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To:	Rare & Misc. Mtls.	Date	7/5/55
To:	Oper Com	Date	7-26-55
To:	Oper. Com	Date	11-18-55
To:	Mr. Johnson	Date	11/21/55
To:	M & J	Date	11-21-55
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Ching
Ellis
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Selfridge

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

NOV 21 1955

Treasury Vault Uranium Corporation
505 Colorado Building
1615 California Street
Denver 2, Colorado

Re: Docket No. DMEA-3887 (Uranium)
Champaign and Coney Mines
Park County, Colorado

Gentlemen:

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 anomalous radioactivity on your property, indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you that, under these circumstances, your application for exploration assistance is denied. Such denial, however, is made without prejudice. In the event further work on your part discloses new and more favorable evidence of ore deposition on the property, we shall be pleased to consider a new application.

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

Sincerely yours,

Frank E. Johnson

ACTING Administrator

MChing/izm 11-18-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Code 700
Mr. Ching
Messrs. Hosted, Rm. 3210, GSA
Kiilsgaard, Rm. 5224
Crawford, Rm. 3641
DMEA Field Team, Region III, (2)

R.C.

Docket Copy

Ching
Ellis
Nelson

November 18, 1955

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-3887

Commodity: Uranium

Applicant: Treasury Vault Uranium Corporation
505 Colorado Building
1615 California Street
Denver 2, Colorado

Property: 25 patented claims wholly owned, 2 patented claims partly owned and partly leased, 1 patented claim partly leased, 52 unpatented claims wholly owned and the W½, Sec. 36, T. 8 S., R. 79 W. (State School Land) leased; All in Sec. 1, T. 9 S., R. 79 W., Sec. 6, T. 9 S., R. 78 W., Sec. 31, T. 8 S., R. 78 W., and Sec. 36, T. 8 S., R. 79 W., 6th P.M., Park County, Colorado. The property is known as the Champaign and Coney Mines.

Date of Application: June 24, 1955

Amount of Application: $281,820.00

Work Proposed:

(1)	Detailed surface examination by competent engineers of 240 acres of highest radioactivity outlined by Lundberg's airborne survey	$9,220.00
(2)	Geophysical survey of above 240 acres and laying out of grid map for core drilling	7,060.00
(3)	Access roads	5,000.00
(4)	Reopen old mine workings	5,000.00
(5)	Surface core drilling, 20,000 ft. @ $7.50/ft.	150,000.00
(6)	Core drilling from Champaign Mine workings, 6000 ft. @ $7.50/ft.	45,000.00
(7)	Drifting and crosscutting in Champaign Mine, 1400 ft. @ $35.00/ft.	49,000.00
(8)	Supervision, analyses and miscellaneous costs	11,000.00
	Estimated Total Cost	$281,820.00
	Government Participation @ 75%	$211,365.00

Field Team Report: October, 1955 - W.D. McMillan, USBM & R.U. King, USGS:

The Champaign and Coney mines are old gold-silver producers. The ore deposits were found in quartz-sulfide veins occupying minor fault fissures. The country rock consists of Pre-Cambrian granite and schist intruded by porphyry dikes of Tertiary age.

The field examination included radioactivity traverses across selected localities that were reported by the Applicant to contain anomalous radioactivity, and a radioactivity traverse of the No. 4 adit of the Champaign mine, including 300 feet of drifting performed by the Applicant since July, 1955.

Although anomalies are numerous on the surface and in the mine, they are all small and probably not economically significant. No structual or petrologic controls indicating specific loci of uranium deposits that might be the source of the radioactivity were found, nor were any reported by the Applicant. No relationship has been established between the presence of abnormal amounts of radon gas in the mine and possible uranium occurrences. The small quantities of uranium found in the vein material and wall rocks fail to account for the anomalies. Twenty samples taken from surface dumps and pits and adit Nos. 3 and 4 by the Geological Survey in 1951, 1952, and 1953 analyzed from 0.001% to 0.013% U. It is concluded that anomalous radioactivity is not greater than what might be accounted for by differences in rock type, by radioactive mineral accumulations along iron oxide coated fractures, or by deposits of radioactive minerals in pegmatites. It is recommended that the application be denied without prejudice to the property.

Commodity Group Comments:

Bureau of Mines - John E. Crawford - November 9, 1955

Reviewed the report of examination and discussed it with the AEC representative. Reaffirms a July 11 suggestion that, owing to weak mineralization with relation to the extent of existing underground workings, the application be denied.

Geological Survey - N. E. Nelson - November 10, 1955

The applicant has done considerable work in the mine and has had aerial and ground geophysical surveys made in an attempt to spot the source of what was taken to be exceptional radioactivity. Based on the data provided by the field examiners, agrees that no distinct target has been set up. Concurs with the recommendation that the application be denied without prejudice.

Rare and Miscellaneous Metals Division - Michael Ching - November 18, 1955

Extensive preliminary work by the Applicant, previous investigations by the Geological Survey, and the present field examination, have all failed to produce any evidence of significant uranium mineralization on this property. Anomalous radioactivity, while not completely accounted for, is not unusually great, and cannot be related to specific occurrences of mineralization. Under these circumstances an exploration project is not warranted.

Conclusions and Recommendations:

The chances of finding a significant ore body representing the source of the observed anomalous radioacivity are limited. It is recommended that the application be denied, but that such denial be made without prejudice since the significance of the abnormally high radon content of the air in the mine adits and of the presence of other anomalies remain unknown.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

11/15/55 gfa

IN REPLY REFER TO:

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

November 10, 1955

Re: DMEA 3887
Treasury Vault Uranium Corp.
Champaign and Coney mines
Park County, Colorado
$281,820 - Uranium

RECEIVED
NOV 14 1955

Memorandum

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

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

Subject: Review of Field Team report.

The application requested assistance in exploring for uranium, by drifting, crosscutting and diamond drilling, in and around an old-time silver-lead-gold mine.

The applicant has done considerable work in the mine and has had aerial and ground geophysical surveys made in an attempt to spot the source of what was taken to be exceptional radioactivity.

The examiners made radiometric surveys of the surface and found, as had other observers, that there are radioactivity anomalies on the surface, but they are small and probably not economically significant. "No structural or petrologic controls which would indicate specific loci of deposits of uranium that might be the source of the radioactivity anomalies were found, nor were any reported by the applicant."

Of the underground conditions the examiners note: "In September 1952 Geological Survey field parties noted the presence of extremely high radioactivity in the Champaign mine during a traverse of the No. 1 adit. The presence of radon gas was suspected because the Geiger counters used were contaminated for several hours after leaving the mine." Radon gas was also found in the No. 3 adit.

The examiners report that pitchblende has been identified on a dump of the London Extension mine 2 miles to the south and the Kentucky Belle mine 4 miles to the northeast. "The occurrences, although of academic interest, probably are not economically significant at this time." Also "Detailed geologic mapping of the No. 3 and No. 4 adits of the Champaign mine by the Geological Survey in 1952 did not reveal any relationships between veins, fracture, faults, or wall rocks, and the radioactivity anomalies either underground or on the surface."

The examiners conclude "that the search for uranium on the subject property is in the nature of prospecting and that the search is based entirely on small differences of radioactivity not as yet correlated with any particular veins, structures, or rock types."

Based on the data provided I agree with the examiners that no distinct target has been set up and concur with the recommendation of the examiners and the Field Team that the application be denied without prejudice.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

November 10, 1955

Re: DMEA 3887
Treasury Vault Uranium Corp.
Champion and County mines
Park County, Colorado
$251,800 - Uranium

Memorandum

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

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

Subject: Review of Field Team report.

RECEIVED NOV 14 1955

The application requested assistance in exploring for uranium, by drifting, crosscutting and diamond drilling, in and around an old-time silver-lead-gold mine.

The applicant has done considerable work in the mine and has had aerial and ground geophysical surveys made in an attempt to spot the source of what was taken to be exceptional radioactivity.

The examiners made radiometric surveys of the surface and found, as had other observers, that there are radioactivity anomalies on the surface, but they are small and probably not economically significant. "No structural or petrologic controls which would indicate specific loci of deposits of uranium that might be the source of the radioactivity anomalies were found, nor were any reported by the applicant."

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Based on the data provided I agree with the examiners that no distinct target has been set up and concur with the recommendation of the examiners and the Field Team that the application be denied without prejudice.

N. E. Nelson

N. E. Nelson

NENelson:jeh
G-11/10/55
cc: Director's reading 4212
Branch reading 4212
DMEA (3)
Docket file
J. E. Crawford, 3641
J. O. Hosted, 3210

IN REPLY REFER TO:

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

November 10, 1955

Re: DMEA 3887
Treasury Vault Uranium Surp.
Champion and Gunny mines
Park County, Colorado
$881,800 - Uranium

Memorandum:

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

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

Subject: Review of Field Team report.

RECEIVED
NOV 14 1955

The application requested assistance in exploring for uranium, by drifting, crosscutting and diamond drilling, in and around an old-time silver-lead-gold mine.

The applicant has done considerable work in the mine and has had aerial and ground geophysical surveys made in an attempt to spot the source of what was taken to be exceptional radioactivity.

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Based on the data provided I agree with the examiners that no distinct target has been set up and concur with the recommendation of the examiners and the Field Team that the application be denied without prejudice.

N. E. Nelson

N. E. Nelson

NENelson:jeh
6-11/10/55
cc: Director's reading 4212
Branch reading 4212
NMEA (3) ✓
Docket file
J. M. Crawford, 3641
J. O. Kosted, 3210

IN REPLY REFER TO:

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

November 10, 1955

Re: DMEA 3087
Treasury Vault Uranium Corp.
Champion and Conway mines
Park County, Colorado
$251,500 - Uranium

Memorandum

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

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

Subject: Review of Field Team report.

RECEIVED
NOV 14 1955

The application requested assistance in exploring for uranium, by drifting, crosscutting and diamond drilling, in and around an old-time silver-lead-gold mine.

The applicant has done considerable work in the mine and has had aerial and ground geophysical surveys made in an attempt to spot the source of what was taken to be exceptional radioactivity.

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The examiners report that pitchblende has been identified on a dump of the London Extension mine 2 miles to the south and the Kentucky Belle mine 4 miles to the northwest. "The occurrences, although of academic interest, probably are not economically significant at this time." Also "Detailed geologic mapping of the No. 3 and No. 4 adits of the Champion mine by the Geological Survey in 1952 did not reveal any relationships between veins, fracture, faults, or wall rocks, and the radioactivity anomalies either underground or on the surface."

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N. E. Nelson

NENelson:jah
6-11/10/55
cc: Director's reading 4212
Branch reading 4212
NMEA (3)
Docket file
J. M. Crawford, 3641
J. O. Rested, 3210

11/10/55 gla

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

November 9, 1955

Memorandum

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

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

Subject: Report of examination, DMEA Docket 3887, Treasury Vault Uranium Corporation, Champaign and Coney mining claims, Park County, Colorado

I have reviewed the report of examination, DMEA Docket 3887, dated October 27, 1955, and received in this office November 8, 1955. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

While the field examiners determined that radioactivity anomalies were present on the surface of the claims and in an adit of the Champaign mine, they were found to be small and not of economic significance. Previous Geological Survey examinations also have resulted in the discovery of minor radioactivity in the old mine workings and at the surface.

Inasmuch as there is no evidence of economic or near-economic-grade uranium mineralization on the Champaign and Coney mining claims, the field examiners and Field Team recommend denial of the applicant's request for assistance on an exploration program of drifting, cross-cutting, and diamond drilling at estimated total cost of $281,820.00.

We concur with the recommendations of the field examiners and the Field Team, and reaffirm our comments mentioned in my memorandum of July 11 to you suggesting that, owing to weak mineralization with relation to the extent of existing underground workings, the application be denied.

In accordance with the routing slip attached thereto, the report is being sent to the Chief, Division of Minerals.

John E. Crawford

John E. Crawford

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

November 9, 1955

Memorandum

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

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Uranium Commodity Committee

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John E. Crawford

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

November 9, 1955

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Uranium Commodity Committee, Room 4445

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Uranium Commodity Committee

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We concur with the recommendations of the field examiners and the Field Team, and reaffirm our comments mentioned in my memorandum of July 11 to you suggesting that, owing to weak mineralization with relation to the extent of existing underground workings, the application be denied.

In accordance with the routing slip attached thereto, the report is being sent to the Chief, Division of Minerals.

John E. Crawford

11-8-55 [illegible]

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

RECEIVED
NOV - 2 1955

October 27, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, DMEA Docket 3887 (Uranium), Treasury Vault Uranium Corporation, Champaign and Coney mining claims, Park County, Colorado

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

The examiners conclude that there is no known relation between the very minor radiometric anomalies noted in the area and the presence of significant uranium deposits along any of the veins.

We concur in their recommendation that the application be denied without prejudice.

W. M. Traver

By J. W. Townsend
J. W. Townsend

E. N. Harshman
E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
11-7-55
(date)

IN REPLY REFER TO:
DMEA

RECEIVED
NOV - 2 1955

Date Rec'd.
OCT 27 1955
BUREAU OF MINES
Denver, Colorado

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

October 26, 1955

TRANSMITTED
OCT 27 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: DMEA Docket 3887 (Uranium), Treasury Vault Uranium Corp., Champaign and Coney mining claims, Park County, Colorado

Enclosed are the original and nine copies of a joint examination report by R. U. King, U. S. Geological Survey, and W. D. MacMillan, U. S. Bureau of Mines, covering their examination of the subject property.

The applicant proposes a program of exploration for uranium ore by drifting, crosscutting, and diamond drilling at an estimated cost of $281,820.00.

The examiners conclude that there is no known relation between the very minor radiometric anomalies noted in the area and the presence of significant uranium deposits along any of the veins. They recommend the application for exploration assistance be denied without prejudice.

We concur with this recommendation.

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

John F. Shaw
John F. Shaw
Supervising Mining Engineer

Enclosures (10)

ENHarshman:arh

Reviewed by
DMEA OPERATING COMMITTEE
11-7-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS MCKAY, SECRETARY

RECEIVED
NOV - 2 1955

DEFENSE MINERALS EXPLORATION ADMINISTRATION

TRANSMITTED
OCT 27 1955

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3887

Treasury Vault Uranium Corporation

Champaign and Coney Mining Claims

London Mining District

Park County, Colorado

Uranium

Joint Engineering and Geologic Report

by

W. D. McMillan
U. S. Bureau of Mines

R. U. King
U. S. Geological Survey

October 1955

Reviewed by
DMEA OPERATING COMMITTEE
11-7-55
(date)

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Geology and ore deposits	6
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ILLUSTRATIONS

Figure	Follows page
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2. Partial claim map showing development, Treasury Vault Uranium Corporation, Park County, Colorado	5
3. Geologic map of the Champaign-Coney mines area showing the outlines of the principal claims of the Treasury Vault Uranium Corporation, Park County, Colorado	6

TABLES

Number	
1. Analyses of samples collected from the Champaign mine and vicinity, Park County, Colorado	8

DMEA 3887
TREASURY VAULT URANIUM CORPORATION
CHAMPAIGN AND CONEY MINING CLAIMS
LONDON MINING DISTRICT
PARK COUNTY, COLORADO

RECEIVED
NOV - 3 1955

By W. D. McMillan and Robert U. King

INTRODUCTION

The Treasury Vault Uranium Corporation applied to the Defense Minerals Exploration Administration for Government assistance to explore for uranium ore on their property in the London mining district, Park County, Colorado. They propose to drill 20,000 feet of core hole from surface locations, 6,000 feet of core hole from underground locations, and to drive 1400 6,000 feet of drifts and crosscuts. The applicant's estimated total cost of the project is $281,820.00, Government participation 75 percent or $211,365.00.

An examination was made on September 7, 1955, by a Region III examining team consisting of W. D. McMillan of the Bureau of Mines, and Robert U. King of the Geological Survey. A representative of the applicant failed to appear, but three shareholders were visiting the property at the time of the examination. These were F. C. Squire, Washington, D. C., R. E. Parkhille, Grafton, West Virginia, and Russel A. Smith, Pinealles Park, Florida.

The examination included a field check of a number of claim corners, radioactivity traverses across selected localities that were reported by the applicant to contain anomalous radioactivity, and a radioactivity traverse of the No. 4 adit of the Champaign mine including 300 feet of drifting performed by the applicant since July 1955.

Although radioactivity anomalies are numerous on the surface and in the No. 4 adit of the Champaign mine, they are all small, and they are probably not economically significant. No structural or petrologic controls which would indicate specific loci of deposits of uranium that might be the source of the radioactivity anomalies were found, nor were any reported by the applicant.

It is concluded that the search for uranium in the Champaign and Coney mines is in the nature of prospecting, and the examining team, therefore, recommends that the application for Government assistance to explore for uranium be denied.

ACKNOWLEDGMENTS

The merits of the radioactive deposits in the Champaign mine in regard to their potential as an economic source of uranium were discussed with members of the Denver Exploration Branch of the U. S. Atomic Energy Commission. They agree with the conclusions and recommendations presented in this report.

The sample data presented in table 1 were obtained by the Geological Survey during the period from 1952 to 1954 in connection with its Trace Elements program.

The cooperation of the Colorado State Public Health Department and Dr. Jacoe, Director, in making available the results of a gas survey made in July 1955 of the Champaign mine is acknowledged.

E. H. Roseboom of the U. S. Geological Survey mapped in detail the geology of the No. 3 and No. 4 adits of the Champaign mine in July 1953; data from this investigation have been used in this report.

LOCATION AND PHYSICAL FEATURES

The Champaign and Coney mines are in the London mining district 5 miles airline west-northwest of Alma in Park County, Colorado. Alma is 6 miles north of Fairplay on Colorado Highway 9; Fairplay, on U. S. Highway 287, is 87 miles west of Denver (fig. 1).

The applicant's claims are in secs. 1, 6, 31, and 36, Tps. 8 and 9 S., Rs. 78 and 79 W., 6th principal meridian, on the east slope of the Mosquito Range. Altitudes range from 11,500 to 13,000 feet above sea level. North Mosquito Creek flows southeastward across the claims, and joins the South Platte River about 1 mile south of the town of Alma.

The Champaign mine is reached from Colorado Highway 9 by 3 miles of graded and county-maintained road and by 3 miles of ungraded road along North Mosquito Creek. The last 2 miles of the road have steep grades and are passable only with truck or 4-wheel drive vehicles. The Coney mine, on the southeast end of Treasure Vault Mountain, is 2,000 feet N. 76° W. of the portal of the No. 4 adit of the Champaign mine.

