved. Good core recovery, but no mineralization in core. Thin seams of carbonaceous material from 47-49'.

Hole No. 11

Date drilled: 7-31-54 Date probed: 7-31-54
Depth drilled: 88' Depth probed: 85'
Feet cored: 6' (82-88' --all Moencopi)
Hole collared in shale, in sandstone from 52-82'.
Shinarump-Moencopi contact at 82'.
Probe results: No radioactivity.

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Hole No. 12

Date drilled: 7-31-54 Date probed: 7-31-54
Depth drilled: 79' Depth probed: 79'
Feet cored:
Shinarump-Moencopi contact at 67.3'
Probe results: No radioactivity
Core results: Diss. specks chalcopyrite in core from 62-67.3'.

Hole No. 13

Date drilled: 8-1-54 Date probed: -----
Depth drilled: 52' Depth probed: -----
Feet cored: None

Lost circulation while still in Chinlee shales and abandoned hole.

Hole No. 14

Date drilled: 8-1-54 Date probed: 8-4-54
Depth drilled: 47' Depth probed: 47'
Feet cored:
Shinarump-Moencopi contact at 46'
Probe results: Trace radioactivity at 34.5'
Core results: Specks CuO_x from 44' to 46', in lower 6'' of white ss.
Lt. brown ss above 44'.
Conglomeratic ss with carbon++, pyrite+, iron oxide+ at 34-35'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-30'	0.00-0.01	38'	0.01
30'	0.00	39	0.01
31	0.01	40	0.02
32	0.01	41	0.02
33	0.01	42	0.01
34	0.02	43	0.01
34.5	0.03	44	0.01
35	0.01	45	0.00
36	0.01	46	0.00
37	0.00	47	0.00

Hole No. 15

Date drilled: 8/3-4/56 Date probed: 8-4-56
Depth drilled: 52' Depth probed: 32'
Feet cored: 22' (30-52')
Shinarump-Moencopi contact at 50'.
Probe results: No radioactivity from 0 to 32'. Hole caved below that point, but good core recovery.
Core results: No appreciable radioactivity. From 30-48.5', fine-grained to medium-grained sandstone with weak iron oxide. 48.5-49.5', silty sandstone with thin, carbonaceous laminae, muscovite and CuO_x+. 49.5-50.5', white, glassy sandstone with muscovite+.

Hole No. 16

Date drilled: 8-4-56 Date probed: 8-4-56
Depth drilled: 44' Depth probed: 44'
Feet cored: 10' (34-44')
Shinarump-Moencopi contact at 43'.
Probe results: No appreciable radioactivity
Core results: Bottom 1.5' of Trs has chalcopyrite, copper oxides+, FeO_x+.
Trace of copper in lower 4'.

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Hole No. 16 (con.)

Depth	Radiometric Reading	Depth	Radiometric Reading
0-29'	0.00-0.01		
30	0.02		
31	0.02		
32	0.01		
33	0.01		
34	0.02		
35-45'	0.00-0.01		

Hole No. 17

Date drilled: 8-4-56 Date probed: 8-4-56
Depth drilled: 112' Depth probed: 100'
Feet cored: 13' (99-112')
Probe results: Weak radioactivity at 99-100'. Hole caved below this point.
Core results: At 99', thin carbonaceous seams with iron oxides.
From 99' to 110', wkly disseminated chalcopyrite.
At 106.5', 2'' with chalcopyrite//, carbon./, muscovite/.
Shinarump-Moencopi contact at 111'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-50'	0.00	94'	0.00
75-50'	0.00-0.02	95	0.01
80-75	0.00-0.02	96	0.01
80-87	0.00	97	0.02
88	0.01	98	0.02
89	0.00	99	0.02-0.05
90	0.00	100	0.03
91	0.01		
92	0.01		
93	0.03		

Core is gray to reddish gray sandstone, white in lower one foot.

Hole No. 18

Date Drilled 8-5-54 Date probed: 8-5-54
Depth drilled: 63' Depth probed: 63'
Feet cored: 19' (44-63')
Shinarump-Moencopi contact at 59'.
Probe results: No appreciable radioactivity.
Core results: From 58-58.5', 6'' with strong copper oxides, carbon, and gypsum. Specks copper oxides, iron oxides from 48-58.5'.