Because of the high altitude, the winter season is long and severe. Heavy snowfall and sub-zero temperatures would restrict surface operations chiefly to the summer months. An adequate water supply for mining and drilling purposes is available from Mosquito Creek or from the mine water. Native timber would be available from local sources within 5 miles of the mine. The nearest public utility power supply is at Alma, 6 miles east of the property. Housing could be provided at Park City, 4 miles from the property.

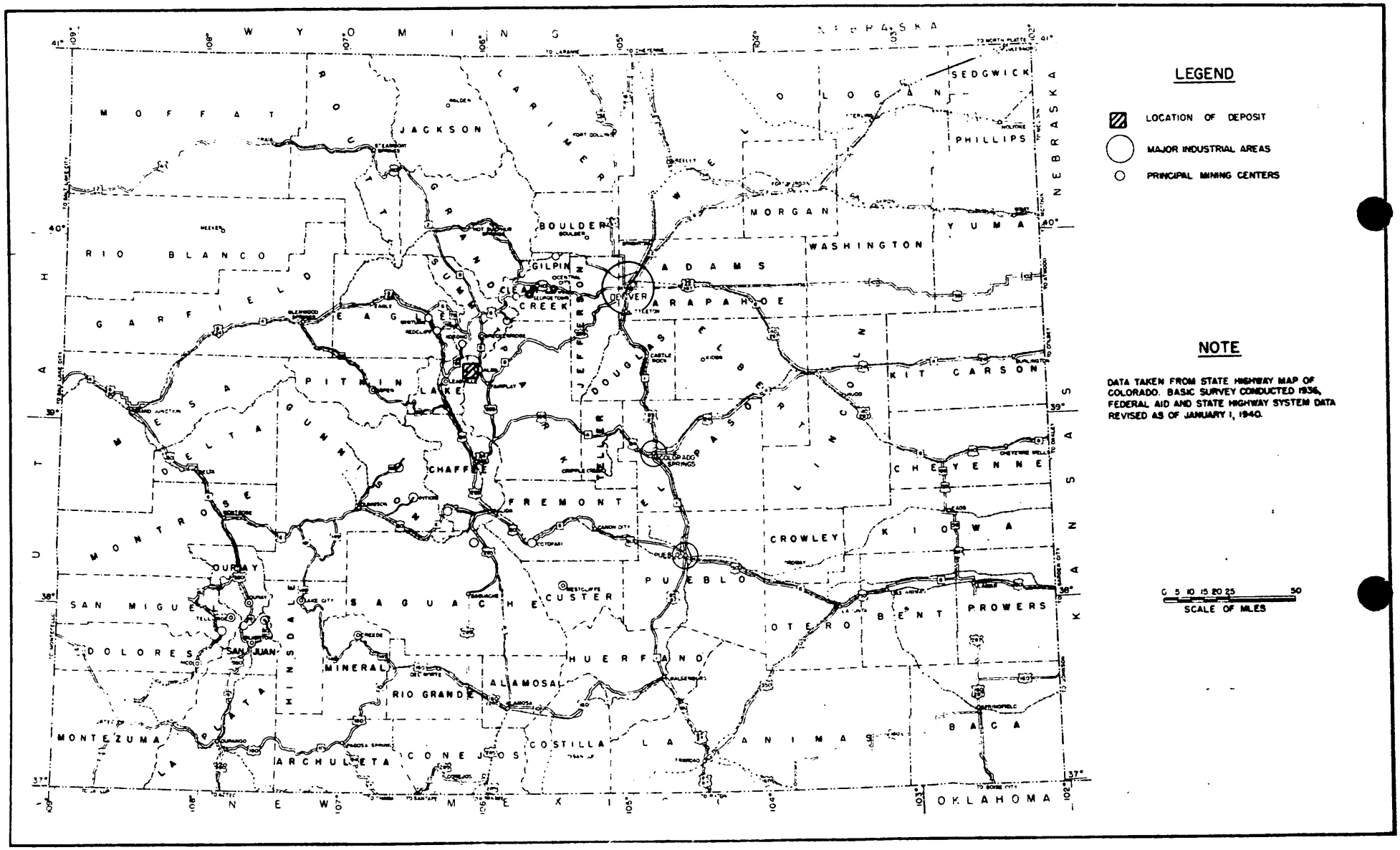

FIGURE 1 - LOCATION MAP, TREASURY VAULT URANIUM CORPORATION, CHAMPAIGN AND CONEY CLAIM GROUP, LONDON MINING DISTRICT, PARK COUNTY, COLO. DMEA 3887

HISTORY, PRODUCTION, AND OWNERSHIP

The first mining in Park County was for placer gold in 1859, which was soon followed by lode mining of gold, silver, copper, lead, and zinc. Production from 1859 to 1923 had a total value of $19,671,020, of which $10,435,801 was from gold and $6,910,809 was from silver. Most of this production was from the Alma (London) mining district.

The Champaign mine was discovered in 1876 and was operated intermittently from 1882 to 1900. The estimated production is $250,000 from sorted ore probably with average unit content of 80 ounces of silver and 2 ounces of gold per ton. Production from 1901 to 1929 was 42 tons containing 49 ounces of gold and 5,795 ounces of silver. There has not been any production since 1929.

Pitchblende was discovered in July 1951 in the Alma (London) mining district by the U. S. Geological Survey acting on behalf of the U. S. Atomic Energy Commission, and vein material from the Champaign mine was found to contain as much as 0.013 percent uranium (U.S.G.S. Circ. 294, 1953).

In September 1952 Geological Survey field parties noted the presence of extremely high radioactivity in the Champaign mine during a traverse of the No. 4 adit. The presence of radon gas was suspected because the Geiger counters used were contaminated for several hours after leaving the mine.

In March 1953 a gas survey was made of the No. 3 adit, and the presence of radon in the mine openings was confirmed.

The applicant states that he controls 25 claims by record ownership in entirety, 2 claims one-quarter owned and three-quarters under lease and option, 1 claim two-thirds held by lease and option, and a Colorado state lease on one-half section. In view of the recommendation for denial, a check of the applicant's holdings was not made.

PRESENT STATUS

Exploration and Development

Exploration and development on the Fanny vein on the Champaign claim consist of four adits designated from top to bottom as Nos. 1 to 4, inclusive, with respective lengths of 80, 260, 1,500, and 1,320 feet. Adits Nos. 2, 3, and 4 are connected by raises and small stopes. Driving of No. 4, the lowest adit, is being continued (see fig. 2).

Mining equipment and other facilities

A frame building has been rehabilitated and is used for storage of supplies and for shop maintenance. Mining equipment consists of one 220 CFM Gardner-Denver diesel-driven compressor, two air receivers, two jack-hammers mounted on jack-legs, three mine cars, one pressure tank, mine rail, compressed air pipe, one gasoline-powered blower, and 8-inch ventilation pipe.

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NOV - 2 1955

GEOLOGY AND ORE DEPOSITS

The geology and ore deposits of the Alma district that includes the area surrounding the Champaign and Coney mines, has been described by Singewald in Bulletin 911 of the U. S. Geological Survey. The Champaign and Coney mines are in a terrane of Precambrian granite and schist. The Precambrian rocks have been faulted and intruded by porphyry dikes of Tertiary age (fig. 3). The area is about 1 mile north of the main center of mineralization that has accounted for the highly productive London silver-lead mines.

Silver Plume granite, a gray to pink medium-grained biotite-muscovite granite, and associated pegmatite, make up the bulk of the host rocks that contain the vein deposits of the Champaign and Coney mines. Two small bodies of biotite schist of the Idaho Springs formation occur in the immediate vicinity. Dikes of porphyritic rocks that range in composition from diorite to granite are common in the area.

The London fault, the major structural feature in the area, is about three-fourths of a mile west of the Champaign mine. It is a steeply-dipping reverse fault that extends for several miles northwest and southeast of the area; sedimentary rocks of Paleozoic age are in fault contact with Precambrian crystalline rocks. Most of the productive ore deposits of the Alma (London) district are within a narrow zone of highly folded and faulted limestone immediately west of the London fault.

Faults that trend northeast and along which minor displacement has occurred are common in the Precambrian rocks and may be related

to the London fault. Some of these minor faults are mineralized and constitute the ore deposits of the Champaign and Coney mines area.

The ore deposits of the area consist of gold- and silver-bearing quartz-sulfide veins that occupy minor fault fissures. The Champaign and Coney mines exploit veins that are along such faults.

The workings of the Coney mine are inaccessible, and geologic information is limited to observations that can be made from the dump material. The workings apparently were intended to explore an east-northeast trending mineralized fault that cuts porphyry dike rocks, granite, and schist. No new data are submitted by the applicant concerning the Coney mine.

The Champaign mine exploits the Fanny vein, a northeast-trending fissure along which some small displacement of the granite and schist wall rocks has occurred. The vein has been traced on the surface for over 1 mile. It dips steeply to the northwest and ranges in width from a knife-edge to as much as 5 feet. The vein material consists of gold- and silver-bearing base metal sulfides, and small quantities of pyrite and chalcopyrite in a gangue of quartz and altered wall rock.

A westward-trending vein (Clipper vein) one-fourth of a mile southeast of the Fanny vein, has been explored by three short adits. This vein that dips steeply to the south, is poorly exposed on the surface. According to the late Mr. Redman, it presumably crosses the Fanny vein in the No. 3 adit about 500 feet southwest of the portal of the adit. The Clipper vein is a quartz-sulfide vein that has been mined for lead, zinc, and silver, but no production data are available.

According to the late Mr. Redman, one of the principal owners of the Champaign mine, pitchblende was reported to have been found in the Champaign mine in a stope above the No. 3 adit level near where the Clipper vein crosses the Fanny vein.

A sample of radioactive vein material from the dump of the No. 4 adit of the Champaign mine contained 0.006 percent eU and 0.005 percent U ((Pierson and Singewald, USGS Circular 294, 1953). Vein material from the Champaign fissure contained 0.010 percent eU and 0.013 percent U. Results of analyses of samples collected by the Geological Survey during early investigations of the Champaign mine are given in table 1.

The radon content of 14 gas samples, collected by the Geological Survey during the early part of 1953, ranges from 760 to 25,300 micro-micro curies per liter.

A gas study was made by the Colorado Public Health Department in July of 1955 in the No. 3 and No. 4 adits of the Champaign mine. Radon daughter products in the air at the face of the No. 4 adit, during a period when mining was in progress and fresh air was being supplied at the rate of 18,000 linear feet per minute, amounted to 215 micro-micro curies per liter; in the No. 3 adit through which no air was circulating, the radon daughters amounted to 26,000 micro-micro curies per liter, and the radon gas content of the air amounted to 17,000 micro-micro curies per liter.

Although anomalous radioactivity due to radium emanations including radon gas and radon daughter products, is very noticeable in the mine workings of the Champaign and Clipper mines, and is measurable on

Table 1.--Analyses of samples collected from the Champaign mine and vicinity, Park County, Colorado

Description and location of sample	Date collected	Source	eU (percent)	U (percent)	Remarks	No.
Dump, No. 4 adit, Champaign mine.	July 1951	USGS	0.006	0.005		51484
Dump,adit 500 ft SW of Champaign No. 4.	do.	do.	0.005	0.003		51483
Portal 550 ft SW of Champaign No. 4.	do.	do.	0.010	0.013		51482
Champaign No. 4, 21 ft S of sta. 25.	Aug. 1952	J.N.Redman	0.009	0.002		72624
Do. do.	do.	do.	0.009	0.001		72625
Do. near sta. 25	do.	do.	0.007	0.002		72626
Do. near sta. 26	do.	do.	0.009	0.001		72627
Do. muck pile near sta. 26.	do.	do.	0.005	0.001		72628
Champaign No. 4 X-cut near sta. 25.	Sept.1952	USGS	0.23	--	Specimen, black fracture coating.	74393
Do.	do.	do.	0.040	0.003	Vein material and wall rock.	74392
Do.	do.	do.	0.012	0.002	Fault gouge.	74394
Do.	do.	do.	0.022	0.001	do.	74395
Do.	do.	do.	0.005	0.002	Granite wall rocks.	74396
Champaign No. 3, 275 ft from portal.	do.	do.	0.008	0.005	Wall rock	74398
Middle Clipper dump	Sept.1952	A.Flanagan	0.002	--	Quartz vein, wall rocks.	73110
Pit, 75 ft SW of Corner No. 6 Little Edna claim.	July 1953	USGS	0.007	0.001	Granite pegmatite.	92696
Pit, 60 ft S of Corner 6, Little Edna claim.	do.	do.	0.002	--	Quartz porphyry.	92697
Cut, 250 ft SW Lone Star shaft.	do.	do.	0.009	0.008	General Canby vein.	92698
Dump, Lone Star shaft.	do.	do.	0.010	0.005	Vein material, black stain.	92699
Champaign No. 4, 33 ft S. sta. 26.	do.	do.	0.011	0.002	1 ft vein material.	92700
Do. X-cut, 25 ft S. of sta. 26.	do.	do.	0.005	0.002	Granite.	92701
Do. 18 ft N. of sta. 24.	do.	do.	0.005	0.001	3 ft vein material.	92702
Do. near sta. 13.	do.	do.	0.003	--	Altered granite.	92703
Champaign No. 3, near sta. 62.	do.	do.	0.008	0.003	Granite wall rock.	92704
Do. 80 ft S. of sta. 48.	do.	do.	0.001	--	Sulfide ore, 0.27 oz. Au/T; 85.48 oz. Ag/T.	92705
Do. 14 ft S. of sta. 61.	do.	do.	--	--	0.066 ppmU mine water.	92706
Do. near sta. 52.	do.	do.	--	--	0.054 ppmU do.	92707
Champaign No. 4, 60 ft S. of sta. 26.	do.	do.	--	--	0.003 ppmU do.	92708
Do. 37 ft S. of sta. 26.	do.	do.	--	--	0.038 ppmU do.	92709

the surface, no uranium minerals have been found in the vein material nor in the wall rocks that might account for the anomalous radioactivity.

Pitchblende has been identified in high-grade gold-silver-lead ore on a dump of the London Extension mine 2 miles to the south, and in the Kentucky Belle mine 4 miles to the northeast. These occurrences, although of academic interest, probably are not economically significant at this time.

Detailed geologic mapping of the No. 3 and No. 4 adits of the Champaign mine by the Geological Survey in 1952 did not reveal any relationships between veins, fracture, faults, or wall rocks, and the radioactivity anomalies either underground or on the surface.

CONCLUSIONS

The radioactivity anomalies reported by the applicant and the presence of small quantities of uranium both on the surface and underground are substantiated by the results of previous investigation by the Geological Survey made on behalf of the U. S. Atomic Energy Commission. The anomalies, however, are not greater than what might be accounted for by differences in rock type, by radioactive mineral accumulations along iron oxide coated fractures, or by deposits of radioactive minerals in pegmatites. Also the relationships between the abnormally high radon content of the air in the adits of the Champaign and Clipper mines and to possible uranium occurrences has not yet been determined.

Analyses of vein material and wall rocks submitted by the applicant are almost without exception one order of magnitude greater than analyses of samples collected previously by Geological Survey field parties. Inasmuch as some of the sample localities are virtually identical with those of the applicant, some doubt is cast on the accuracy of the applicant's analyses as submitted.

No significant uranium occurrences have been uncovered thus far by the applicant in the Champaign and Coney mines, and the examining team, therefore, concludes that the search for uranium on the subject property is in the nature of prospecting and that the search is based entirely on small differences of radioactivity not as yet correlated with any particular veins, structures, or rock types.

RECOMMENDATIONS

The examining team recommends that the application for assistance to explore for uranium at the Champaign and Coney mines be denied, but without prejudice to the property.

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

RECEIVED
AUG - 5 1955

224 New Customhouse
Denver 2, Colorado

August 2, 1955

Memorandum

To: Secretary to the Operating Committee

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA-3887 (Uranium), Treasury Vault Uranium Corporation, Champaign and Coney Mines, Park County, Colorado

Enclosed are two copies of assays and other data which has been submitted by the applicant as additional information to the subject docket.

W. M. Traver

Enclosures

W. M. Traver

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
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W. M. TRAVER,

Enclosures

W. M. Traver

RECEIVED
AUG - 5 1955
DMEA
Date Rec'd
AUG 1 1955
BUREAU OF MINES
Denver, Colorado

July 28, 1955

Defense Minerals Exploration Administration
New Customs House
Denver, Colorado

Re: DMEA-3887
Exploration Assistance
Champaign Mine and
Coney Mine

Attention: William Traver

Gentlemen:

Enclosed herewith please find four copies of assays from Denver Research Institute and which contain on the bottom line the percentages of U308 as shown by graphs which have been carefully worked out by the said Research Institute. I enclose also an original and three copies of letter from the Research Institute showing that they have extensive calibration data upon which to base their conclusion that samples contain a certain percentage.

The percentages are rounded out to the nearest hundredth percent. The first sheet, consisting of series No. 1 of 5 samples was taken at 113 feet from station 26 in tunnel No. 4. Sample No. 1 was taken from the left wall. Sample No. 2 was taken from the right wall. Sample No. 3 was taken from the right center of the face of the tunnel. Sample No. 4 was taken from the center of the face near the left side. Sample No. 5 was taken at the center of the face at the roof. These samples were taken prior to the time the tunnel was advanced this year.

Series No. 2 was taken at the following places: Sample No. 1 was taken at 173 feet from station 26 from the roof at a vein junction. Sample No. 2 was taken at the center of the breast at a point 173 feet from station 26. Sample No. 3 was taken at station No. 24 from the right wall. Samples Nos. 4 and 5 were taken from the dump of the Wanda Rose, which is a claim lying to the south of Champaign tunnel No. 4. These two samples appeared to be mineralized but obviously are very low in their uranium content.

Sample No. 1 of Series No. 3 was taken 193 feet from station No. 26 at the bottom of the face of the tunnel. Sample No. 2 was taken at the same place at the top of the face of the tunnel.

Sample No. 1 of Series No. 4 was taken at a point 204 feet from station No. 26 at the top of the left hand side of the face. Sample No. 2 was taken at 204 feet from station No. 26 at the top of the right side of the face of the tunnel. Sample No. 3 was taken in the dog leg at the right of station No. 24. Sample No. 4 was taken at a point 196 feet from station 26 at the center of the face of the tunnel. Sample No. 5 was taken at 196 feet from station 26 at the left side of the center of the face. Sample No. 6 was taken from property not belonging to the corporation and should therefore be disregarded.

Sample No. 1 of Series No. 5 was taken at a point 193 feet from station 26. Sample No. 2 was taken at a point 198 feet from station 26. Sample No. 3 was taken at a point 203 feet from station No. 26.

Sample No. 1 of Series No. 6 was taken from the Diefendorf claim, which lies to the south of Champaign tunnel No. 4. Sample No. 2 was taken at a point 208 feet from station 26 on the left wall. Sample No. 3 was taken at a point 208 feet from station No. 26 on the right wall. Sample No. 4 was taken at a point 210 feet from station No. 26 at the right of the center vein.

The samples in Series No. 7 and Series No. 8 were taken at points further in the tunnel, with the exception of No. 6 of Series No. 7, which was also taken from the Wanda Rose, and sample No. 2 of Series No. 8 which was taken from an outcrop on Loveland Mountain. The record book showing the exact location where the other samples were taken has been left at the mine and in the interest of time I am therefore not specifically stating exactly where they were taken, although Nos. 2, 3 and 4 were taken at the same distance from station 26. Sample No. 2 was taken from the left hand side of the vein. Sample No. 3 was taken from the face of the vein junction. Sample No. 4 was taken at the center of the vein at the breast of Champaign tunnel No. 4. Exact data as to where the samples from Series Nos. 7 and 8 were obtained will be available the latter part of next week and can then be submitted, if desired, or more particularly, can be submitted and explained to the engineer who will make the field examination for you.

Yours very truly,

TREASURY VAULT URANIUM CORPORATION

By Ben L. Wright, Jr.

Ben L. Wright, Jr., President

BLW/dw
enc.

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 3 June FOR Treas Vault U Corp BY MCS
SAMPLE Series #1
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATION Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # Chart # 1345-50

Remarks:

★ Counts per second above background

Element	#1 ★	#2	#3	#4	#5				
Cb	12	—	—	—	—				
Zr	20	—	—	16	24				
Y	20	—	—	16	16				
U	40	36	48	28	40				
Pb	—	16	16	28	16				
Zn	48	40	64	60	56				
Fe	224	176	240	112	232				
Mn	28	16	24	116	48				
Sr	—	—	—	—	12				
%									
U_3O_8	0.08	0.07	0.11	0.05	0.08				

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 10 June FOR Tresoubult U Corp BY MLS
SAMPLE Series #2
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MONITOR LINE 1 TO 4
COLLIMATION Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # ● Chart # 1352-6

Remarks:

★ Counts per second above background

Element	#1★	#2	#3	#4	#5				
Zr	—	12	—	—	—				
Y	12	16	—	16	16				
U	40	37	40	16	—				
Pb	—	—	—	—	96				
Zn	16	24	8	1712	960				
Fe	280	184	128	400	240				
Mn	24	28	—	48	160				
Ag	—	—	—	16	24				
%									
U_3O_8	0.08	0.07	0.08	0.02	—				

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 13 June FOR Treas Vault U Cop BY MES
SAMPLE Series #3
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH Air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATION Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP1X8

Job # ____ Chart # 1357-1358

Remarks:

★ Counts per second above background

Element	#1 ★	#2
U	27	24
Pb	16	16
Zn	—	32
Fe	237	152
Mn	96	24
Y	27	—
%		
U_3O_8	0.05	0.04

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 13 June FOR Treas Vault U Cnp BY MKS
SAMPLE Series #4
EXCITATION W KV. 50 MA. 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TO 4
COLLIMATOR Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # ____ Chart # 1362 - 1367

Remarks:

* counts per second above background

Element	#1*	#2	#3	#4	#5	#6			
Zr	22	16	16	—	—	—			
U	29	32	16	24	24	44			
Pb	32	8	160	37	32	—			
Zn	96	100	1496	40	88	36			
Fe	365	244	352	248	150	208			
Mn	32	108	16	22	24	42			
Y	—	—	24	16	—	—			
Ag	—	—	—	—	32	—			
%									
U_3O_8	0.06	0.06	0.02	0.04	0.04	0.09			

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 22 June FOR Texas Vault U Corp BY MXS
SAMPLE Series #5
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TO 4
COLLIMATOR 54#1 BACK FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRIX P 1X8

Job # Chart # 1381-83

Remarks:

★ Counts per second above background

Element	#1★	#2	#3
Ag	13	—	24
Zr	13	—	10
Y	32	—	—
U	24	16	—
Pb	176	24	320
Zn	288	179	1504
Fe	551	288	890
Mn	224	176	16
Cb	—	—	8
%			
U_3O_8	0.04	0.02	—

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 5 July FOR Treas Vault U Corp BY MES
SAMPLE Series #6
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATION Std #1 FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP1X8

Job # Chart # 1390-1393

Remarks:

* counts per second above background

Element	#1*	#2	#3	#4
U	32	32	32	—
Pb	26	27	—	112
Zn	304	232	448	669
Fe	352	672	714	432
Mn	101	176	38	16
Zr	—	16	13	—
Y	—	16	16	—
Sr	—	—	13	—
Ba	—	—	13	—
%				
U_3O_8	0.06	0.06	0.06	—

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 6 July FOR Treas Vault U Corp BY MKS
SAMPLE Series 7
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 IC 4
COLLIMATOR Std #1 ABSORBER none
SCANNING DELAY 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XPIX8

Job # Chart # 1394-1398

Remarks:

★ Counts per second above background

Element	#1★	#2	#3	#4	#5				
Ba	1	—	—	16	—				
U	—	48	48	32	24				
Pb	560	32	—	16	56				
Zn	1520	232	128	352	736				
Fe	408	400	256	240	304				
Mn	—	35	56	264	29				
Ag	16	—	—	—	—				
Y	—	13	—	—	16				
Sr	—	16	—	—	—				
Zr	—	—	16	—	24				
Cr	—	—	16	—	—				
%									
U_3O_8	—	0.11	0.11	0.06	0.04				

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 8 July FOR Treas Vault U Corp BY MXL
SAMPLE Series 8
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TO 4
COLLIMATION St #1 G.M. FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # Chart # 1402-1404

Remarks:

★ counts per second above background

Element	#2★	#5	#6
Sr	16	—	—
U	32	32	32
Fe	256	237	296
Mn	24	96	104
Pb	—	38	—
Zn	—	1184	74
%			
U_3O_8	0.06	0.06	0.06

C
O
P
Y

UNIVERSITY OF DENVER
Denver Research Institute
University Park
Denver 10, Colorado

12 July 1955

Mr. Ben Wright
718 Symes Bldg.
Denver 2, Colorado

Dear Ben:

Eight copies of each test report for the various series of your samples are enclosed.

The concentrations of the elements are indicated by numerical factors which are related to the percentages of the elements. Some of the concentrations (1000 counts per second or more) range up to 25 or 30% while the others (250 counts per second or less) range up to 1 or 2%.

In the case of uranium, we have extensive calibration data and samples with readings of 16 counts per second contain 0.02% U3O8 and samples with readings up to 50 counts per second contain 0.11% U3O8.

We will be happy to discuss the results further at your convenience.

Sincerely,

s/ Merlyn L. Salmon
Research Engineer
Metallurgy Division

July 28, 1955

Defense Minerals Exploration Administration
New Customs House
Denver, Colorado

Attention: William Traver

Re: DMEA-3887
Exploration Assistance
Champaign Mine and
Coney Mine

Gentlemen:

Enclosed herewith please find four copies of assays from Denver Research Institute and which contain on the bottom line the percentages of U3O8 as shown by graphs which have been carefully worked out by the said Research Institute. I enclose also an original and three copies of letter from the Research Institute showing that they have extensive calibration data upon which to base their conclusion that samples contain a certain percentage.

The percentages are rounded out to the nearest hundredth percent. The first sheet, consisting of series No. 1 of 5 samples was taken at 113 feet from station 26 in tunnel No. 4. Sample No. 1 was taken from the left wall. Sample No. 2 was taken from the right wall. Sample No. 3 was taken from the right center of the face of the tunnel. Sample No. 4 was taken from the center of the face near the left side. Sample No. 5 was taken at the center of the face at the roof. These samples were taken prior to the time the tunnel was advanced this year.

Series No. 2 was taken at the following places: Sample No. 1 was taken at 173 feet from station 26 from the roof at a vein junction. Sample No. 2 was taken at the center of the breast at a point 173 feet from station 26. Sample No. 3 was taken at station No. 24 from the right wall. Samples Nos. 4 and 5 were taken from the dump of the Wanda Rose, which is a claim lying to the south of Champaign tunnel No. 4. These two samples appeared to be mineralized but obviously are very low in their uranium content.

Sample No. 1 of Series No. 3 was taken 193 feet from station No. 26 at the bottom of the face of the tunnel. Sample No. 2 was taken at the same place at the top of the face of the tunnel.

Sample No. 1 of Series No. 4 was taken at a point 204 feet from station No. 26 at the top of the left hand side of the face. Sample No. 2 was taken at 204 feet from station No. 26 at the top of the right side of the face of the tunnel. Sample No. 3 was taken in the dog leg at the right of station No. 24. Sample No. 4 was taken at a point 196 feet from station 26 at the center of the face of the tunnel. Sample No. 5 was taken at 196 feet from station 26 at the left side of the center of the face. Sample No. 6 was taken from property not belonging to the corporation and should therefore be disregarded.

Sample No. 1 of Series No. 5 was taken at a point 193 feet from station 26. Sample No. 2 was taken at a point 198 feet from station 26. Sample No. 3 was taken at a point 203 feet from station No. 26.

Sample No. 1 of Series No. 6 was taken from the Diefendorf claim, which lies to the south of Champaign tunnel No. 4. Sample No. 2 was taken at a point 208 feet from station 26 on the left wall. Sample No. 3 was taken at a point 208 feet from station No. 26 on the right wall. Sample No. 4 was taken at a point 210 feet from station No. 26 at the right of the center vein.

The samples in Series No. 7 and Series No. 8 were taken at points further in the tunnel, with the exception of No. 6 of Series No. 7, which was also taken from the Wanda Rose, and sample No. 2 of Series No. 8 which was taken from an outcrop on Loveland Mountain. The record book showing the exact location where the other samples were taken has been left at the mine and in the interest of time I am therefore not specifically stating exactly where they were taken, although Nos. 2, 3 and 4 were taken at the same distance from station 26. Sample No. 2 was taken from the left hand side of the vein. Sample No. 3 was taken from the face of the vein junction. Sample No. 4 was taken at the center of the vein at the breast of Champaign tunnel No. 4. Exact data as to where the samples from Series Nos. 7 and 8 were obtained will be available the latter part of next week and can then be submitted, if desired, or more particularly, can be submitted and explained to the engineer who will make the field examination for you.

Yours very truly,

TREASURY VAULT URANIUM CORPORATION

By Ben L. Wright Jr.
Ben L. Wright, Jr., President

BLW/dw
enc.

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 3 June FOR Treas Vault U Corp BY MCS
SAMPLE Series #1
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TO 4
COLLIMATION Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # Chart # 1345-50

Remarks:

★ Counts per second above background

Element	#1 ★	#2	#3	#4	#5				
Cb	12	—	—	—	—				
Zr	20	—	—	16	24				
Y	20	—	—	16	16				
U	40	36	48	28	40				
Pb	—	16	16	28	16				
Zn	48	40	64	60	56				
Fe	224	176	240	112	232				
Mn	28	16	24	116	48				
Sr	—	—	—	—	12				
%									
U_3O_8	0.08	0.07	0.11	0.05	0.08				

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 10 June FOR Treas Vault Ulab BY MLS
SAMPLE Series #2
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d 4.0276
SCALE FACTOR 32 DISCRIMINATOR 1 TO 4
COLLIMATOR Std #1 FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1XB

Job # ● Chart # 1352-6

Remarks:

★ Counts per second above background

Element	#1★	#2	#3	#4	#5
Zr	—	12	—	—	—
Y	12	16	—	16	16
U	40	37	40	16	—
Pb	—	—	—	—	96
Zn	16	24	8	1712	960
Fe	280	184	128	400	240
Mn	24	28	—	48	160
Ag	—	—	—	16	24
%					
U_3O_8	0.08	0.07	0.08	0.02	—

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 13 June FOR Treas Vault U Corp BY MRS
SAMPLE Series #3
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATION Std #1 TUBE FILTER none
SCANNING SPEED 2°/min MARK SPEED 30"/hr
SAMPLE HOLDER DRIXP1X8

Job # Chart # 1357-1358

Remarks:

* Counts per second above background

Element	#1*	#2
U	27	24
Pb	16	16
Zn	—	32
Fe	237	152
Mn	96	24
Y	27	—
%		
U_3O_8	0.05	0.04

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAM CHART

DATE 13 June FOR Treas Vault U Corp BY MCS
SAMPLE Series #4
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2θ = 4.0276
SCALE FACTOR 32 SAMPLING 1 sec 4
COLLIMATOR Std #1 TUBE WINDOW none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # Char: # 1362 - 1367
Remarks:

★ counts per second above background

Element	#1★	#2	#3	#4	#5	#6			
Zr	22	16	16	—	—	—			
U	29	32	16	24	24	44			
Pb	32	8	160	37	32	—			
Zn	96	100	1496	40	88	36			
Fe	365	244	352	248	150	208			
Mn	32	108	16	22	24	42			
Y	—	—	24	16	—	—			
Ag	—	—	—	—	32	—			
%									
U_3O_8	0.06	0.06	0.02	0.04	0.04	0.09			

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 22 June FOR Trans Vault U Corp BY MLS
SAMPLE Series #5
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATOR Std #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRIX P 1X8

Job # Chart # 1381-83
Remarks:

★ Counts per second above background

Element	#1★	#2	#3
Ag	13	—	24
Zr	13	—	10
Y	32	—	—
U	24	16	—
Pb	176	24	320
Zn	288	179	1504
Fe	551	288	890
Mn	224	176	16
Cb	—	—	8
%			
U_3O_8	0.04	0.02	—

METALLURGY DIVISION
[illegible] RESEARCH INSTI[illegible]
[illegible] OF FINLER
[illegible] SPECTROGRAPH CHART

DATE 5 July FOR Treas Vault U Corp BY MCS
SAMPLE Series #6
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TC 4
COLLIMATION Std #1 TOP FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRIXPIX8

Job # Chart # 1390–1393

Remarks:

★ counts per second above background

Element	#1★	#2	#3	#4
U	32	32	32	—
Pb	26	27	—	112
Zn	304	232	448	669
Fe	352	672	714	432
Mn	101	176	38	16
Zr	—	16	13	—
Y	—	16	16	—
Sr	—	—	13	—
Ba	—	—	13	—
%				
U_3O_8	0.06	0.06	0.06	—

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 6 July FOR Treas Vault U Corp BY MKS
SAMPLE Series 7
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 PRINTOUTS 1 TO 4
COLLIMATOR Std #1 X-RAY FILTER none
SCANNING RATE 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP1X8

Job # Chart # 1394-1398

Remarks:

★ Counts per second above background

Element	#1★	#2	#3	#4	#5				
Ba	1	—	—	16	—				
Cu	—	48	48	32	24				
Pb	560	32	—	16	56				
Zn	1520	232	128	352	736				
Fe	408	400	256	240	304				
Mn	—	35	56	264	29				
Ag	16	—	—	—	—				
Y	—	13	—	—	16				
Sr	—	16	—	—	—				
Zr	—	—	16	—	24				
Cr	—	—	16	—	—				
%									
U_3O_8	—	0.11	0.11	0.06	0.04				

METALLURGY DIVISION
DENVER RESEARCH INSTITUTE
UNIVERSITY OF DENVER
X-RAY SPECTROGRAPH CHART

DATE 8 July FOR Treas Vault U Corp BY MXL
SAMPLE Series 8
EXCITATION W KV 50 MA 40
G.M. VOLTAGE 1475 RADIATION PATH air
ANALYZING CRYSTAL LiF 2d = 4.0276
SCALE FACTOR 32 MULTIPLIER 1 TO 4
COLLIMATION St #1 TUBE FILTER none
SCANNING SPEED 2°/min CHART SPEED 30"/hr
SAMPLE HOLDER DRI XP 1X8

Job # Chart # 1402-1404
Remarks:

★ counts per second above background

Element	#2★	#5	#6
Sr	16	—	—
U	32	32	32
Fe	256	237	296
Mn	24	96	104
Pb	—	38	—
Zn	—	1184	74
%			
U_3O_8	0.06	0.06	0.06

C
O
P
Y

UNIVERSITY OF DENVER
Denver Research Institute
University Park
Denver 10, Colorado

12 July 1955

Mr. Ben Wright
718 Symes Bldg.
Denver 2, Colorado

Dear Ben:

Eight copies of each test report for the various series of your samples are enclosed.

The concentrations of the elements are indicated by numerical factors which are related to the percentages of the elements. Some of the concentrations (1000 counts per second or more) range up to 25 or 30% while the others (250 counts per second or less) range up to 1 or 2%.

In the case of uranium, we have extensive calibration data and samples with readings of 16 counts per second contain 0.02% U308 and samples with readings up to 50 counts per second contain 0.11% U308.

We will be happy to discuss the results further at your convenience.

Sincerely,

s/ Merlyn L. Salmon
Research Engineer
Metallurgy Division

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

RECEIVED
AUG - 5 1955

224 New Customhouse
Denver 2, Colorado

August 2, 1955

Memorandum

To: J. F. Shaw c/o Enclosure
E. N. Hinshaw

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA-[illegible] (Uranium), Treasury Vault Uranium Corporation, Champaign and Coney Mines, Park County, Colorado

Enclosed is the subject application in the amount of $[illegible]. Field examination and suitable report are requested.

For your information, attached is a copy of a letter from the Chairman of the Operating Committee and relevant memoranda from members of the Uranium Commodity Committee.

W. M. TRAVER,

W. M. Traver

Enclosures

HMC:pw

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

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

RECEIVED
AUG - 5 1955

224 New Customhouse
Denver 2, Colorado

August 2, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA-3807 (Uranium), Treasury Vault Uranium Corporation, Champaign and Coney Mines, Park County, Colorado

Enclosed is the subject application in the amount of $281,000.00. A field examination and suitable report are requested.

For your information, attached is a copy of a letter from the Chairman of the Operating Committee and relevant memoranda from members of the Uranium Commodity Committee.

W. M. TRAVER,

W. M. Traver

Enclosures

HMC:pw

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

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

Surname copy

JUL 28 1955

Ellis
Gehon
Kalogaard
Martin
Hyman

Mr. Ben L. Wright, Jr.
Treasury Vault Uranium Corporation
505 Colorado Building
1615 California Street
Denver 2, Colorado

Re: Docket No. DMEA-3887 (Uranium)
Champaign and Coney Mines
Park County, Colorado

Dear Mr. Wright:

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

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

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

Sincerely yours,

C. O. Mittendorf

Administrator

MChing/gla
7-25-55
cc to: Admr.'s Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.S.S.

700

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

Surname

Ellis
Martin

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

JUL 2 8 1955

Re: Docket No. DMEA-3887 (Uranium)
Treasury Vault Uranium Corp.
Champaign and Coney Mines
Park County, Colorado

Dear Mr. Traver:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendation.