Depth	Radiometric Reading
0-37'	0.00-0.01
38'	0.02
39	0.04
40	0.02
41	0.02
42	0.01
43	0.02
44-48	0.00-0.01
49-50	0.02
	0.00-0.01

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Hole No. 19

Date drilled: 8-5-54 Date probed: 8-6-54
Depth Drilled: 55' Depth probed: 34'
Feet cored: 9' (46-55')
Probe results: Radiometric readings from 0-34' ran 0.00 to 0.01. Below 34', the hole had caved.
Core results: Shinarump-Moencopi contact at 50'. Lower 4' of Trs was lt. brown, porous, conglomeratic sandstone with weak copper oxide from 46' to 49.5'.

Hole No. 20

Date drilled: 8-5-54 Date probed: 8-6-54
Depth drilled: 50' Depth probed: 50'
Feet cored: None
Probe results: Weak radioactivity from 40 to 43'.
Shinarump-Moencopi contact at 48.5'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-35'	0.00-0.01	42.5'	0.07
36'	0.01	43'	0.03
37	0.02	44	0.01
38	0.01	45	0.01
39	0.02	46	0.02
40	0.01	47	0.02
40.5	0.06	48	0.01
41	0.05	49	0.00
42	0.05	50	0.01

Hole No. 20A

Date drilled: 8-6-54 Date probed: 8-6-54
Depth drilled: 50' Depth probed: 50'
Feet cored: 9' (41-50')
Probe results: Weak radioactivity from 49 to 44'.
Core results: 41-46', fine-grained, light gray ss.
46-48', conglomeratic ss with iron oxides/, carbon/.
Shinarump-Moencopi contact at 49'.

Depth	Radiometric Reading	Depth	Radiometric Reading
0-37'	0.00	43'	0.07
38'	0.01	43.5	0.03
39	0.01	44	0.00
39.5	0.02	45	0.00
40	0.03	46	0.01
40.5	0.05	47	0.01
41	0.04	48	0.01
41.5	0.04	49	0.01
42	0.04	50	0.00
42.5	0.04		

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Hole No. 21

Date drilled: 8-6-54
Depth drilled: 84'
Feet cored:
Shinarump-Moencopi contact at:
Probe results: Moderate radioactivity at 64.5'.
Core results. White, medium-grained ss with scattered specks chalcopyrite. Occasional, thin seams of carbonaceous material and muscovite.

Date probed: 8-6-54
Depth probed: 84'

Depth	Radiometric Reading
0-63'	0.00-0.01
64	0.04
64.5	0.10
65	0.02
66	0.01
67-84'	0.00

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REPORT ON THE

NORTH MARKEY GROUP
RED CANYON DISTRICT

RECEIVED
APR 18 1955

San Juan County
Utah

April, 1954
Elmer Strand

Introduction

The North Markey Group of twenty-eight (28) claims, in the Red Canyon District of San Juan County, southeastern Utah, were originally located in 1951 as part of a much larger group of claims covering most of the Shinarump formation outcrops in the area. The claims were assigned to the Anaconda Copper Mining Company which undertook a very limited exploration program in 1951 and 1952, looking for a continuation or a repitition of the copper-uranium orebodies then being developed at The Happy Jack, Fry 4 and Posey mines. The exploration work was termintaed in 1952. In 1953, Anaconda shipped copper-uranium ore from the Markey Mine, which adjoins the southeast end of the North Markey Group, to the A.E.C. mill at Monticello, Utah.

Underground development at the Happy Jack Mine, fifteen miles north of the North Markey Group, has proved the existance of the largest known, copper-uranium orebody on the Colorado Plateau. Exploration drilling by the U.S. Atomic Energy Commission and private companies has shown the presence of important, but undeveloped, orebodies in the area extending from the Fry 4 Mine to the southwesterly into Red Canyon. This area lies eight to ten miles east of the North Markey Group. Exploratory drilling and underground development at the Blue Lizzard Mine, just across Red Canyon from the North Markey Group, and at the Posey Mine, one mile to the southeast, indicates commercial reserves at both properties.

The Atomic Energy Commission has a geologicand drill camp at the Markey Mine, servicing two core drills working on the property of the Posey Mine. This camp is under the direct supervision of the main A.E.C. camp in Fry Canyon.