Enclosed are two copies each of comments and recommendations by John E. Crawford and Thor H. Kiilsgaard of the Uranium Commodity Committee, dated July 11 and July 19, 1955, respectively.

In the event a contract is recommended, the following documents would be required:

1. Owner's Consent to Lien from Effie M. Haring on the Eclipse, Lone Star and Keystone claims.

2. Assignment of the foregoing three claims to the subject corporation by James H. Redman.

3. A Performance Bond or third-party guarantee in lieu of Owner's Consent to Lien, on the State-owned W½ of Sec. 36, T.8 S., R. 79 W.

4. Assignment of foregoing State land to the subject corporation by Ben L. Wright, Jr., and consent to such assignment by the State.

MChing/gla 7-25-55

Sincerely yours,

cc to: Admr.'s Read. File
Operating Committee
Messrs. JECrawford, R. 3641
THKiilsgaard, R. 5224
JOHosted, R. 3210,
GSA Bldg.
Code 700
Mr. Ching

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

Enclosures

APPROVED:

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

Thor H. Kiilsgaard
Member, Geological Survey (WB)

R.C.L.

7/12/55 gla

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

RECEIVED
JUL 12 1955

July 11, 1955

Memorandum

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

From: Bureau of Mines Member
Uranium Commodity Committee

Subject: Application for assistance, DMEA Docket 3887, Treasury Vault Uranium Corporation, Champaign Mine and Coney Mine, Park County, Colorado

I have reviewed the attached application, Treasury Vault Uranium Corporation, DMEA Docket 3887; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We recommend that the application of the Treasury Vault Uranium Corporation be denied because the small amount of uranium uncovered in relation to the extent of underground workings does not indicate that this project would be attractive.

John E. Crawford

John E. Crawford

Attachment

7/22/55 gla

IN REPLY REFER TO:

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

July 19, 1955

Memorandum

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

From: Thor H. Kiilsgaard, U. S. Geological Survey

Subject: Review of application, Treasury Vault Uranium Corp., Park County, Colorado, DMEA Docket 3887.

The applicant controls an old gold-silver mine on Treasury Vault Mountain, which was developed on four levels between 1873 and 1919. In 1951, slight indications of uranium ore were found on the dumps by a U. S. Geol. Survey crew, and in 1952 the portals of the No. 3 and No. 4 levels were opened by the applicant for sampling. These two levels were rehabilitated in 1954, and in April 1955 drifting was commenced on the No. 4 level. Following the opening of the No. 3 and No. 4 tunnels the applicant had the property examined by several consultants whose reports are attached to the application. One of the reports, by Lundberg Explorations, Ltd., presents an isorad map which has been superimposed over a Survey geologic map of the area. The map indicates a radioactive anomaly of about one mile in length located north of the applicant's mine. Lundberg infers that this anomaly is associated with a buried uranium deposit that has leaked radon gas along various fissures and faults leading to the surface. Comments on the underground workings indicate that most of the radioactivity is associated with radon gas trapped in the levels. Some very low uranium assays are reported from the veins, although these may have been contaminated, and it is inferred that more uranium mineralization may be associated with various prophyry dikes that are present.

The applicant proposes a rather indefinite program to explore the property, the work to consist of further surface geological and geophysical study, core drilling, and underground development. Estimated cost of the project is $281,000.00.

Considerable effort appears to have been expended in making this mine accessible and care has been taken to obtain opinions from leading consultants. These consultants have recommended more exploration, but there seems to be some question regarding the uranium potential of the mine. Comparatively small amounts of high-grade ore might have created in a considerable amount

of radon gas in the workings. Further, it would be difficult to determine how far the radon might have traveled. If there is a large flow of water in the mine the radon could have moved in the water for thousands of feet before its lifetime was expended. Unless there can be a definite target outlined that could contain the ore, exploration based on the mere presence of radon gas would probably be fruitless.

The proposed project raises several questions that can be answered only by a field examination or by someone familiar with the property. I therefore recommend that it be referred to the Field Team for further study. As Bob King of the USGS Denver office is mentioned as being familiar with the property it is suggested that he be contacted for his opinions on the geology. If he makes the field examination he might check on the reported possibility of uranium occurring in the dikes as versus the veins, and on whether there is a possibility of making a significant discovery by the proposed drifting and/or crosscutting. In this respect, it would seem there has been enough geological and geophysical information submitted by the applicant to make it possible to evaluate the merits of the property without requesting additional technical information.

Thor H. Kiilsgaard

Thor H. Kiilsgaard

IN REPLY REFER TO:

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

July 19, 1955

Memorandum

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

From: Thor N. Killingsord, U. S. Geological Survey

Subject: Review of application, Treasury Vault Uranium Corp., Park County, Colorado, DMEA Docket 3887.

The applicant controls an old gold-silver mine on Treasury Vault Mountain, which was developed on four levels between 1873 and 1919. In 1951, slight indications of uranium ore were found on the dumps by a U. S. Geol. Survey crew, and in 1952 the portals of the No. 3 and No. 4 levels were opened by the applicant for sampling. These two levels were rehabilitated in 1954, and in April 1955 drifting was commenced on the No. 4 level. Following the opening of the No. 3 and No. 4 tunnels the applicant had the property examined by several consultants whose reports are attached to the application. One of the reports, by Lundberg Explorations, Ltd., presents an isorad map which has been superimposed over a Survey geologic map of the area. The map indicates a radioactive anomaly of about one mile in length located north of the applicant's mine. Lundberg infers that this anomaly is associated with a buried uranium deposit that has leached radon gas along various fissures and faults leading to the surface. Comments on the underground workings indicate that most of the radioactivity is associated with radon gas trapped in the levels. Some very low uranium assays are reported from the veins, although these may have been contaminated, and it is inferred that more uranium mineralization may be associated with various porphyry dikes that are present.

The applicant proposes a rather indefinite program to explore the property, the work to consist of further surface geological and geophysical study, core drilling, and underground development. Estimated cost of the project is $281,000.00.

Considerable effort appears to have been expended in making this mine accessible and care has been taken to obtain opinions from leading consultants. These consultants have recommended more exploration, but there seems to be some question regarding the uranium potential of the mine. Comparatively small amounts of high-grade ore might have created in a considerable amount

of radon gas in the workings. Further, it would be difficult to determine how far the radon might have traveled. If there is a large flow of water in the mine the radon could have moved in the water for thousands of feet before its lifetime was expended. Unless there can be a definite target outlined that could contain the ore, exploration based on the mere presence of radon gas would probably be fruitless.

The proposed project raises several questions that can be answered only by a field examination or by someone familiar with the property. I therefore recommend that it be referred to the Field Team for further study. As Bob King of the USGS Denver office is mentioned as being familiar with the property it is suggested that he be contacted for his opinions on the geology. If he makes the field examination he might check on the reported possibility of uranium occurring in the dikes as versus the veins, and on whether there is a possibility of making a significant discovery by the proposed drifting and/or crosscutting. In this respect, it would seem there has been enough geological and geophysical information submitted by the applicant to make it possible to evaluate the merits of the property without requesting additional technical information.

Thor H. Kiilsgaard

THKiilsgaard:iml
G-7/19/55

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

July 5, 1955

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-3887 Treasury Vault Uranium Corp.

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

July 5, 1955

Subject: DMEA-3887

Re: Exploration Assistance
Champaign Mine & Coney
Mine

Treasury Vault Uranium Corp.
505 Colorado Building
1615 California St.
Denver 2, Colorado

Gentlemen:

The receipt of your application dated June 24, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3887 and referred to the Rare and Miscellaneous Metals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

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

RECEIVED
JUL - 5 1955

224 New Customhouse
Denver 2, Colorado

June 30, 1955

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Uranium Application of Treasury Vault Uranium Corporation, (Champaign mine and Coney mine), Park County, Colorado

Enclosed are three copies of the subject application in the amount of $281,820.00.

A review of the application indicates that the location and depths of holes are dependent on further geological information, which the applicant should obtain at his expense.

One copy of the application is being retained in our file.

W. M. Traver

W. M. Traver

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DMEA
Date Rec'd.
Form Approved.
Budget Bureau No. 42-R1035.2.

JUN 29 1955

BUREAU OF MINES
Denver, Colorado

RECEIVED
JUL 5 1955

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

Not to be filled in by applicant.

Docket No. 3887
Metal or Mineral Uranium
Date Received 7-5-55
Estimated Cost $ 28,820
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: Treasury Vault Uranium Corporation, 505 Colorado Building, 1615 California Street, Denver 2, Colorado

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. Incorporated in Colorado, July 29, 1954.

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached note and exhibits

(*b*) State any mine name by which the property is known. Champaign Mine and Coney Mine.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise See attached note and exhibits for sub-item 3(a)

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See attached note and exhibits for sub-Item 3(a).

(*e*) If you own the land, describe any liens or encumbrances on it No encumbrances on land owned by applicant.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See attached note and exhibits for sub-Item 3(a).

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached note for Item 4.

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

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See attached note for Item 4 sub-Item (c) and engineers' reports, and maps submitted hereunder.

(*d*) State the facts with respect to the accessibility of the project. Access roads, distances to shipping, supply and residence points. See attached note for Item 4 sub-Item (d).

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

See attached note for Item 4 sub-Item (e).

16—66551-1

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

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See attached note Item 5 sub-Item (b) and maps.

(*c*) The work will start within ..... days and be completed within ..... months from the date of an exploration project contract. See attached note Item 5 sub-Item (c).

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See attached note Item 5(d).

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. See attached note Item 6 ~~(a)~~.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. See attached note Item 6.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be. See attached note Item 6.

(*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. None

(*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. None.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes. See attached note Item 6.

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

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

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

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

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

Explain in detail on acompanying paper. See attached note Item 7.

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 June 24, 1955

Treasury Vault Uranium Corporation
(Applicant)

By Ben L. Wright, Jr.

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

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Application of

Treasury Vault Uranium Corporation

Item 1-C -- Officers.

President - Benjamin Lee Wright, Jr., 1672 South Elizabeth Street, Denver, Colorado; attorney at law.

Vice President - Robert Ray Hale, Fairplay, Colorado; automobile dealer.

Vice President - Leroy Allison West, 3546 Eudora Street, Denver, Colorado; Regional Farm Placement Representative of Regional Office, U. S. Government Bureau of Employment Security.

Secretary-Treasurer - David James McKee, 2984 Birch Street, Denver, Colorado; attorney at law.

Directors.

Benjamin Lee Wright, Jr., Robert Ray Hale, and Leroy Allison West, are also directors. Additional directors are:

Delbert LeRoy Peterson, 1428 East Evans Avenue, Denver, Colorado; a Supervisor for Gates Rubber Company.

Cora Delcena Young, 402 Franklin Street, Denver, Colorado; housewife.

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DEFENSE MINERALS EXPLORATION ADMINISTRATION

Application of

TREASURY VAULT URANIUM CORPORATION

ITEM 3--APPLICANT'S PROPERTY RIGHTS - SUB-ITEM (D)

The copy of lease from Effie M. Haring on 3/4 ECLIPSE, 3/4 LONE STAR, 2/3 KEYSTONE.

copy

MINING LEASE AND OPTION

THIS INDENTURE, Made this 2nd day of August, 1954, between EFFIE M. HARING, of the County of Boulder, State of Colorado, party of the first part, hereinafter called Lessor, and JAMES N. REDMAN, of the City and County of Denver, State of Colorado, party of the second part, hereinafter called Lessee,

WITNESSETH: That Lessor, for and in consideration of the sum of One Hundred Twenty ($120.00) Dollars, heretofore in hand paid Lessor by Lessee, (which amount, in the event the Lessee exercises any of the options to purchase the hereinafter described mining claims as such option is given him under Paragraphs numbered 15 and 16 of this instrument, shall be credited on the option price of the particular interest or interests which may be purchased by Lessee), and other good and valuable considerations, and of the rents, covenants and agreements hereinafter expressed to be paid, kept and performed by the Lessee, has leased, let and demised, and by these presents does lease, let and demise unto said Lessee, the following described undivided interests in and to the following described mining claims, situate, lying and being in the Mosquito Mining District, Park County, Colorado, to-wit:

3/4 ECLIPSE	U. S. Survey No.	175
3/4 LONE STAR	U. S. Survey No.	2774
2/3 KEYSTONE	U. S. Survey No.	272

together with all of the right, title and interest of Lessor in and to the lodes, veins and ore deposits in said claims, and to all of the rights, privileges, hereditaments and appurtenances thereunto belonging or in any wise appertaining.

TO HAVE AND TO HOLD the same for the purposes of mining for a term beginning on the date hereof and terminating on the 31st day of July, 1959, unless sooner forfeited or terminated, in accordance with the terms hereof, with full power to Lessee to assign this lease and option, or any interest therein, or to sublet all or any portion of herein demised premises, and

In consideration of this lease, Lessee hereby covenants and agrees with Lessor as follows, to-wit:

1. To enter upon said leased premises, or any of them, on or before the first day of September, 1954, and to work and maintain said premises in a manner necessary for the preservation of the premises as a workable mine, with due regard for the covenants herein contained.

2. To work and mine said leased premises at the discretion of Lessee, in a good and miner-like fashion during the life of this Lease.

IT IS UNDERSTOOD AND AGREED that Lessee shall not be required to make any specified performance of labor or improvement upon the

hereunder demised premises, but shall pay Lessor the advance royalty required in Paragraph numbered 8 hereof, and the annual general taxes assessed against the demised premises, as required in Paragraph numbered 7 hereof.

3. To carry Workmen's Compensation Insurance during operation of this lease so as to save Lessor harmless from any liability for industrial accidents arising from Lessee's operations, and to keep notices respecting such insurance properly posted on said premises.

4. To allow Lessor or her agents, at all reasonable times, access to said demised premises for the purposes of inspection and sampling.

5. To repair all old timberings in workings and openings operated by Lessee and in addition to do all work in miner-like fashion, and to protect properly all workings made by Lessee on demised premises, unless prevented by extraordinary mine casualty.

It is further understood that all tunnels excavated by Lessee in said premises shall be at least 6 feet in height in the clear, and 3½ feet in width in the clear; that all shafts sunk by Lessee shall be at least 7 feet long and 3½ feet wide in the clear; that no underhand stoping shall be done; that all crossveins which may be discovered in said premises shall, within the boundaries of demised claims, be the property of the owners of the said claims, as their interests may appear.

6. To furnish Lessor full, true and accurate information with regard to condition of underground workings, or any part thereof, and as to the work performed, and any money expended by Lessee in the operation of said premises.

7. To pay all general taxes for the year 1953, due and payable in 1954, on the leased premises, and to pay such taxes for each succeeding year of the life of this lease.

8. To pay or case to be paid promptly, collectively to the owners of the said Eclipse, Lone Star and Keystone claims as royalties, ten percent (10%) of thenet smelter or mill value of all ores removed from demised premises by Lessee during the life of this lease, and to pay or cause to be paid promptly to Lessor herein the proportion of said ten percent royalty, to which said Lessor shall be entitled, according to her respective undivided interests in said claims.

By net smelter or mill value of ore is meant the value of the ore after deducting the following charges: the actual cost of transporting said ore from the mine to buyer or custom mill; all smelter and custom mill charges for the treatment and handling of said ore, and such additional charges or deductions as are usually made by such smelter or custom mill.

Detailed duplicate statements on all sales of ore from demised premises to smelter or custom mill shall be furnished by the buyer to Lessor.

Lessee shall pay Lessor, as advance royalty and rental, the sum of Ten Dollars ($10.00) per month, on the first day of each month, beginning with the month of September, 1954.

Any and all royalties, and such advance royalties so paid Lessor, shall be credited by Lessor on the options to purchase herein demised premises, or any of them, as recited in Paragraph numbered 15 hereof.

9. Lessee shall save Lessor harmless from any and all costs, liability or damage whatsoever for any labor, services, skills, machinery, materials or supplies used by Lessee during the life of said lease, and Lessee will post conspicuously upon the premises, notices to the effect that Lessor will not be held responsible for any such obligations contracted by Lessee.

10. Lessee covenants and agrees to deliver the said premises to Lessor in good order and condition, without demand or notice upon the termination of this lease, or at any previous time, upon forfeiture thereof.

11. Lessee agrees that the ownership of all ores extracted and not removed from the premises shall remain in the Lessor and her co-owners as their respective interests shall appear.

12. In the event of any breach of covenant or condition of this lease by Lessee, Lessor shall notify Lessee in writing of Lessor's intention to declare forfeiture for default, such default to be specified in said notices and if Lessee, within 30 days after receipt of said written notice shall not have remedied the particular specified defects, Lessor shall thereupon declare forfeiture and re-enter the premises without prejudice to any and all claims for damages which Lessor may have by reason of theviolation of any covenant hereof by Lessee.

13. Lessee shall have the right to surrender this lease and all of his rights thereunder to Lessor at any time during the life of this lease. Prior to any such surrender, Lessee shall give Lessor thirty (30) days notice in writing of Lessee's intention to surrender said leased premises. Any such surrender shall not operate to release or discharge Lessee of liability for default on his part occurring prior to the time of such surrender, but shall only relieve Lessee from the obligation of further operation of demised premises.

14. Upon the termination of this lease for any cause, all timber, houses and erections placed on said premises by Lessee shall remain there as the property of Lessor, but all machinery, mine tools, pipe and rail placed thereon by Lessee shall remain as Lessee's property, and may be removed by him within a reasonable time after termination, forfeiture or surrender of this lease.

15. In consideration of Lessee having fully complied with all of the terms and provisions hereof, Lessee is hereby given the following exclusive option to purchase, on or before July 31, 1959, the above described interests of Lessor, namely:-

(a) to purchase Lessor's undivided 3/4 interest in and to said ECLIPSE and LONE STAR lodes for $3000;

(b) to purchase Lessor's undivided 2/3 interest in and to said KEYSTONE lode for $2000;

IT IS UNDERSTOOD AND AGREED that any and all royalties, or advance royalties, which may be paid to Lessor under this lease on any or all of the three above described ownerships of Lessor, shall be credited to Lessee on the option price of the particular interest or interests which may be purchased by Lessee.

16. It is further understood and agreed that Lessee shall have the right, at his election, to completely exercise either of the foregoing options, without the necessity of completely exercising both of them.

17. In the event of expiration of this lease or its termination by forfeiture or surrender, any or all of the payments and/or royalties and advance royalties theretofore paid or caused to be paid to Lessor by Lessee, shall be retained by Lessor as her property as liquidated damages.

Each and every clause and covenant of this lease shall extend to the heirs, executors, assigns and successors of each of the parties hereto.