LOCATION

As shown on the accompanying map of the Red Canyon District, the North Markey Group lies in an unsurveyed area on the southeast side of Red Canyon, approximately fourteen airline miles above the junction of Red Canyon and the Colorado River. Projection of existing survey lines into the area indicates the North Markey Group covers parts of section 13, T. 37, S., R. 14 E and Section 18, T. 37 S., R. 15 E, S.L.B. & M.

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The Red Canyon District lies in west-central San Juan Couhhy, in the southeast corner of Utah, approximately four hundred miles, by road, southeast of Salt Lake City. Blanding and Monticello, the nearest sources of supply, are 70 and 90 miles, respectively, by road, east of Red Canyon.

ACCESSIBILITY

The area of the North Markey Group can be reached, over good, improved dirt roads, from Blanding, Utah, the end of the paved portion of State Highway 47. About three miles south of Blanding, on Highway 47, a new road runs westerly across Cottonwood Wash and Comb Wash to State Highway 95, a distance of thirty-eight miles from Blanding. Highway 95 is the old road from Blanding to the White Canyon-Red Canyon area via Elk Ridge, a slower, longer road which is frequently impassable during the winter months.

Eight miles west of the junction of the Comb Wash road and Highway 95 and approximately one-half mile beyond the entrance to the Natural Bridges National Monument, an improved dirt road, marked"Skelly Oil Company", turns southwesterly. Highway 95 continues northwesterly into White Canyon, Fry Canyon and on to the village of Hite, on the Colorado River.

Eleven miles beyond the junction at the Natural Bridges, the Skelly road forks, the left-hand fork running southwesterly to Clay Hills Divide and the right-hand fork winding northwesterly into Red Canyon. The Posey and Blue Lizzard mines and the North Markey Group are approximately fourteen miles beyond this junction, on the right-hand fork.

Except for brief periods during summer rainstorms, the entire road is passable throughout the year. Driving time from Blanding to Red Canyon is about two and one-half hours.

POWER, WATER,TIMBER, ETC.

Commercial power is not available beyond Blanding. Diesel-generated power is universally used at camps in both Red and White Canyons.

Timber and mine supplies are hauled from Monticello, Utah, by ore trucks on their return trips, for $8.00-$10.00 per ton. During the summer months, unfinished lumber is available at Blanding and at the sawmill on Elk Ridge.

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Water is not plentiful in the Red Canyon drainage. Warm Springs, shown on the district map, flows 50-100 G.P.M. throughout the year. In 1951, a road was completed from the Posey Mine to Warm Springs and the mouth of Red Canyon. This road is now impassable beyond the North Markey Group because of boulder accumulations along the canyon floor, but could be easily repaired. The drills now being operated in the Red Canyon area obtain water from shallow, bed-rock sumps, but this source cannot be relied upon during the hot summer months. Domestic water, for camp and culinary use, is usually hauled in from Blanding by supply or ore trucks. Ample water, of good quality, could be developed with a 200 to 300 foot well in the bottom of Red Canyon. This well would tap the Cedar Mesa sandstone, a known aquifer producing water for the A.E.C. camp in Fry Canyon.

Transportation of supplies and ore can be contracted with any of the numerous local firms or individuals operating in the area. The ore haul is normally contracted for at $ 0.08 per ton-mile, $ 0.06 of which is repaid to the shipper by the Atomic Energy Commission as an ore haulage allowance.

At an elevation of 4500 feet, the area of the North Markey Group has relatively mild winters, but hot, dry summers punctuated by torrential rainstorms. Snow is uncommon, except in generally severe winters. Summer temperatures frequently rise above 100'.

PROPERTY AND OWNERSHIP

The twenty-eight, unpatented lode mining claims comprising the North Marky Group are shown on the accompanying claim map. The claims were surveyed by compass-pace methods, showing the total area covered to be slightly more than 370 acres.

The claims wre located in February, 1951 by E.H. Bakland, Jr,; J.P. Rigg, Jr.; D.H. Wegner and O.L. Jahnke. The claims were conveyed, in 1951, by an unrecorded deed to the Anaconda Copper Mining Company which has performed the necessary annual assessment work for the year 1952-1953. Proof of Annual Labor for 1952-1953 was recorded at Monticello, the coutny seat for San Juan County. By a quitclaim deed, executed in April, 1954 title was transfered from the Anaconda Copper Mining Company to E.H. Bakland, Jr., of 2254 South Twentieth East Street, Salt Lake City, Utah

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GENERAL GEOLOGY

The Red Canyon District covers an area of Triassic and Jurassic sediments with a gentle, monoclinal dip to the southwest. The nearest igneous rocks are the intrusive stocks of the Henry Mountains, approximately fifteen miles to the northwest, and of the Abajo Mountains, some forty-five miles to the east.

Structurally the area is not complex. A north-trending, west-dipping fault with a normal displacement of about thirty feet crosses Red Canyon about two miles west of the North Markey Group. A conjugate system of joint cracks, one set striking northwest and the other northeast, with little or no displacement, is persistent throughout the area. No direct connection has been established between the copper-uranium mineralization and the structural features in the Red Canyon area.

The oldest sediments exposed in the Red Canyon drainage are the white, cross-bedded, calcareous, fine to coarse-grained sandstones of the Cedar Mesa member of the Permian Cutler Formation. Exposures are limited to a few isolated spots in the bottom of Red Canyon. No appreciable thickness is exposed; but, from exposures in White Canyon, the Cedar Mesa sandstone is known to be several hundred feet thick. The writer is unaware of any mineralized outcrops in the Cedar Mesa sandstone in the Red Canyon-White Canyon area, but, further north in the Indian Creek drainage, uranium mineralization has been found in the White Rim sandstone, the stratigraphic equivalent of the Cedar Mesa sandstone.

Overlying the Cedar Mesa sandstone and, in most places, forming the floor and lower walls of Red Canyon is the basal Triassic Moenkopi Formation, a thick (150-200 feet) unit of alternating, red-brown, silty sandstones and mudstones. Red Canyon was presumably named for the characteristic red walls of the Moenkopi Formation in contrast to the white walls of White Canyon, formed in the underlying Cedar Mesa sandstone.

Overlying the Moenkopi mudstones is a discontinuous unit of white sandstone with a basal conglomerate facies, known as the Shinarump formation. The unit, when present, outcrops as a five to forty-foot cliff or ledge, capping cliffs of Moenkopi mudstones, and as broad benches from which the softer, overlying formations have been eroded. The Shinarump formation occurs in broad (two to three miles wide) belts generally trending northerly to northwesterly across the area. In the center of these belts, the Shinarump reaches a maximum thickness of forty to fifty feet; then pinching, irregularly, to a few feet on the edges. In the central part of Red Canyon, the Shinarump formation is missing, reappearing again in the lower part of Red Canyon.

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The contact between the Moenkopi mudstones and the overlying Shinarump sandstone is an irregular, erosional surface, having a relief of a few inches up to twenty feet. The channels scoured in the Moenkopi muds by the streams depositing the Shinarump sediments are the loci of all of the important uranium orebodies in the general area.

Overlying the Shinarump and, in areas were the Shinarump unit is missing, the Moenkopi are variegated shales and intercalated brown conglomeratic sandstones of the Chinle Formation, probably five hundred feet thick. The Chinle Formation has the peculiar trait of slumping, in large, coherent masses, sliding out over the Shinarump benches and obscuring the outcrop of the Shinarump ledges. The Chinle formation is not known to contain mineralized outcrops in the Red Canyon area, but this may be a result of the lack of systematic prospecting. Weak anomalies have been reported on Jacob's Chair, in the White Canyon area, and elsewhere on the Plateau the sandstone units of the Chinle formation are important producers(Mi Vida Mine and other properties in the Lisbon Valley area produce from a sandstone unit in the Chinle formation.

Overlying the Chinle shales are the vertical, fluted, red sandstone walls of the Wingate Formation, capped by the purple-red Kayenta silty sandstones. A few, residual knobs of white,aeolian, cross-bedded Navajo sandstone occur on the higher plateaux, capping the Kayenta Formation.

Geology OF THE NORTH MARKEY GROUP

The North Markey Group covers the central portion of a broad belt of Shinarump outcrops which appears to have a general northwesterly trend. Thicknesses of the unit vary from twenty-five to forty feet, but the lower contact with the Moenkopi mudstones is not well exposed, being frequently obscured or covered by talus and landslide debris. Channel scours, filled with coarse conglomerate and carbonized vegetal fragments are exposed in several places, especially in embayments in the Shinarump outcrop were the contact is well exposed. In contrast to the general northerly trend of the belt of Shinarump sediments, the scours appear to have an east-west or southeasterly trend, roughly normal to the trend of the belt.