IN WITNESS WHEREOF, The parties hereto have hereunto set their hands and seals, in duplicate, the day and year first above written.

/s/ EFFIE M. HARING (SEAL)
Effie M. Haring, Lessor.

/s/ JAMES N. REDMAN (SEAL)
James N. Redman, Lessee.

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DEFENSE MINERALS EXPLORATION ADMINISTRATION

Application of

TREASURY VAULT URANIUM CORPORATION

ITEM 3—APPLICANT'S PROPERTY RIGHTS - SUB-ITEM (a)

Copy of lease from State of Colorado on West ½ of Section 36, Township 8, South, Range 79, W 6 P.M.

RECEIVED
JUL - 5 1955

COLORADO
MINING LEASE

NO. 470-16

1. THIS MINING LEASE, Made and entered into this 1st day of October, 1954, by and between THE STATE OF COLORADO, acting through its State Board of Land Commissioners, hereinafter referred to as "Lessor," and Ben L. Wright, Jr., of 718 Symes Building, Denver, Colorado, hereinafter referred to as "Lessee";

2. NOW, THEREFORE, Lessor, for and in consideration of the sum of One hundred sixty and no/100 Dollars ($160.00) as rental for the first year hereof, receipt of which is hereby acknowledged, and the further payment of an equal sum on or before each anniversary of the date hereof, as annual rental for the ensuing year, which Lessee hereby covenants and agrees to pay so long as this lease shall remain in effect, and in further consideration of the covenants and agreements hereinafter mentioned, to be kept and performed by the Lessee, its successors and assigns, has demised and leased to the Lessee the right and privilege of mining for and taking uranium and vanadium and other minerals of value that can be removed in the process of mining and milling uranium and vanadium, from the lands hereinafter described, situate, lying and being in the County of Park and State of Colorado, to-wit:

320.00 acres--Sec. 36, Twp. 8-South, Range 79-West, 6th P.M.

together with the right to use as much of the surface thereof as may reasonably be required in the exercise of the rights and privileges herein granted, subject to the rights of patentees of said premises, where the land herein leased or any part thereof has been patented and mineral rights reserved to the State of Colorado.

3. Reserving, however, to the State of Colorado:

a. The rights to all peat, coal, petroleum, oil, gas, naphtha, asphaltum, and kindred substances.

b. The right to use or lease said premises, or any part thereof, at any time, for any purpose other than the rights and privileges herein specifically granted.

c. The right at all times during the life of this lease to go upon said premises and every part thereof, for the purpose of inspecting same, and the books of account and records of mineral workings therein, and of ascertaining whether or not said Lessee and those holding thereunder, by and from it, are carrying out the terms, covenants and agreements in this lease contained.

d. Reserving all rights and privileges of every and whatsoever kind or nature not herein expressly granted.

4. TO HAVE AND TO HOLD the above described premises, with the appurtenances, unto the Lessee and the heirs, assigns, successors

or legal representatives of Lessee, from the 1st day of October, 1954, for the full term of twenty (20) years and until the first day of October, 1974, and as long thereafter as uranium and vanadium or other minerals of value are being produced in paying quantities from said premises, and the royalty and rents provided for herein are being paid, subject to the following terms, conditions and agreements, to-wit:

5. As minimum and advance royalty, without relation to the amount of the uranium and vanadium or other minerals of value mined from the leased premises, the Lessee shall pay to the Lessor during the continuance of this lease, the following amounts:

Lease Year	Minimum Royalty	Lease Year	Minimum Royalty
1st year	$ 0	11th year	$320.00
2nd year	0	12th year	"
3rd year	0	13th year	"
4th year	0	14th year	"
5th year	0	15th year	"
6th year	160.00	16th year	640.00
7th year	"	17th year	"
8th year	"	18th year	"
9th year	"	19th year	"
10th year	"	20th year and all subsequent years	"

6. In the event that said Lessee shall not extract from said premises said minimum amounts above specified during each lease year of the term of this lease, it is nevertheless understood that the above sums of money are royalties for the years stated, and are due and payable to the Lessor whether uranium and vanadium and other minerals of value are mined or not during such year, but that such minimum advance royalty shall be credited upon the first royalties due as hereinafter provided for minerals actually produced from said premises and sold or milled during the year for which such minimum royalty was paid. Provided, however, that the minimum royalties herein provided, and the rate of royalty to be paid on all uranium and vanadium and other minerals mined shall at all times be subject to revision, either by increase or decrease, when so authorized and directed by statute enacted by the General Assembly or by the People under the initiative power reserved to them by the Constitution.

7. Lessee covenants and agrees that during the continuance of this lease he will fully comply with all of theprovisions, terms and conditions of all laws, whether state or federal, and orders issued thereunder, which may be in effect during the continuance hereof relating to the operations of Lessee under this lease, and the marketing of any product thereof, or labor relations in connection with such operations or marketing.

8. The Lessee shall mine and extract from the demised premises uranium and vanadium and other minerals that can be extracted in the process of mining and milling the uranium and vanadium, so as to procure the greatest net return per ton of ore mined, regardless of the principal type of ore which shall yield such return.

9. Lessor reserves as royalty, and Lessee agrees to pay to Lessor on or before the 20th day of each month hereafter, the following amounts:

a. An amount equal to 15 percent of the gross value delivered to the mill at which sold, of all uranium or thorium or other materials which have been or may hereafter be determined by the Atomic Energy Commission to be peculiarly essential to the production of fissionable materials, produced from the leased premises and sold during the preceding month, whether the same is mined or produced as the principal mineral for which this lease is granted, or is produced, or saved in the process of mining or milling the principal mineral for which this lease is granted.

b. An amount equal to 10 percent of the gross value delivered at the mill of any mineral not covered in the preceding paragraph 9-a the right to mine or remove which is herein given, which is produced from the leased premises and sold or milled during the preceding month, whether the same is mined or produced as the principal mineral for which this lease is granted, or is produced, or saved in the process of mining or milling the principal mineral for which this lease is granted; provided that as used in this paragraph, where minerals or ores are milled at a mill owned or operated by Lessee, the words "value delivered at the mill" shall mean: Where the mill to which such mineral is delivered is a custom or commercial mill, the amount which would actually be paid by such mill for mineral of equal quantity and assayed value upon the purchase thereof upon the same day, from any person other than Lessee; where the mill to which such mineral is delivered is a private mill owned and operated by Lessee for the milling only of minerals produced by Lessee, the amount which would actually be paid by the nearest custom or commercial mill for mineral of equal quantity and assayed value purchased upon the same day.

10. Royalty payments shall be made and shall apply to any bonus payment received by the Lessee on uranium and vanadium or other mineral so sold or milled. The uranium and vanadium and other minerals mined from the leased premises may be milled in a custom or commercial plant or mill owned and operated by Lessee. They may not be mixed or co-mingled with ores from other properties until they have been crushed and sampled by the mill for the purpose of determining the uranium and vanadium and other minerals contained in the crude ore. The resulting samples shall be assayed at the laboratory used by the mill where ore is milled, and Lessor shall receive an assay certificate showing the contents of each day's delivery to mill. In addition, the mill shall reserve a pulp of each day's composite sample for testing, provided, however, said mill shall not be obliged to keep pulp for a period of more than sixty (60) days. In the event of a dispute as to analysis, the pulp prepared from each day's composite sample shall be referred to an umpire acceptable to Lessor and Lessee and the determination of the umpire shall be binding upon both parties. The net weight of the crude ore on a dry weight basis shall be determined at the scales at the mill. Lessor shall have the right to check the weights as often as it deems advisable. Lessee shall furnish Lessor

with duplicate scale weight certificates. Lessee agrees to, and shall be held accountable to see that the foregoing provisions are carried out by such mill or mills as shall receive minerals produced from the premises herein demised.

11. On or before the 20th day of each and every month during the term of this lease, Lessee shall make a sworn report to the Lessor in which shall be entered and set down the exact amount in weight of all uranium and vanadium and other minerals of value mined on said premises during the preceding calendar month. Such statements shall clearly set forth the tonnage as shown by the miners' production reports, and shall also show the use or disposal by the Lessee of uranium and vanadium or other minerals of value. The report shall be made whether or not any uranium and vanadium or other minerals are mined during the month for which the report is made. In the event that no mining is done during the month for which the report is made, such report shall contain a complete statement of the work done by the Lessee during the month.

12. The Lessee shall have the right to mine, raise, carry and transport ores from the lands hereby leased through other lands now or hereafter owned or leased by the Lessee, and the right to raise, carry and transport ores mined by the Lessee from other lands owned or leased by the Lessee over or through the lands covered by this lease; provided, that the ores mined from other lands are in no event mixed with ore mined from these leased premises, except as provided in Paragraph 10 herein.

13. The Lessee further agrees to hold the Lessor harmless for any and all manner of claims arising or to arise from the operation of said leased premises by Lessee whether from soil or surface subsidence, or from any other cause or any other nature soever; this paragraph shall be binding upon Lessee and upon the heirs, assigns, successors and legal representatives of Lessee, and shall be a continuing obligation during and after the expiration of this lease, so long as any possibility of soil or surface subsidence remains.

14. In the underground and open pit workings, all shafts, inclines and tunnels shall be well timbered (when good mining requires timbering) and all parts of workings, where uranium and vanadium and other minerals are not exhausted, will be kept free from water and waste materials, as in ordinary operations. The underground and open pit workings shall be protected against fire and floods and the creeps and squeezes. If such events do occur they shall be checked in a manner which is in keeping with good methods of mining. Such methods of mining shall be used as shall insure the extraction of the greatest possible amounts of uranium and vanadium and other minerals of value, consistent with good mining methods.

15. Lessee shall be liable and agrees to pay for all damages to the surface of the land, livestock, growing crops or improvements caused by Lessee's operations on said lands. It is agreed and understood that no operations shall be commenced on the lands hereinabove described unless and until the Lessee or his assignee shall have filed a good and sufficient bond with the Lessor in an amount to be fixed by Lessor, to secure the payment for such damage to the surface of the land, livestock,

growing crops or improvements as may be caused by Lessee or his assignee's operations of said lands and to secure compliance with all the provisions, conditions, covenants and obligations of this lease and the statutes of the State of Colorado, and rules and regulations thereto appertaining.

16. It is agreed that during all proper hours and at all times during the continuance of this lease the Lessor, by its Superintendent of the Mineral Department or by its duly authorized agent or agents, shall be, and hereby is authorized to check scales as to their accuracy, to go through any of the slopes, entries, shafts, openings or workings on said premises, and to examine, inspect and survey the same and to examine and make extracts or copies of all books and weight sheets which show in any way the uranium and vanadium and other mineral output of the leased premises, and that all conveniences necessary for said inspection, survey or examination shall be furnished to the Lessor, its Superintendent of the Mineral Department or its agent or agents by the Lessee.

17. It is agreed that the Lessee, while using any diamond, churn or other drill on said premises during the term of this lease, shall keep an accurate log of all work so done and performed, showing the geological formations penetrated, the depth or thickness of each, the mineral character of each, especially mineral veins and strata, their elevations, the location of same by tying to a corner of some legal subdivision or, in unsurveyed territory, to some bench mark or other officially established point, established by United States surveys, and each and everything necessary to make and supply a perfect and complete log of the hole throughout its entire depth, a true copy of which said log shall be furnished the Lessor when and at the time such holes are drilled or at any time thereafter upon demand of the Lessor.

18. A map of the mine shall be made yearly by an engineer or surveyor duly licensed by the State of Colorado, on a scale of not less than 100 feet nor more than 200 feet to the inch, showing the dimensions of ore vein, a permanent hub with center point at the top of the shaft or the face of the slope, at each elevation and at each angle, at side entries, stopes, rooms or drifts, showing elevation of same and latitude and departure and date established, each point taken from a true meridian established on the surface; and shall bear the name or number of the mine; its location as to county, section, township, and range, the name of the company or owner; the north points; the scale to which the map is drawn and explanatory legend; and the certificate of the engineer or surveyor as to its accuracy.

19. Mine maps and plans hereinbefore mentioned shall be extended and corrected at least once each year. True copies of all maps and plans shall be provided as follows: The original maps and tracings to be kept in the office of the engineer or surveyor, blue or white prints certified to by engineer to be on file, one at the office at the mine, one at the office of the Mineral Superintendent of the State Board of Land Commissioners, Capitol Building, Denver, Colorado.

20. Lessor reserves the right to grant rights of way over said premises for public roads, railroads, power, telegraph, telephone,

ditches, and canal lines, or lease the above described lands for any other purpose than the one specified herein, which such grants or leases shall be so made as not to interfere with the operation of this lease, and so as to require the grantees of such rights to assume all risk resulting therefrom.

21. Any notice required or permitted to be given to the Lessee under the provisions of this lease shall be sent by registered mail, addressed to Ben L. Wright, Jr., 718 Symes Building, Denver, Colorado. Such service of notice by mail shall be sufficient and in full compliance with the terms of this lease.

22. In the event this lease is terminated by forfeiture, surrender or the expiration of term, the Lessee may, subject to the provisions of Paragraph 26 hereof, remove all improvements and equipment from the said premises within nine (9) months from the date of such termination, and such removal shall be accomplished without unnecessary waste or injury to the premises. All improvements and equipment remaining on the leased premises nine months after the termination hereof shall be forfeited to the State of Colorado, without compensation.

23. This lease may be surrendered by the Lessee at the expiration of any lease year, upon three (3) months' written notice to Lessor, of Lessee's intention to surrender, and upon payment of all rents and royalties due and payable to Lessor and performance of all obligations required herein to the end of such lease year; notice given by Lessee of intention to surrender under the provisions hereof shall operate as an election to surrender at the end of such lease year, and shall not be withdrawn by Lessee without consent of Lessor; it being understood and agreed that should this lease be so surrendered by the Lessee, or should this lease be cancelled by Lessor as hereinafter provided, or should this lease be terminated in any manner, advance rentals and minimum royalties which shall have been paid in or shall have become due hereunder shall be and remain the absolute property of the Lessor, regardless of the amount of ore mined during the term of this lease under the terms hereof and regardless of the length of unexpired term of this lease.

24. All the conditions, covenants and agreements in this lease contained shall be binding upon the heirs, assigns and successors of the Lessee.

25. The Lessee, before commencing work under the provisions of this lease, or sub-leasing, contracting or subcontracting any of the work, shall procure Workmen's Compensation Insurance, as required by the Workmen's Compensation Act of Colorado, and shall at all times keep such compensation insurance in full force and effect, and shall furnish the Lessor with premium receipts or other satisfactory evidence of Lessee's compliance with this requirement; and a failure of the Lessee strictly to comply with this requirement shall subject this lease to cancellation at the option of Lessor as hereinafter provided.

26. It is agreed that if for any reason the Lessee shall fail to keep each and every one of the covenants herein, and such default shall continue for a period of sixty (60) days after service of written notice thereof upon the Lessee by the Lessor, the Lessor shall have the right to declare this lease forfeited, and to enter onto the leased premises, or any part thereof,

either with or without process of law, and to expel, remove and put out the Lessee or any person occupying the premises, using such force as may be necessary to do so. In the event of the termination of this lease by reason of breach of the covenants herein contained, the Lessee shall surrender and peaceably deliver up to the Lessor the above described premises, and such premises shall be in good mining condition. If, upon termination of this lease for any reason, whether by surrender, forfeiture or expiration of term or otherwise, Lessee shall not have fully complied with the terms of this lease, Lessor shall hold and retain possession of the property, improvements, and equipment of Lessee, as security unto Lessor for the payment of rents and royalties due it, or to protect it against liens, or to indemnify it against any loss or damage sustained by it by reason of the default of the Lessee, for which purpose Lessor is hereby given a lien upon all of such property, improvements, and equipment, which lien shall attach as the same are placed upon the premises. In the event Lessor shall foreclose the lien in this Article given to it by Lessee, Lessor may itself be a purchaser at any sale thereof under such foreclosure. Upon the termination of this lease for any cause, if the Lessee shall remain in the possession of said premises, he shall be guilty of an unlawful detainer under the statutes in such case made and provided and he shall be subject to all the conditions and provisions thereof and to eviction and removal, forcibly or otherwise, with or without process of law, as above provided.

27. Lessee shall pay all taxes lawfully assessed on property of Lessor located on the leased premises.

28. Lessee shall furnish corporate surety bonds from time to time as required by Lessor and in form and amounts satisfactory to the Lessor, which bond shall be conditioned upon the performance by Lessee of its obligations as provided in Paragraph 15 hereof, and any such bonds shall run to the State of Colorado and to any individual or individuals as may be determined by Lessor.

29. No assignment or transfer of this lease will be held valid by Lessor, unless made with its consent in writing and duly entered in the books of record of said Board.

30. The benefits and obligations of this lease shall extend to and be binding upon the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

31. IN WITNESS WHEREOF, the Lessor has caused these presents to be executed in duplicate by the State Board of Land Commissioners and sealed with the official seal of said Board, and the Lessee has hereunto set his hand and seal, all on the day and year first above written.

STATE BOARD OF LAND COMMISSIONERS

s/ A. M. Ramsey
President (SEAL)

s/ A. S. Willburn
Engineer

s/ E. Pickard
Adm. Asst.

s/ Ben L. Wright, Jr.
Lessee

DEFENSE MINERALS EXPLORATION ADMINISTRATION

Application of

TREASURY VAULT URANIUM CORPORATION

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Sub-Item 3 (a)(c)(f) Applicant's Property Rights in Land to be Explored

PATENTED PROPERTY

Claim	Survey No.	Location	How Controlled
Champaign	646	Sec. 1, T. 9 S., R. 79 W.) Sec. 6, T. 9 S., R. 78 W.) Sec. 31, T. 8 S., R. 78 W.) Sec. 36, T. 8 S., R. 79 W.)	Record Ownership in Entirety
Fanny	4490	do	do
Edna	3926	Sec. 1, T. 9 S., R. 79 W.) Sec. 6, T. 9 S., R. 78 W.)	do
Sunny South	2606	do	do
Little Newton	19926	Sec. 1, T. 9 S., R. 79 W.	do
Redman	5828	do	do
Coney	3371	Sec. 36, T. 8 S., R. 79 W.	do
Imperial Placer	1641	Sec. 1, T. 9 S., R. 79 W.) Sec. 6, T. 9 S., R. 78 W.)	do
June	6534	Sec. 31, T. 8 S., R. 78 W.) Sec. 36, T. 8 S., R. 79 W.)	do
Clipper	17024	Sec. 31, T. 8 S., R. 78 W.) Sec. 6, T. 9 S., R. 78 W.) Sec. 1, T. 9 S., R. 79 W.)	do
Clipper No. 2	17514	Sec. 1 ,T. 9 S., R. 79 W.	do
Wealth	17935	Sec. 31, T. 8 S., R. 78 W.) Sec. 6, T. 9 S., R. 78 W.)	do
Prince Oscar	17935	do	do
Vulcan	17935	Sec. 31, T. 8 S., R. 78 W.	do
Eclipse	175	do) Sec. 36, T. 8 S., R. 79 W.) Sec. 1, T. 9 S., R. 79 W.)	1/4 owned; 3/4 held by lease & option
Lone Star	2774	Sec. 36, T. 8 S., R. 79 W.) Sec. 1, T. 9 S., R. 79 W.)	do
Keystone	272	Sec. 36, R. 8 S., R. 79 W.) Sec. 1, T. 9 S., R. 79 W.)	2/3 held by lease & option
S. M.	4022	do	Record Ownership in entirety
Cliff	3817	do	
Triangle	3818	do	do
Comstock No. 1	17471	do	do
Comstock No. 2	17471	do	do
Jacob's Wonder	1394	Sec. 31, T. 8 S., R. 78 W.	do
Wonderful	1395	do) Sec. 6, T. 9 S., R. 78 W.)	do
Three Brothers	2102A	do	do
" " Millsite	2102B	do	do
St. Louis	5091	Sec. 31, T. 8 S., R. 78 W.	do
Brighton	2226	do	do

West 1/2, Sec. 36, T. 8 S., R. 79 W. (State School Land) 20 yr. lease

Note: Applicant has no lease or option on 1/3 of the Keystone Claim, Survey #272, described above, but is now negotiating for lease and option on this interest.