MINERALIZATION

The copper-uranium mineralization in Red Canyon is confined to the lower portion of the Shinarump sandstone. The mineralization may extend up to ten feet or more above the base,but,if present, it is always present at the base.Deposition of secondary minerals of copper and uranium may extend

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down several inches into the Moenkop mudstones.

Primary copper minerals, chalcopyrite and chalcocite, occur as replacements of carbonized wood fragments and as interetitial filling of the sandstone. On the outcrop, the primary minerals have been oxidized to malachite and azurite and, occasionally, the instable sulfate, chalcanthite. The iron disulfide, pyrite, is prevalent underground and the resultant hydrous oxide, limonite, is present everywhere, in the minor amounts, near the lower contact of the Shinarump sandstone. Uraninite or pitchblende has been identified underground at the Happy Jack, Fry 4 and Markey Mine, but the predominant mineral on the outcrop is a yellow-secondary mineral, possibly uranophane. Secondary erythrite (pink cobalt "bloom") and an unidentified silver mineral are minor accessory minerals.

In the North Markey Group, copper minerals occur more or less continuously along the base of the Shinarump formation where it is exposed. The copper mineralization varies from traces of malachite to massive replacement of carbonized wood fragments, probably assaying in excess of 30% copper. On the Suzie Claim, at the edge of an area covered by landslide debris, the lower two feet of the Shinarump contains disseminated malachite and azurite, assaying 0.45-1.25% copper.

Uranium mineralization occurs with the copper mineralization at the outcrop on the Suzie Claim, mentioned above, and elsewhere weak anomalies have been noted in channel scours.

EXPLORARION TECHNIQUES

Exploration for copper-uranium orebodies in the general area usually takes one ot more of the following three forms, excluding foot-prospecting with Geiger counter.

(1) Stripping the outcrop with a bull-dozer to expose the lower Shinarump contact. Depending in the size of dozer used, the contract price ranges from $65 to $100 per day, including operator. A qualified operator can stripfrom one to several thousand feet of outcrop per day. A miner, with jack-hammer and compressor available, usually works with the bull-dozer to remove rock slabs beyond the capacity of the bull-dozer.

(2) Surface drilling is used to explore for hidden orebodies and to follow channel trends prior to underground explorarion. Drill depths in the North Markey area will vary from fifty to three hundred feet, depending on the hole location. Drilling is usually contracted, prices ranging from $2.50 to $3.00 per foot, Drilling techniques developed

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in the area consist of drilling through the Chinle debris, when necessary, with a plug bit using air as a circulating medium, then coring the Shinarump formation with a diamond bit using water as a circulating medium. Mineralized core is split and assayed and the holes are usually probed with a Geiger counter probe.

(3) Underground drifts and cross-cuts are used to explore mineralized outcrops and mineralization cored during drilling. A normal, 5' x 6' drift should cost $12.00 to $15.00 per foot. The Shinarump stands well and little or no timber is required, except in broad stopes.

CONCLUSIONS

The North Markey Group of twenty-eight claims covers an area of 370 acres of Shinarump sandstone containing, at the base of the outcrop, discontinuous areas of copper and some uranium mineralization. The mineralization is generally thin, but widespread. The presence of the widespread mineralization and of the sandstone-filled scours with carbonized wood fragments, the locus of known orebodies in the general Red Canyon-White Canyon region, indicates the possibility of finding commercial orebodies of copper and uranium within the boundaries of the North Markey Group. An exploration program, combining stripping of the outcrop and preliminary drilling on a grid system, prior to detailed drilling or underground exploration, appears warranted.

Respectfully submitted,

Elmer Strand

36 W. Sunset Ave.
Salt Lake City, Utah
April 26, 1954

Received with Applicant's letter

May 22, 1956

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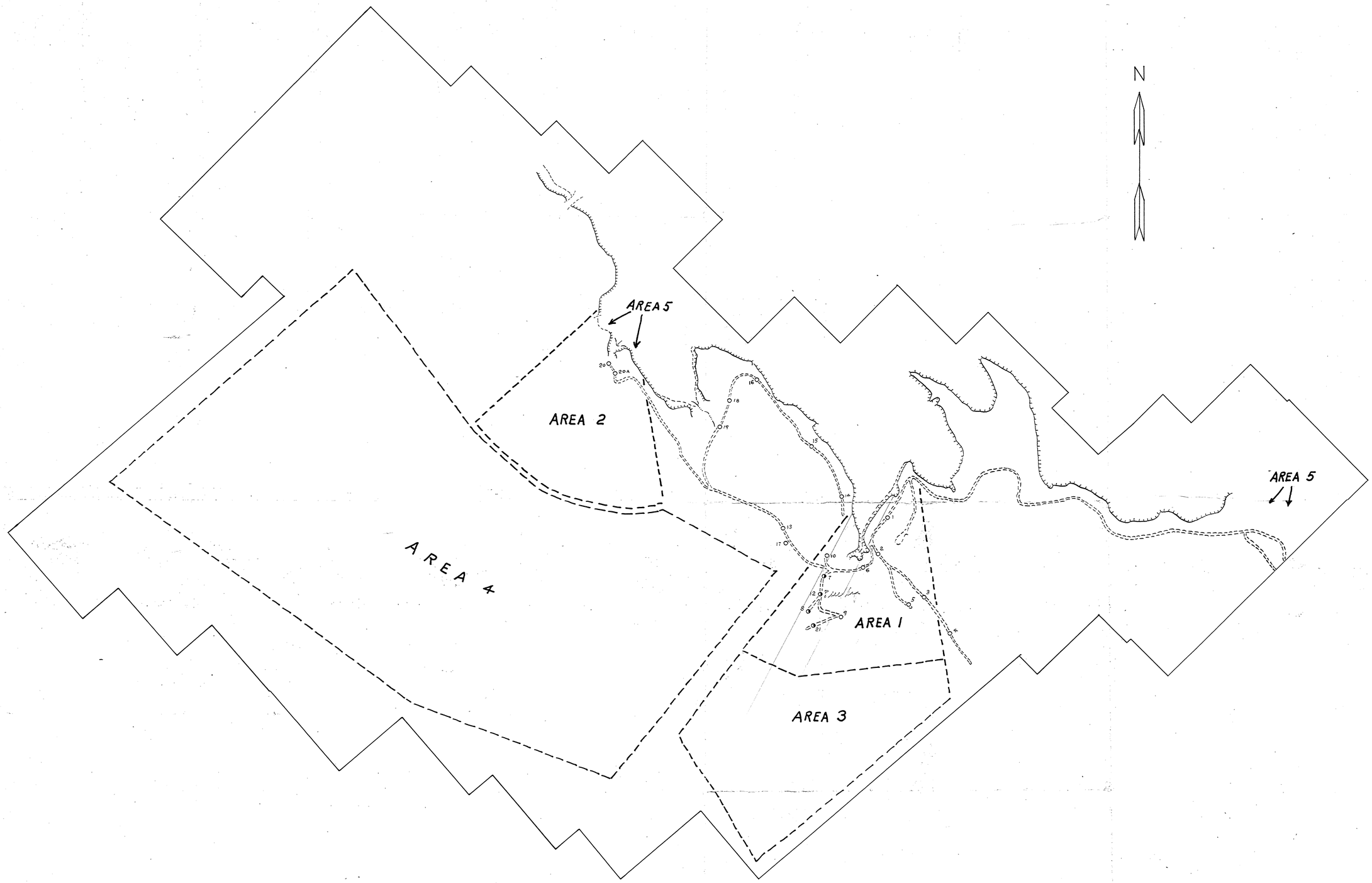
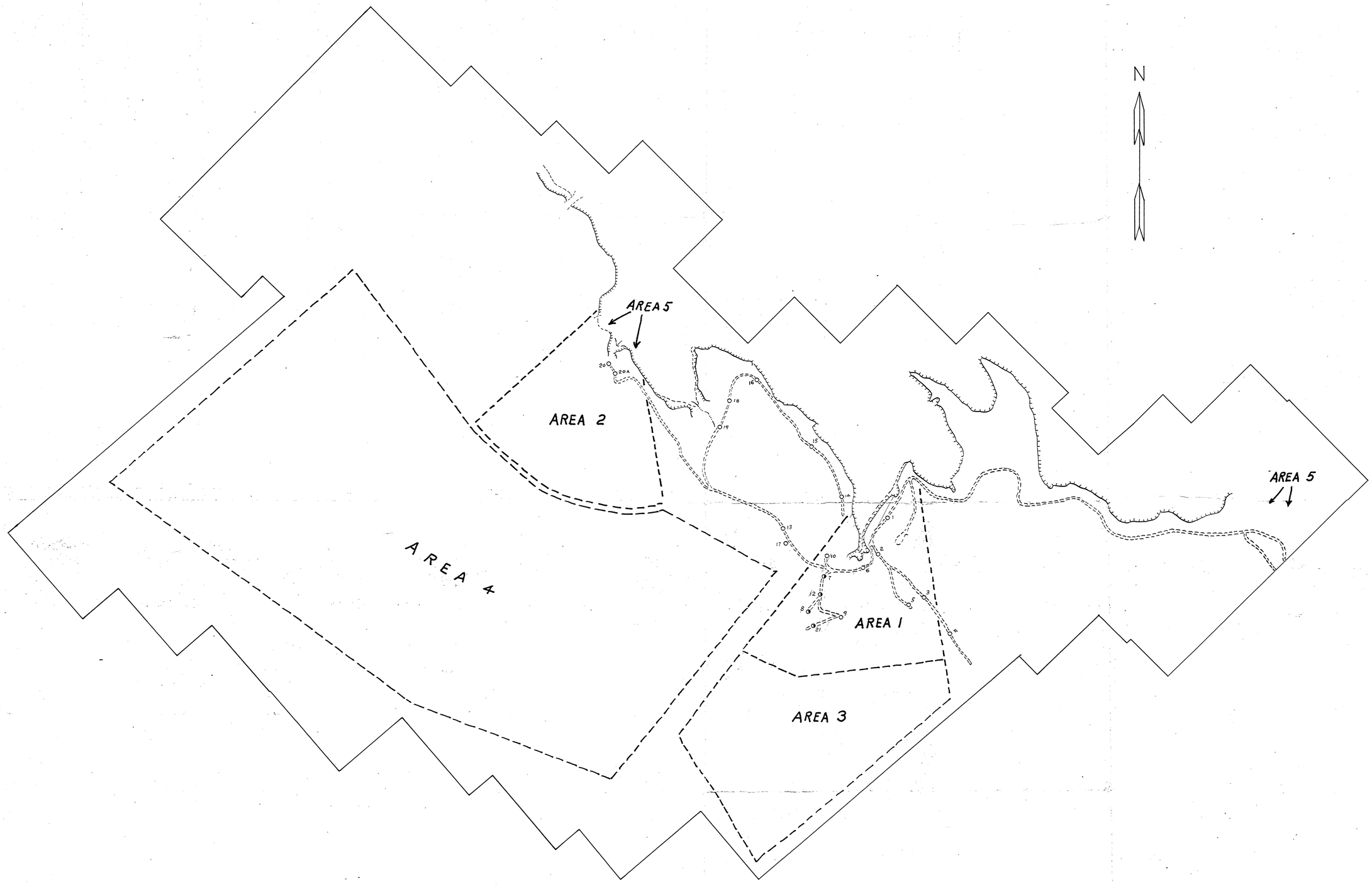