UNPATENTED PROPERTY

Claim	Recording Book	Recording Page
Moinie	39	186
Janie	39	185
Boynton	39	136
Lewie	39	187
Manson	39	166
Diorite	39	131
Jackie	39	134
Treasury Vault	43	373
Treasury Vault No. 1	43	373
Treasury Vault No. 4	43	341
Treasury Vault No. 5	43	342
Treasury Vault No. 6	43	343
Treasury Vault No. 7	43	344
Treasury Vault No. 8	43	475
Treasury Vault No. 9	43	476
Treasury Vault No. 10	43	477
Treasury Vault No. 11	43	478
Treasury Vault No. 12	43	479
Treasury Vault No. 13	43	480
Treasury Vault No. 14	43	481
Treasury Vault No. 15	43	482
Treasury Vault No. 16	43	483
Treasury Vault No. 17	43	484
Treasury Vault No. 18	43	486
Treasury Vault No. 19	43	487
Treasury Vault No. 20	43	488
Hale No. 1	43	337
Hale No. 2	43	338
Hale No. 3	43	339
Palmyra	38	152
General Canby	34	346
Bellefontaine	38	400
Tummel	37	553
Frances	43	473
Dorothy	43	472
David	43	471
Virginia	43	474
Wallace	43	485
Dickey	39	132
Odell	39	135
Steele No. 1	43	491
Steele No. 2	43	492
Steele No. 3	43	493
Imperial No. 5	42	665
Sherwood No. 1	43	217
Sherwood No. 2	43	218
Sherwood No. 3	43	219
Loveland No. 1	43	489
Loveland No. 2	43	490
Wanda Rose	42	660
Reserve Placer	38	24
Wonder Home Placer	37	574

Note: Applicant is record owner in entirety of all unpatented property listed on this page.

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Application of

TREASURY VAULT URANIUM CORPORATION

ITEM 4 - PHYSICAL DESCRIPTION

Applicant's properties are situated in Mosquito Mining District, Park County, Colorado, in Sec. 6, T. 9 S., R. 78 W., in Sec. 1, T. 9 S., R. 79 W., in Sec. 36, T. 8 S., R. 79 W., in Sec. 31, T. 8 S., R. 78 W., which properties are approximately 13 miles by road northwest of the town of Fairplay.

These properties are on Treasury Vault Mountain, adjacent to the Mosquito Range and the London Fault. Climax, with its huge deposits of molybdenum, lies but four miles north. The London Mine, one of Colorado's largest gold producers, is only one mile south of the center of applicant's property. Six or seven miles to the south lie the Hilltop and other former large producers of lead, silver, and zinc. Colorado's largest producing mining camp, the Leadville District, is eight miles southwest of the Treasury Vault area.

The altitude ranges from 11,500 ft. to 13,521 ft. at Treasury Vault Peak. The elevation of most of the property is between 11,700 and 12,600 ft.

Sub-Item (a)

This area was explored and developed between 1873 and 1919 for gold and silver. The principal mine of the area is the Champaign, discovered in 1876, and mined intermittently between 1882 and 1919 with a reputed production of around $250,000 in gold and silver. The workings consist of four adits all driven southwesterly on the Fanny Vein. No. 1 adit is 80' long; No. 2 (120' lower) is 260' in length; No. 3 (35' lower than No. 2) is the main working of the mine and is approximately 1500' long; No. 4 (111' lower than No. 3) is approximately 1220' long. Nos. 2, 3 and 4 adits are interconnected by stopes as the ore shoots mined in the early days were continuous between these levels. The ore shoots occurred at or near the junctions of the Fanny Vein with numerous cross veins. The adits are locally styled Nos. 1, 2, 3 and 4 Tunnels, and will so be called hereinafter.

The mine was principally worked by lessees. Nearly all of their mining was done by "hand" as no air compressor was installed at the mine until 1930. Production ceased in 1919 when the lessees lost the vein in both Nos. 3 and 4 Tunnels and a considerable length of each tunnel was driven in country rock off of the Fanny Vein.

Applicant, in the fall of 1954, reopened and retimbered the portals of both Nos. 3 and 4 Tunnels; retimbered an additional 600' of No. 4 Tunnel. When applicant started work, No. 4 Tunnel had a length of 1113 ft. Applicant widened the adit for that distance, laid track and compressed air line from portal to breast, dug a drainage ditch for the entire length of the tunnel. Approximately 2000 tons of waste rock was removed from No. 4 Tunnel in the course of this work.

The No. 3 Tunnel was likewise retimbered at the portal and for approximately 300' inside the mine; about 1000 tons of waste rock was removed; part of the track was repaired.

The above work was performed to permit better inspection and ventilation of the mine workings and in preparation for future exploratory work, including long steel drilling and core drilling, recommended by the engineers Wilfley, Freeman, and Lundberg, and for future exploratory drifting and cross cutting.

Applicant resumed work in April 1955, installed ventilation pipe for the entire length of No. 4 Tunnel; also installed blower so that mine ventilation is now good.

Since April 1, 1955, applicant has advanced, by contract, No. 4 Tunnel as a 5 x 7 heading on a vein southwest of and parallel to the Fanny Vein for a distance of 120'. Because, until very recently, the surface has been covered with snow, applicant has not had an opportunity to sample the outcrops of the several porphyry dikes ahead of the Champaign adits and on the crest and northern slopes of Treasury Vault Mountain. This work will probably be started within the next two weeks. At the same time, applicant expects to reopen and enter several adits driven in earlier days on both slopes of Treasury Vault Mountain, as well as to sample the dumps thereof.

The mine workings are presently accessible as explained hereinbelow in Sub-Item (d) of this Item.

Sub-Item (b)

There is no current production, and, as stated above, the past production is locally estimated at $250,000, consisting of gold-silver ore, which, as sorted for shipment, probably averaged 80 oz. silver and 2 oz. gold per ton. There are no exposed gold-silver ore reserves in the mine, although within the past few days silver-gold-lead-zinc ore has been encountered in advancing the heading of No. 4 Tunnel; the extent and average grade has not yet been determined. There are no proved uranium ore reserves in applicant's properties, but based on the opinion of engineers Lundberg, Wilfley and Freeman, applicant believes that the intense radioactivity of the last 200' of No. 4 Tunnel, and the last 900' of No. 3 Tunnel indicate the presence of uranium deposits, the extent and precise location of which can only be determined (a) by core drilling; (b) by so-called long hole drilling from the tunnels, and (c) by the advance of No. 4 heading into the principal anomalies indicated by the Lundberg Survey, or by other exploratory work.

There are no uranium exposures of commercial grade present in either tunnel, although samples taken during the last 60' of the 1955 advance of No. 4 Tunnel have assayed from .04% to .11% U_3O_8.

As stated, since applicant resumed operations in 1955, No. 4 Tunnel heading has been advanced 120' on a vein of the Fanny series paralleling the "main" Fanny Vein and slightly to the south thereof. This advance was begun about 113' from Station 26. At this point samples from both walls, from face and from back or "roof" of adit, ran from a low of .05 to a high of .11% U_3O_8.

At 173' from Station 26 sampling of the back at a junction with a cross vein ran .08% and the breast sample at the same point ran .07% U_3O_8.

The heading has only been sampled intermittently. The next sampling was taken 193' from Station 26 where the face near bottom ran .05 and near back .04% U_3O_8.

The next sampling was taken at 196' from said station where the center of face ran .04%. Another sampling was had at 204' from Station 26, where the left-hand half of the back ran .05 and the right-hand half .06% U_3O_8.

Samples have been taken but not run from a point near the present breast, approximately 233' from Station 26. At this point, the vein has widened to between four and five feet and a sulphide streak occurs near center of vein from five to eight inches wide. No assays have been run on this sulphide streak, either U_3O_8 or gold-silver-lead-zinc.

A sample taken from the breast of the cross-cut known as "Dog Leg," which was started close to Station 25, and which is entirely off the vein from which the other samples were taken, showed .02% U_3O_8.

The returns recited hereinabove were obtained from the University of Denver Research Institute.

No systematic sampling has yet been undertaken of the old Champaign underground workings. It is possible that a thorough sampling of the raises, stopes and crosscuts of both Nos. 4 and 3 Tunnels might disclose higher grade uranium occurrences accidentally exposed by former operators. None of the earlier operators of the Champaign Mine reported any uranium discoveries. They were probably unable to identify uranium minerals if they had been encountered in the adits.

In 1951, a U. S. Geological Survey crew reported slight indications of uranium on the dumps of both of the Champaign Tunnels. In the fall of 1952, the caved portals of these adits were opened sufficiently to permit entry, and Geiger counters were taken into each tunnel. Only a moderate reading was had in the first 900' of the No. 4 Tunnel and in the first 600' of the No. 3 Tunnel. The Geiger reading rose rapidly at a point in the No. 3 Tunnel where the Fanny Vein (on which both tunnels were driven) junctions with a cross vein known as Clipper. The Geiger rose more rapidly at the junction of the Fanny and Thomas Veins, about 100' beyond the Clipper crossing. The Geiger made a further rise at the next vein known as Canham-Nelson. At a point over Roberts Winze, the Geiger attained its maximum reading and remained ineffective to the breast of the tunnel.

In the No. 4 Tunnel, the first high reading was had near the Clipper Vein crossing. As shown in the attached mine working map, the No. 3 Tunnel extends much farther into the hill than does the No. 4 Tunnel, so, the latter tunnel which has already been advanced past the assumed position of the Thomas Vein and is close to that of the Canham-Nelson Vein, would have to be advanced around 285' to cut the downward extension of the Roberts Vein where the highest reading was had in the upper tunnel.

Applicant will attempt to blow out the intense volume of radon gas in both tunnels in order to obtain a more accurate Geiger reading at the numerous vein crossings. While applicant cannot prove this statement, old timers in the district insist that this gas (not then identified as radon gas) has been present in both adits since around 1893.

In the Summer of 1953 the Champaign Mine was entered and examined by the mining engineer, T. S. Ary. In the summer of 1954, Ary requested Robert Hale to furnish him air samples taken near the breast of Champaign No. 4 Tunnel. According to Ary's instructions, Hale pumped the air into an automobile innertube which he took to the United States Vanadium Company's mill at Rifle, Colorado, where a "scaler" determination was had, showing an equivalent of 4.59% U_3O_8. Ary expressed the opinion that some of the high readings might be due to what he called "direct emanations" from nearby uranium deposits. Ary also expressed the opinion that it would be impossible to blow out completely the radon gas in the two Champaign tunnels.

Geological Survey Circular No. 294, "Results of Reconnaissance for Radioactive Minerals in Parts of the Alma District, Park County, Colorado" by C. T. Pierson and Q. D. Singewald, Table 1, shows "EU" Per cent of .013 from vein material from Champaign fissure; .006, 005 and .004 from vein material from Champaign dumps.

Although Circular No. 294 was published in 1953, it apparently gave effect only to the reconnaissance in the summers of 1951 and 1952. The caved portals of Champaign Nos. 3 and 4 Tunnels were

reopened in the fall of 1952. At that time it was found that a caved stope had blocked No. 3 Tunnel at a point about 600' from the portal thereof. In the spring of 1953 this caved material was removed so that this tunnel was open to the breast. Both Nos. 3 and 4 Tunnels were examined several times in the summer and fall of 1953 by engineers of the USGS, including Robert U. King. Apparently none of the results of the 1953 examination shows in Circular No. 294.

Sub-Item (c)

The general geology of the Treasury Vault area is described in Geological Survey Bulletin No. 911 and delineated on the geologic map of the Alma-Horseshoe District, accompanying said bulletin. Lundberg's anomalies, resulting from his Airborne Survey, were superimposed on a "blow-up" of this map.

The applicant's property generally covers the so-called Treasury Vault granite batholith (Silver Plume Granite) in which occur numerous schist inclusions and which is cut by a number of porphyry dikes (quartz-monzonite, monzonite-diorite, and tertiary white porphyry). Some small pegmatite dikes are also found in this area. All of the sedimentaries have been scored away in this region.

There is probably a great deal yet to be learned about the deposition of uranium. The Mosquito Range and London Fault have been the sources of large deposits of ores. The applicant believes there is a distinct possibility that when the other large deposits of ore were deposited, uranium was also deposited, either contemporaneously or within other geologic periods, in a favorable place and host rock in the general vicinity of the London and Mosquito Faults. Treasury Vault Mountain and the surrounding territory show the highest radiation anomaly on the Mosquito Range, so far as our knowledge extends, and certainly the only high anomaly along the London Fault. We believe our area is where the uranium was deposited.

We showed the two Lundberg anomaly maps to AEC officials, also to officials of United Stated Geological Survey. Independent of each other, officials of these two agencies, after examining the USGS map accompanying Geological Bulletin No. 911, (a blow-up of which map the Lundberg engineers used as a base for their anomaly maps), suggested that the maze of porphyry dikes shown by the original USGS map on Treasury Vault Mountain and in the neighborhood of the Champaign Mine might have some bearing on the radioactivity noted by Lundberg. They suggested that we have this map from Bulletin No. 911 blown up on a scale large enough so that the outcrops of these dikes could be clearly shown and superimpose thereon Lundberg's anomalies. We followed this suggestion and are submitting with this application two prints of the same tracing, on which the Lundberg anomalies are superimposed; one map colored as to geology and showing only anomaly lines, the other colored only as to Lundberg's anomalies.

The pattern of criss-crossing porphyry dikes on Treasury Vault Mountain as shown by this map resembles to some extent maps of the productive portions of the Marysvale, Utah, area. Applicant understands that the primary uranium ores of Marysvale occur in close proximity to a porphyry stockworks and in other cases near junctions of porphyry dikes.

We believe that prints of the two above-mentioned maps might assist materially in laying out a surface core drilling pattern designed to explore the above-mentioned maze of porphyry dikes, after the porphyry outcrops have been examined and sampled by geologists.

The engineer, Robert D. Wilfley, whose report is submitted herewith, expressed the opinion that the higher radioactivity near the breast of Champaign No. 3 Tunnel and the surface radioactivity noted beyond the breast is related to a strong porphyry dike in that vicinity.

Attention is called also to the grid survey of a portion of the area by Lundberg Explorations Ltd. The Fanny Vein has been productive of gold and silver. It lies more or less along the center of the mapped area. Towards the sides of the mapped area appear anomalies which roughly parallel the trend of this vein. Obviously, grid mapping of the larger area requested herein will assist in determining the complete pattern and assist in exploration.

The principal development of this area has been on the Fanny Vein, a fault-fissure series, which strikes S. 37 deg. W. and is believed to effect an almost right-angle junction with the London Fault. It is believed that the London Fault antedates the Fanny because the Fanny fracture system appears to have dislocated or "thrown" the London Fault at the junction point. The Fanny Vein dips to the northwest from 65 deg. to 87 deg., 75-80 probably an average. To the north occur two veins approximately paralleling the Fanny, known as Imperial and General Canby. The Fanny is a vein system in a persistent northeast-southwest striking fractured zone rather than an individual fissure.

The Fanny is cut by a series of cross-fissures, known as Champaign, Nos, Clipper, Thomas, Canham-Nelson, Edna, and Sunny South, of strike generally approximating N. 75 W. These cross veins carried only sparse gold-silver mineralization and therefore received little development in the early days. Applicant believes that the radioactivity in the Champaign Nos. 3 and 4 Tunnels proceeds from the cross veins rather than from the main Fanny Vein. Geiger and scintillometer readings on the surface seem to bear out this theory.

Three adits, at different elevations, were driven on the Clipper Vein resulting in an unimportant gold-silver production. The uppermost and lowermost of these adits are now open to the breast. Each shows radon gas, but in lesser volume than that present in Champaign Nos. 3 and 4 Tunnels.

The Eclipse-Lone Star Mine was developed by a shaft of unknown depth and laterals therefrom. This mine is said to have had commercial gold-silver production but no accurate records are available. Three times normal background Geiger readings have been had on the dump from this shaft.

The Coney Mine is located on the steep southern cliff face of Treasury Vault Peak and is difficult of access. Its workings have not been reopened. It is said to have had an early-day commercial production of high grade gold-silver ore. This property was first located as the Treasury Vault Claim and gave its name to the mountain.

The concentration of radon gas is extremely high in the Champaign tunnels. As stated, an air sample taken at the breast of No. 4 Tunnel and "scaled" at United States Vanadium Company plant at Rifle, Colorado, gave results of 4.59% U_3O_8. We believe the concentration at the breast of No. 3 Tunnel would run higher. We know of no other mine in the United States having a comparable volume of radon gas. These tunnels are in or near the "hottest" part of the anomaly shown by the airborne survey by Lundberg. This "hot" part of the anomaly is approximately 1 mile long and one-half mile wide. The grid surveys indicate localized "hot spots." These hot spots may be caused by uranium deposits along vein systems. We believe the uranium deposits will be high-grade primary deposits. We therefore believe that an exploration program which is altered and amended as information is developed will discover a large amount of primary uranium ore. The core drilling program will require expert engineering advice which we hope can

be partially supplied by the Defense Minerals Exploration Administration, Atomic Energy Commission, and/or the United States Geological Survey.

Sub-Item (d)

As stated elsewhere herein, the Champaign workings are approximately 13 miles by road northwest of Fairplay, Colorado. Five miles of this road is part of State Highway No. 9, the next 7-1/2 miles is a county road, in generally good condition. The last half mile has deteriorated but is presently negotiable by truck and jeep.

The Champaign Nos. 3 and 4 Tunnels are on the westerly slope above North Mosquito Creek. These tunnels were driven southwesterly under a bench. The surface from the top of this bench for almost a mile southwesterly is relatively easy terrain. North of this terrace the terrain steepens sharply to the north up the Treasury Vault Ridge. Roads built relatively recently to the North London and Oliver Twist Mines (both now inactive), could be rehabilitated at comparatively small expense, so that transportation of core drilling equipment, etc., to surface drilling sites south of Treasury Vault Ridge could be handled by trucks.

Jeeps could negotiate, with little difficulty, the area north of Treasury Vault Ridge.

Because of the altitude, the winter climate is severe. No surface drilling can be begun before July 1st, and all surface work will terminate around November 1st, so probably two summer seasons will be required to drill the anomalies indicated by Lundberg. Much worthwhile core drilling could be done underground at any time of the year from locations in the two Champaign adits, especially after Champaign No. 4 Tunnel has been advanced 400' or more feet into the hill.

Sub-Item (e)

Applicant believes sufficient manpower will be available in the Fairplay region or in the nearby Leadville District to carry out the project planned. No railroads serve this region so all materials, supplies, and equipment must be transported by truck. There is sufficient water for underground core drilling at all times of the year and for surface drilling between June 1 and October 15.

Applicant plans to contract the core drilling and it is likely that contractors will use either gasoline or diesel-powered equipment. The Public Service Company's electric transmission line runs within one-half mile of the Champaign tunnels. The cost of the extension from this line to the Champaign is estimated at $2,000.00.

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REPORTS OF
GEOPHYSICAL AND AIRBORNE RADIATION SURVEYS
ON THE TREASURY VAULT MOUNTAIN AREA
PARK COUNTY, COLORADO

MADE TO

TREASURY VAULT URANIUM CORPORATION

BY

LUNDERRO EXPLORATIONS LIMITED
TORONTO

RECEIVED
JUL - 5 1955

REPORT ON THE GEOPHYSICAL SURVEY OF A PORTION OF THE PROPERTY OF TREASURY VAULT URANIUM CORPORATION, ALMA DISTRICT PARK COUNTY, COLORADO

LUNDBERG EXPLORATIONS LIMITED

TORONTO

December 20, 1954

REPORT ON THE GEOPHYSICAL SURVEY OF A PORTION OF THE PROPERTY OF TREASURY VAULT URANIUM CORPORATION, ALMA DISTRICT PARK COUNTY, COLORADO

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INTRODUCTION

The geophysical survey on the Treasury Vault Uranium Corporation property was undertaken in order to measure the extent and quantity of gamma radiation on the surface and to establish any trends in the radiation pattern.

The survey was begun on October twenty-fourth and completed on November fourth. During this period six and one-half days were spent in the field.

The necessary unskilled labour to assist the geophysical survey was supplied by Treasury Vault Uranium Corporation. Mr. Melvin Koepke actively assisted in the grid lay-out.

PHYSICAL CONDITIONS

Location and Area

The property is located in Park County, in the Alma district of Colorado. The property is about seven miles west of the town of Alma.

Approximately two thousand seven hundred feet of profile were geophysically surveyed.

Accessibility

A motor road leads from Alma up North Mosquito Gulch, and a small road branches off this and leads directly to the survey area.

Topography

The property is about thirteen thousand feet above sea level and is situated on a glacial terrace on the south side of the North Mosquito Gulch. The terrace is relatively flat, however the hillside on which the Champaign mine is situated is quite precipitous. The survey area is covered with little over-burden and is cut by a small intermittent stream in the south-east end.

WEATHER CONDITIONS

The geophysical survey was interrupted due to inclement weather owing to the approach of winter.

GEOLOGICAL CONDITIONS

The geology of the Treasury Vault Uranium Corporation property will not be discussed in detail as it is adequately covered by the following author.

Singewald, Quentin D. and Butler, B.S.	"Ore Deposits in the Vicinity of the London Fault of Colorado", USGS Bulletin 911, 1941.

General

The property is entirely underlain by the Precambrian basement complex. Injection gneiss and quartz-mica schist are present in the north-western part of the map area. These rocks are believed to be the oldest rocks in the district and are co-related with the Idaho Springs formation. They are thought to be the metamorphosed equivalent of a thick series of somewhat sandy shales containing a few lenses of nearly pure sandstone.

The granite of the area is a fine to medium grained, light-grey biotite-muscovite rock and has been correlated with the Silver Plume granite. The granite is the most abundant rock type in the map area. The gneiss, schist and granite has been intruded by numerous pegmatite dykes which are genetically related to the granite.

The ore deposits of the area are gold-silver fissure types. Three parallel vein systems cut the area, the Fanny vein, striking S37°W, the Imperial and General Canby striking north-south.

THE GEOPHYSICAL SURVEY

Uranium, thorium and very minor amounts of radium occur in most igneous rocks. Many granites and related rocks contain about 0.003 per cent uranium and/or thorium oxide. These elements produce gamma particles in proportion to the amount of

element present in the rock. Potassium in the form of K^{40} also produces gamma particles which contribute to the total radiation. Potassium is present in most igneous rocks as a constituent of feldspars and micas. Thus over an igneous mass of uniform composition the radiation pattern should be relatively uniform. However, if radioactive elements such as radon gas dissolved in ground waters are transferred to the surface along breaks and joints in the rock, those breaks will appear as radiation highs when compared to the general background.

If the deposits are drift-covered the effectiveness of this method will depend upon the kind of soil, its porosity, water content, drainage, etc.

The Radiation Method

The radiation survey was made on one hundred foot centres on one hundred foot lines. A Precision III hand scintillator was used. Neither the snow nor the overburden appeared to interfere with the readings, however the ground was bared for each reading.

Readings were taken underground for comparison purposes using a geiger counter supplied by Robert Hale of Treasury Vault Uranium Corporation. It was found that the counter became so contaminated with radioactive material as to render it useless for spotting the source of the radiation. Fortunately, however, the counter was enclosed in a plastic bag during the visit to number four tunnel and only the bag became contaminated.

RESULTS OF THE SURVEY

Map No. 22-377-1

One map accompanies this report, drawn to the scale of one inch equals one hundred and twenty feet. Map No. 22-377-1 is the radiation map of the Treasury Vault property. The areas of high radiation are coloured red; those of low radiation coloured green.

Discussion of the Results

The radiation survey has indicated several anomalous areas. The known fault system which coincides with the anomaly A' indicates that the anomalies may be due to radon gas seepage along fractures or fracture systems in the rock. For this reason possible fracture systems have been shown on the map by dashed lines passing through the anomalies. The general trend of most of these probable fractures is in a north-west direction with variations in strike from N20°W to about N70°W. Examples of these systems are anomalies A, A', C, J, D. A possible north-east fracture system is also apparent from the anomalies. This system roughly parallels the Clipper vein system. Anomalies E, D, G, F and H show this trend.

The Fanny vein system projected to the surface coincides with a radiation low. This fact could be due to mining along the fissure which has allowed the ground waters, with their dissolved radon gas, to escape.

The readings underground are roughly ten times higher than those at the surface. Unfortunately instrument contamination prevented the selection of the actual source of radiation underground. A possible method of overcoming this difficulty will be mentioned in a later section.

We believe from our comparison of the surface results with the readings taken underground, that the source of the radon gas is associated with the mineralization in and below the workings and not near the surface. However, it seems likely that the source is associated with the cross-fractures rather than the main Fanny fissure since the cross-fractures occur as radiation highs at the surface.

SUGGESTIONS

1. Ventilation of the mine workings might eliminate contamination and thereby permit a radiation survey of the tunnel to locate the source of the emanations.

2. The radiation survey in the tunnel could be accomplished

by covering an instrument with several plastic bags. This would allow the meter to remain visible and prevent the radon gas from coming in contact with the instrument. A reading could then be taken at a point for a specific time. Immediately before the next reading is taken the bag would be removed, thus leaving an uncontaminated surface.

3. The radiation survey could be extended to the north to cover the Clipper workings at a favourable time of the year when the hill side is more accessible. Further geological investigation could be done in the anomalous areas on surface. A detailed geological mapping underground in conjunction with a tunnel radiation survey would be of assistance in locating the radioactive source.

4. Systematic sampling underground and analyses of these samples after the geological and radiations surveys have been completed, would assist in the layout of a comprehensive diamond drilling program.

5. To avoid any risk of harm due to radiation to the personnel working in the mine, a radiation dosimeter should be worn to measure the radiation over longer periods of time. Further information regarding these instruments and the allowable dosage could probably be obtained from the local Civil Defence organization.

CONCLUSIONS

The radiation survey has indicated several anomalous areas. These anomalies have been attributed to radon gas seepage in fracture zones. None of these anomalies appear to be due to a near surface radioactive deposit.

Extension of the radiation survey to the north and further geological work on the surface and underground appears to be warranted.

We would appreciate being kept informed on the progress of any future work as this would enable us to better evaluate the results of these surveys and, in this way, help to guide a future development program.

Respectfully submitted,

LUNDBERG EXPLORATIONS LIMITED,

/s/ Hans Lundberg
Hans Lundberg
President

Toronto, Ontario
December 20th
1 9 5 4

REPORT ON THE TREASURY VAULT PORTION OF THE RADIATION SURVEY FOR LEADVILLE LEAD CORPORATION PARK COUNTY, COLORADO

Map No. 22-372-1

LUNDBERG EXPLORATIONS LIMITED
TORONTO

REPORT ON THE TREASURY VAULT PORTION OF THE RADIATION SURVEY FOR LEADVILLE LEAD CORPORATION PARK COUNTY, COLORADO

INTRODUCTION

An airborne radiation survey was conducted for Leadville Lead Corporation in September 1954. Through an agreement with Leadville Lead Corporation, the northern portion of the radiation map has been made available to Treasury Vault Uranium Corporation. This report will deal only with the northern section of the map area.

THE GEOPHYSICAL SURVEY

Trace elements occur in all of the igneous and sedimentary rocks. Among these elements are minor amounts of uranium, thorium and radium. These elements due to their radioactive nature yield gamma emanations in proportion to the amount of element present. Potassium in the form of K^{40} and radon gas emanating through fissures and joints also produce gamma particles which contribute to the total radiation.

Using a suitable gamma ray detector it is, therefore, possible to map various rock types through the gamma ray emanations. Similarly uranium deposits which yield high radiations can be detected by this method.

If the deposits are drift-covered, the effectiveness of this method will depend upon the kind of soil, porosity, water content, drainage, etc. The overburden in the survey area is very light and had no apparent effect on the emanations.

THE RADIATION METHOD

The radiation survey was made with a very sensitive airborne scintillation counter. This instrument is only sensitive to gamma particles. The profiles were flown in an east-west direction contingent on the

topographic conditions. Where possible, lines were flown five hundred feet apart and at an elevation of two hundred feet. Corrections were made for variations in altitude.

RESULTS OF THE SURVEY

One map no. 22-372-1 drawn to scale 1:12000 accompanies this report. This is the radiation map of the Treasury Vault Mountain Area. Areas of high gamma radiation are coloured varying shades of red; of low radiation coloured green.

A relatively high background counting rate is general throughout the area. The Precambrian granites and gneisses appear as radiation highs throughout the area; as do the Weber (?) shales. The carbonaceous rocks, siliceous rocks and the porphyries appear as radiation lows.

In the north portion of the surveyed area the uplift on the east side of the London fault has exposed Precambrian rocks. Therefore, the radiation high caused by these igneous rocks makes it possible to trace the London fault in that area. However, where the Precambrian and the Weber (?) shale are in contact, the location of the fault becomes indefinite. The minor features such as fissures, which are so important in this area as mineralizing conduits, are difficult to trace by this method.

An area of relatively intense radiation occurs in the vicinity of Treasury Vault Mountain extending southeast to include the North London area. The most intense radiation occurs in a fairly local zone on the south slope of Treasury Vault Mountain. The presence of talus in this area could account for some of this high radiation. As this anomaly includes a portion of the Champaign property, it is reasonable to assume that the high is caused by the same source as the radiation in the Champaign tunnel. For

this reason it is recommended that the property underlying this anomaly be acquired, if that has not already been done.

CONCLUSIONS

The airborne radiation survey in the Champaign area has yielded several interesting facts. The radiation pattern shows broad regional changes due to geology and large structures, such as the London fault. An area of high radiation south of Treasury Vault Mountain could be caused by radon gas seepage from extensive uranium deposits.

Respectfully submitted,
LUNDBERG EXPLORATIONS LIMITED

. . . . . .
Hans Lundberg
President

Toronto, Ontario
January 7th
1955

RECEIVED
JUL - 5 1955

GRID MAP RADIATION SURVEY REPORT
ON
THE TREASURY VAULT URANIUM CORPORATION
PROPERTY

TREASURY VAULT MOUNTAIN
PARK COUNTY
COLORADO

Geology by R. D. Wilfley.

Grid Maps by R. D. Wilfley & J. G. Freeman.

Radiation Determination by John G. Freeman.

Radiation Interpretation by Dr. Gordon L. Locher,
Ph D. Physicist.

To Mr. Ben L. Wright
718 Symes Bldg.
Denver, Colorado

Radioactivity Report
on
Surface Survey, and Grid Maps
of
Treasury Vault Uranium Corporation
Property

To: Mr. Ben L. Wright
718 Symes Bldg.
Denver, Colorado

From: John G. Freeman
1717 N. Weber St.
Colorado Springs, Colorado

Subject:

Radioactive measurements, and Grid Maps on surface of property, covering mine tunnels No. 3 and No. 4 (Champaign) tunnels, in Fanny Vein, located on Treasury Vault Mountain, Mosquito Mining District, Park County, Colorado.

Time: October 9th, thru October 21st, 1954.

Equipment:
F-1 Nuclear Survey Meter.
Raytomic, Super X.
Western Radiation Lab. XR7. Super Radiation Meter.

A special instrument, the F-1 was used to establish key points for grid work. This instrument is a specially high sensitivity instrument, having 25 special tubes and an ionization chamber. It has 8 sensitivity ranges: .02, .05, .10, .20, .50, 1.0, 5.0 and 10.0, in mr/hr and the ratios are: 1, 2.5, 5, 10, 25, 50, 250, and 500 to 1. Due to the high sensitivity of the F-1 it was used as a pilot instrument for locating key points to start check on the grid. After key points were established, the work was carried on with a second instrument calibrated to the F-1.

The second instrument was a Raytomic, Super X, with 12 high sensitivity tubes, and calibrated to the F-1. This instrument was the same as used in the original tunnel surveys, and very reliable.

The third instrument was a Western Radiation Laboratory, XR7 built especially for this survey by Dr. G. L. Locher, and is a Super Radiation Meter, and so calibrated to only show extremely high intensities.

The background count of the F-1 instrument was .55 mr/hr on selector .02 mr/hr.

The background count of the Raytomic Super X was 55 (C.P.M.) counts per minute on the 1000 C.P.M. range.

The background count was .10 mr/hr on the XR7 on the 0.2 mr/hr range.

Grid and Isorad Map.

On October 9th, 1954, the surface survey was started by first laying out a grid pattern on the surface, and staking each corner.

Number 2 corner of Survey No. 4490 was used as a starting point. This corner became our "ZERO" and was so selected in order that the boundary lines of the grid would parallel the Fanny vein, and give sufficient area on both sides of the Champaign tunnels, in order to follow the "Hot" spots originally observed in the tunnel survey.

The grid was laid out in 100 foot squares, divided into 25, 20 foot squares each. The westerly line of the grid started at zero, or No. 2 corner of Survey No. 4490, and ran N. 32° 58' W. for 300 feet, to crest of hill, then 90° easterly or 122° 58' for 300 feet. Then in a southerly direction from zero a line of stakes was set along the Fanny vein S. 30° 45' W. for 400 feet. This brought the southwest grid line approximately 20 feet beyond the breast of No. 3 tunnel and the Little Newton shaft.

The 100 foot markers placed in the N.E. end of the grid are designated as +1, +2, +3 from "0", and the S.W. end of the grid, the markers are designated as -1, -2, -3, -4 from "0". The lines running the length of the grid and parallel to the Fanny Claim are designated A, B, C, D. Radioactivity observed between these lines within the 20 foot squares are noted as being so many feet from the main grid lines, for example: 40 feet from +2C toward +3A, etc.

RADIOACTIVITY MEASUREMENTS.

The following are radioactivity measurements as observed, and include the background count in mr/hr for the F-1 instrument, counts per minute (C.P.M.) for the Raytomic Super X, and mr/hr for the XR7.

Column 1, Readings on F-1 Nuclear Survey Meter.
" 2, " Raytomic Super X.
" 3, " XR7 Super Radiation Meter.

Station No.	(1) Meter - Selector Range	(2) C.P.M.	(3) X1 Range
A 0	80 on 0.1	(80 on 1000 scale)	20
A+1	100 on 0.02 40% reduction 100 on 0.5 0.8 reduction 80 on 0 reduction	75	20

Station No.	(1) Meter - Selector Range	(2) C.P.M.	(3) X1 Range
A+2	off 100 on 0.02 off 100 on 0.25 off 100 on 0.5 80 on 0.1 30 on 0.2	75	20
A+3	84 on 0.1 84 on 0.05 reduction of 0.5	85	30
B+3	78 on 0.1	75	18
C+3		85	18
D+3	94 on 0.1	82	20
D+2	90 on 0.1	82	20
40 ft. on line to B+2 Granite outcrop	100-on 0.1 36 on 0.2	85 100 next day	30
On same line 40 ft. from B+2	95 on 0.1	85	18
C+2	70 on 0.1	80	18
B+2	85 on 0.1	85 95 to 100	18 20 - second day
B+1	85 on 0.1	75	12
B 0	70 on 0.1	70	15
C 0	75 on 0.1	75	12
D 0	80 on 0.1	75	18
D+1	65 on 0.1	65	10
D-1	85 on 0.1	75	10
Center of square made by D-1, D-2, C-1 and C-2	85 on 0.1	80	12
D-2	80 on 0.1	80	5 to 10
30 ft. S.E. of D-1	85 on 0.1	80	15

Station No.	(1) Meter - Selector Range	(2) C.P.M.	(3) X1 Range
A-1		80	14
A-2		78	18
A-3		85	16
A-4		80	16
100 ft. E. of A-4		80 to 100 in bursts	20
Shaft 40 ft. N. of Little Newton shaft		90 to 100	
B-4		78	12
D-4		85 Steady with bursts	18
C-4		65	12
D-3		80	14
D-2 Cor. No. 6 Sur. No. 19926 lies S. 18° W. 18 ft.		85 2nd day	18
D-1		70 2nd day	12
D-1 + 30 ft. on line to D O Granite outcrop		95	20
C-1		80	15
B-1		75	12
B-2 Granite outcrop		85	12
C-2		90 to 95	18
C-3		75	14
Small dump N. 75° E. 60 ft. from B-3		90 to 95	18
B-3		77	14
C+1		82	16

The following are radioactivity intensities after transposing all observations to mr/hr, calculating statistical errors and fluctuation, and represent the INTENSITIES above background.