NORTH MARKEY GROUP
RED CANYON DISTRICT
SAN JUAN COUNTY UTAH

SCALE 1 in = 200 ft

POSITION OF DRILL HOLES & SHINARUMP OUTCROP
AFTER MAP BY E. H. EARLAND, JR.

STERLING URANIUM CORP. SALT LAKE CITY, UTAH
R. M. ANDERSON GEOLOGIST
MARCH 1956



NORTH MARKEY GROUP
RED CANYON DISTRICT
SAN JUAN COUNTY UTAH

SCALE 1 in = 200 ft

POSITION OF DRILL HOLES & SHINARUMP OUTCROP
AFTER MAP BY E. H. EARLAND, JR.

STERLING URANIUM CORP. SALT LAKE CITY, UTAH
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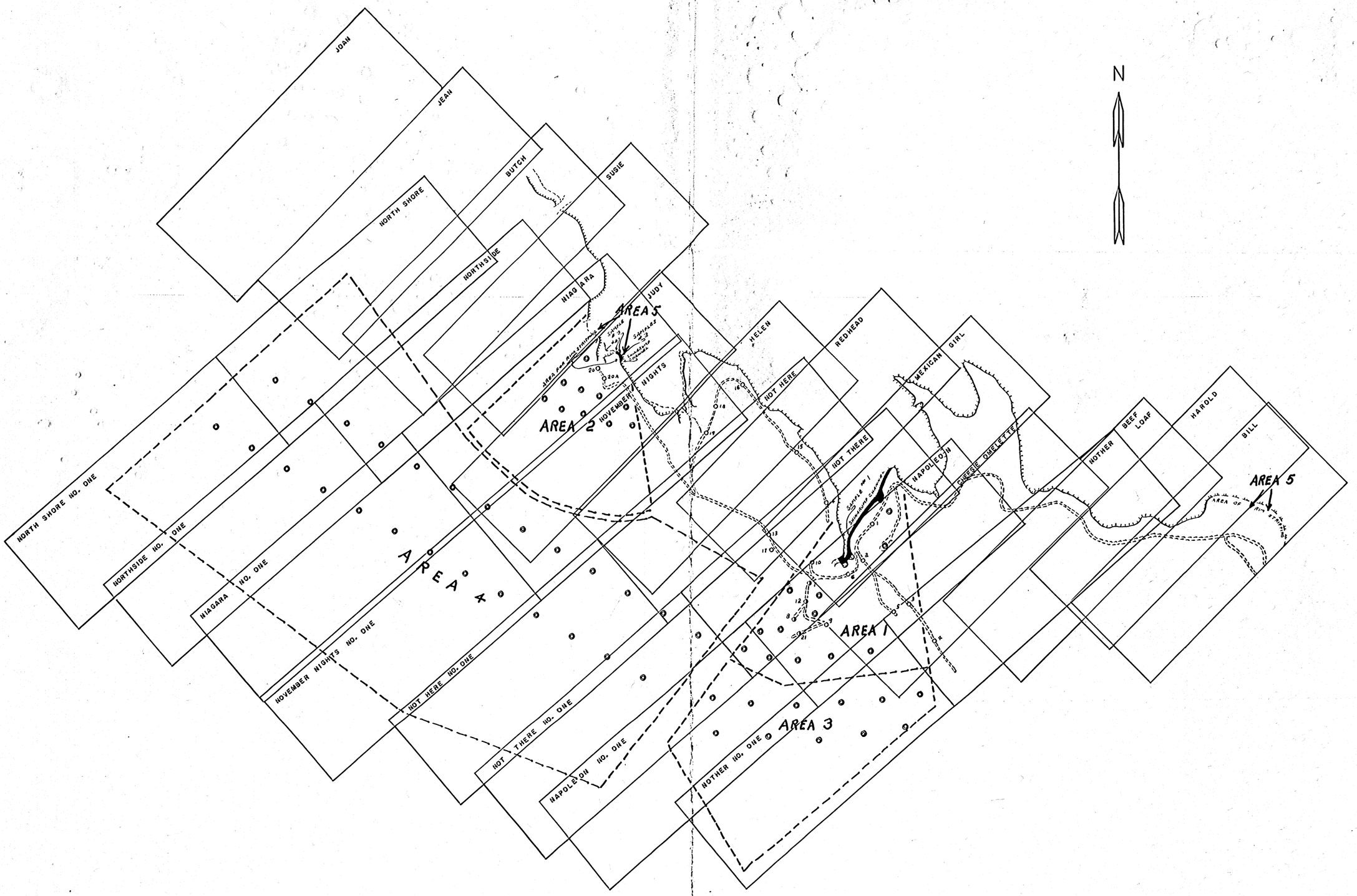

EXISTING DRILL HOLES

PROPOSED DRILL HOLES

SHINARUMP CHANNEL OUTCROP

NORTH MARKEY GROUP
RED CANYON DISTRICT
SAN JUAN COUNTY UTAH

SCALE 1 in = 200 ft

POSITION OF DRILL HOLES & SHINARUMP OUTCROP
AFTER MAP BY E. H. EAKLAND, JR.

STERLING URANIUM CORP. SALT LAKE CITY, UTAH
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MARCH 1956