Stations	Inst. #1 mr/hr	Inst. #2 mr/hr	Inst. #3 mr/hr
A 0	.267	.267	.2
A+1	.333	.246	.2
A+2	.267	.246	.2
A+3	.268	.287	.3
B+3	.233	.246	.18
C+3	.267	.267	.18
D+3	.313	.284	.2
D+2	.30	.284	.2
40 ft. on line to B+2	.333	.284/.333	.3
40 ft. on line from B+2	.313	.287	.18
C-2	.23	.267	.18
B-2	.268	.289/.333	.2
B-1	.268	.246	.12
B-0	.23	.23	.15
C 0	.267	.267	.12
D 0	.269	.246	.18
D-1	.248	.246	.10
Center of Grid Square between D-1, D-2, C-1 & C-2	.269	.267	.12
D+2	.248	.248	.10
30 ft. S.E. of D-1	.269	.267	.15
D+1	.196	.196	.10
A-1		.267	.14
Key Points covered with F-1 Instrument			
A-2		.249	.18
A-3		.287	.16
A-4		.267	.16
100 ft. E. of A-4		.333 Bursts	.2
Shaft 40 ft. N. of Little Newton shaft		.333	.2
B-4		.249	.12
D-4		.287	.18
C-4		.076	.12
D-3		.267	.14
D-2		.287	.18
D-1		.23	.12

Stations	Inst. #1 mr/hr	Inst. #2 mr/hr	Inst. #3 mr/hr
D-1 30 ft. on line to Granite outcrop D.O. line		.317	.2
C-1		.267	.15
B-1		.246	.12
B-2 Granite outcrop		.287	.12
C-2		.315	.12
C-3		.246	.14
Small dump N. 75° E. 60 ft. from B 3		.315	.18
B-3		.250	.14
C+1		.272	.16

USE OF GRID MAP:

A map showing elevation of tunnels, and underground workings with surface elevation has been made, and is at the top of the sheet, a top view of the tunnels and directions through the Fanny vein, also the junction of two other veins, the Clipper and the Edna. The "Hot" spots, as observed are taken from the Tunnel Survey, and are shaded in Red. The "Hot" spots observed in first survey are also shown on elevation map, and shaded in Red as well as the "Hot" spots of the surface survey shown along surface outline of mountain.

The grid map is designed to be an overlay for the map described above, this gives a quick and accurate location. The grid map is also shaded in red, which places anomalies on surface and tunnels in relation to each other, as observed from both surveys. It is very important that index points of the No. 2 map be placed accurately under indexing corners of "Isorad" grid when studying the anomalies.

CONCLUSION:

Although no extremely high Radiation was observed on the surface, it was seen that the entire surface was at all times well above established background count. Over-burden, talus and snow have an effect, detrimental too, and reduce intensities. In many cases snow alone will block out an observation, due to the snow absorption of the Gamma Rays. $2\frac{1}{2}$ feet of water is sufficient. One foot of snow contains one to two inches of water. Wherever snow was encountered during the survey, snow was cleared down to the earth, before taking a reading, and all key points were established on snow free points. It will be noted that the "Hot" spots on surface vary in relation to the "Hot" spots as observed in the tunnels. It is also interesting to observe the "intensity" of the junctions of the Fanny and the Clipper veins, also it is observed that a "path" of very low radiation cuts across the Fanny vein, almost the center of the Edna Vein. This might be caused by a fracture, stemming from a small fault apparently originating, or running

southeasterly through the top of, and down Treasury Vault Peak and close to the base of Redman Hill. This "Path" may possess other enrichments in mineral, but seems to be very low in radiation near the surface.

It is the belief of the author of this report that core drilling from the surface will produce cores of some intensities at shallow depths, however, ore should be reached between 150 and 200 feet in the areas where higher Isorads on grid coincide with high intensities in tunnels. It is believed that good ore is in the vicinity of the breast of tunnel No. 3; although the grid does not indicate an anomaly directly over the breast, it does show an Isorad of good intensity around the breast, and the ore in this area is possibly 300 to 400 feet in depth.

According to the grid, it is the opinion of the author that a core drill started near grid corner +2 between B and C and angled toward the Clipper vein to approximately +3B. This connects a high Isorad on grid with a high intensity area as observed in the tunnels, and it is believed the coring should go somewhat deeper than the tunnel levels.

A test coring should be made about 40 feet from D on line +2, and terminate in the area of line +2C, and terminate not less than 50 feet below tunnel level of No. 3 tunnel.

A test coring should be made 40 feet from C between -4 and -3 and angled toward the breast of No. 3 tunnel, and should be at least 100 feet below tunnel level. This area appears to be a promising one considering the relation of tunnel intensity to grid Isorad, as the grid Isorad almost circles the tunnel breast.

The map, grid, and record of the intensities of this report, together with Mr. Wilfley's report, in the hands of a reputable and experienced core drilling organization can establish correct starting points to drill, correct angles to follow, and depths to terminate.

The anomalies observed and recorded are commensurate with the survey made in the tunnels some months ago and is considered better than expected when type of rock, general terrain and the geology are considered. These points are brought out in Mr. Wilfley's report.

John G. Freeman

Report on interpretation of radiation measurements on Treasurevault Mountain, based on radiation survey of October 9 to 21, 1954 (Nov. 1954)

The tabulated intensity measurements made on top of the mountain, the grid map of the area surveyed, and maps of elevation and top view of the tunnels have been examined.

Measurements were made with three different radiation instruments, all responding principally to gamma rays. Results for each instrument appear to be consistent among themselves, with minor exceptions which are neglected. In evaluation of results, measurements made with a given instrument at different stations are compared with one another, and overall comparisons of results with the three instruments are used to give a map of intensities in the area surveyed. In the data shown on the grid map, relative intensities are shown. Background readings have been subtracted in all cases.

Use of a plurality of radiation instruments in the grid survey is a safeguard against possible erroneous performance of any single instrument, and is always desirable practice. Instruments used should read radiation intensities in standard units of intensity; milliroentgens per hour or microroentgens per hour, and never in counts per minute or other arbitrary units which depend on the particular construction of a particular instrument. The latter cannot be compared with results from other instruments, without deduction and inference.

The most important reading of any radiation instrument is the background reading in the general vicinity of the anomaly--but not over an anomaly. If the anomaly is small, little significance can be attached to observations, except in terms of the background intensity. The smaller the anomaly, the more important the background intensity becomes; repeated checks of background readings of instruments used during the mapping is a necessity. These facts were taken into account in the survey reported, and in the interpretation given below.

The isorads on the grid map show the parts of the area where surface radiation intensity is highest. The area covered shows a clear radiation anomaly, although it is not a large one such as would be found over an outcrop of ore. From the area and intensity pattern, the writer believes that the ore-body lies at some feet depth below the surface.

It is not possible to place a 'range of detection' on a uranium deposit under the surface, due to the many variables involved. But direct detection of a deposit from surface measurements has never been reported at a depth of 100', as far as I know, except through the indirect agency of radon gas, or from low-grade ore or contamination which extends upward toward the surface and gives measurable intensity at the surface. The attenuation of direct radium radiation by earth and rock is very rapid. Even if there were a large exposed uranium deposit in the tunnels, no

large surface anomaly would be expected on top of the mountain, due to the thickness of intervening rock. So the absence of a high surface anomaly is not to be construed as absence of uranium at or near the levels of the tunnels, or higher up.

The regions of higher activity are on the northeast part (+1, +2 and +3) and at the other side of the area (-3B, -4B). The overburden may be less in those areas, or the uranium may be nearer the surface or in larger quantity. On the basis of the radiation survey on top of the ground, the points of highest surface intensity would appear to be the most desirable places for drilling.

Core-drilling at selected places on the mountain would give good information. But from the radiation measurements at hand, I cannot advise as to the relative merits of core-drilling from the surface or drilling inside the tunnels. Considerations of cost and of available methods of drilling are involved, also, the non-equilibrium conditions of observations on radioactivity inside the tunnels as compared with the more stable conditions of activity as measured on the mountain.

Examination of rock or earth on the mountain for possible alpha-particle emitters might prove valuable in connection with radon seepage from a major deposit of uranium. If a region of high alpha-activity were found on top of the mountain, and if no uranium were shown in the surface, escape of radon gas would be indicated.

Respectfully submitted,

Gordon L. Locher, Ph.D., physicist

GEOLOGIC INTERPRETATION OF RADIATION READINGS

TREASURY VAULT URANIUM CORPORATION, TREASURY

VAULT MOUNTAIN, MOSQUITO MINING DISTRICT,

PARK COUNTY, COLORADO.

A radiation survey on grid laid out on the surface above the high radiation areas noted in the Champaign tunnels 3 and 4 was made by the writer and John G. Freeman, October 9 to October 21, 1954. The grid was made in one hundred foot squares, and was 300 feet wide - 150 feet on each side of the Fanny vein - and seven hundred feet along the vein. Each one hundred foot square was roughly subdivided into twenty-five twenty foot squares, and readings taken continuously along the boundaries of these small squares. Snow was scraped off where necessary and readings of several minutes were taken at the corners of the one hundred foot squares, as described in Mr. Freeman's report. While not included in the grid, readings were taken along the course of the Fanny vein to its intersection with the quartz-monzonite dike which cuts the Fanny vein about a hundred feet beyond the end of the Champaign No. 3 tunnel. No exceptional counts were noted there, but the count was as high as that in the area of the Little Newton shaft.

The formation within the boundaries of the grid is granite, like the rest of the Treasury Vault Mountain area. This granite contains several pegmatite dikes and the quartz-monzonite dike mentioned above. A. F. Buddington, in "Ore Deposits of the Western States", page 373, states that uranium deposits with ingenous affiliations are genetically connected with granite and with quartz-monzonite. Dana's System of Mineralogy, seventh edition, page 614, mentions four principal modes of occurence of uraninite. Of these the first and fourth modes might be considered here.

The first is in pegmatite dikes, and this does occur, as a small pocket, or lens, containing iron stained mica, coarse feldspar and quartz, and is located in a pegmatite north 11° West, 500 feet from the zero corner of the grid. This pocket gave high radiation readings, and small specimens removed from it gave about twice the background count. This pocket is an enlargement of a tight feldspar-quartz seam dipping about 30° into the hill. The pegmatite itself is "tight", that is, of a non-porous structure. It is difficult to see how a gas such as radon could travel through it in any quantity such as is found in the Champaign tunnels, in the few weeks before it would lose its radioactivity. Pockets such as this seem to be rare here, as many readings were taken both within and without the grid boundaries on pegmatite exposures. While in general they showed an increase in count, it was no more than on the ordinary granite exposures. So it seems to me that we can rule out that the radon is of pegmatitic origin.

This leaves the fourth mode of occurence as the most likely here. This is in hydrothermal sulfide veins formed at moderate temperatures, without Co-Ni minerals. The uraninite is found as colloform crusts, with sulfides such as pyrite, chalcopyrite, sphalerite and galena. This is the type of mineralization found in Gilpin County, Colorado. The fact that specimens of this type have been found on the dumps of the Champaign tunnels is further evidence that this is the type of occurence to be expected. The association of uraninite with quartz-monzonite in Gilpin County and elsewhere seems to me to indicate that the quartz-monzonite here may have a genetic relationship to the uraninite.

According to V. M. Goldschmidt, the possibility of large scale substitution in minerals from magmas will be limited to such pairs of ions, the radii of which agree within a tolerance of 10-15 per cent of the radius of the largest pair. Quadrivalent ions similar to calcium in size are cerium (1.02A), uranium (1.05A), and thorium (1.10A). The ions of trivalent bismuth (1.1A), and univalent silver (1.13A) belong to the same class. An important host mineral in igneous rocks is plagioclase feldspar, the laboadorite in quartz-monzonite. This may also explain the common association of uranium with silver minerals. The oxidation from the quadrivalent to the hexavalent stage makes it more readily soluble. The path of low radiation noted along the Edna vein might be explained by assuming that this area is more open to the weathering and oxidation by surface waters than other parts of the general area. This would mean that the uranium along this low-radiation path may have been dissolved and carried downward. Secondary enrichment at lower levels might be expected if proper precipitating minerals exist at these levels. While enrichment might not necessarily be expected at the intersection of the dike with the Fanny and other veins, the immediate area of these intersections with the Fanny and other veins seems to me the logical place to expect the highest enrichment.

CONCLUSION:

The radiation intensity in tunnels number three and four is near maximum at the breasts, that is at the points nearest the quartz-monzonite dike; it seems to me that drill holes radiating from the breast and angling toward the dike should disclose ore in this area. The concentration of radon in this area seems to indicate the close proximity of ore there. The intersections of the Clipper and other cross veins also show radiation increases, and these areas should be investigated. The enrichment from these cross veins could easily have come from the quartz-monzonite at depth.

R. D. Wilfley, M. E.

REPORT ON THE CHAMPAIGN MINE

TREASURY VAULT URANIUM CORPORATION

GEOLOGY BY R. D. Wilfley, Consulting Geologist
Colorado Springs, Colo.

RADIATION DETERMINATION by John G. Freeman, M.E.
Colorado Springs, Colo.

RADIATION INTERPRETATION by Gordon L. Locher, Ph.D. Physicist

Western Radiation Laboratory

Los Angeles, Calif.

To BEN L. WRIGHT, JR.

718 Symes Bldg.

Denver, Colo.

CHAMPAIGN MINE

TREASURY VAULT URANIUM CORPORATION

July 28, 1954

This report deals with the possibility of finding uranium ore on the Champaign and adjoining claims owned by the proposed Treasury Vault Uranium Corporation, and is based on radiation counts, made in tunnels 3 and 4 of the Champaign, and on a surface reading beyond the end of the longest tunnel.

The properties are located on Treasury Vault Mountain, near the London Fault, Mosquito Mining District, Park County, Colorado, and are partly in Section 6, Township 9 South, Range 78 West, and in Section 1, Township 9 South and Range 79 West. The area is about one mile northwest of the London Mine. It is about 12 miles from Fairplay by road, and about 4½ miles airline from Climax. The most important units of these properties, representing about 75% of the total area, are patented.

Geologically, the properties occupy a portion of the Treasury Vault granite batholith (about 2½ miles in diameter), which on the west abuts the London Fault, which has a displacement of from 2000 to 3000 feet. Numerous porphery dikes, pegmatites, and shist members occur within this granite.

The area is cut by three parallel vein systems, the Fanny strike S 37° W, Imperial and General Canby, striking generally NW-SW at the right angles to the London Fault strike, and by 12 or more cross veins with about N-S strike. The Fanny vein is covered by the Champaign and Redman claims, and the Imperial and General Canby veins by the Imperial property.

The Champaign Mine is an old gold-silver mine, inactive since 1930. It is reputed to have produced around $250,000.

The Champaign workings consist of No. 3 tunnel, 1500 ft. long and some 250 ft. below the surface, and No. 4 tunnel, 111 ft. below No. 3, and is 1018 ft. long. Both are on the Fanny vein. The highest radiation count in the area is found near the breast of these tunnels.

Some radiation was noted on the dumps of tunnels Nos. 3 and 4 in July 1951. The owners did not hear of this until August 1952. Thereafter they re-opened the tunnels, the

portals being caved. On entering the tunnels the high radiation was noted. An interpretation of this radiation is given in the attached report by Dr. Locher.

The intense radiation in the two tunnels would seem to indicate the possible presence of uranium minerals in the immediate area. The porphyry dike which is less than 100 ft. from the breast of tunnel No. 3 and which cuts the Fanny vein at the point, might reasonably be assumed to be the mineralizer, as some radiation was noted along this dike.

By hearsay, the lessee Everett (now deceased) is said to have found pitchblende in No. 3 tunnel about 1917. Everett is known to have worked in two underhand stopes below No. 3 level, which are now filled with water, so no examination of his workings can be made until these stopes are unwatered. None of the other Champaign operators reported uranium in the mine, and it is doubtful if they would have recognized such ores if they had been encountered.

SUGGESTED DEVELOPMENT PROGRAM

(1) Grid mapping of the radiation at the surface of the area above and ahead of the breast of tunnel No. 3.

(2) Unwatering the workings in No. 3 tunnel known as the Roberts and Everett winzes in search of possible previous exposures of uranium. This would also involve retimbering the portals, and some of the stopes in the two tunnels, removal of some waste rock, installation of new compressed air pipe and of ventilation pipe, repairs to mine track and installation of compressor and blower.

(3) Diamond drilling from surface using grid map data, also drill holes from tunnels.

It is difficult to estimate the cost of such a drilling program. The average distance of No. 3 tunnel to surface is about 250 ft., and the vertical distance between tunnels Nos. 3 and 4 is 111 ft., so it is not likely deep drilling would be required.

The geology of the region has been well mapped by the U.S.G.S. and by Hans Lundberg. Reasonably accurate maps of both Champaign tunnels, showing the position of the Fanny vein, and most of the numerous cross veins are available.

(4) Development of ore found by the core drilling program would be done by driving either or both of the tunnels ahead, and by laterals from them to develop any ore found on the paralleling Imperial or General Canby veins, or on any cross veins having ore.

The possibility of finding good gold and silver ore should not be overlooked, especially if the tunnels are driven ahead to intersect the porphyry dike just ahead of tunnel No. 3.

DETAIL

PROPERTIES. The Champaign property consists of the following patented lode claims: Champaign, Sur. No. 646; Fanny, Sur. No. 4490; Little Newton, Sur. No. 19926; Edna, Sur. No. 3926; Sunny South, Sur. No. 2606; Cliff, Sur. No. 3617; Triangle, Sur. No. 3816.

The Redman property consists of the patented Redman Claim, Sur. No. 5828, covering an additional 1500 ft. on the projected strike of the Fanny vein.

The Imperial property consists of the patented Imperial, Sur. No. 1641, and the following unpatented locations: Imperial Nos. 1 to 5 inclusive; General Canby, Bellefontaine, and Palmyra.

As to title, I have had no opportunity to examine the abstract. Five of the unpatented claims were located in 1952.

ELEVATION TOPOGRAPHY CLIMATE The elevation of the portal of tunnel No. 3 is 12,144 ft., and that of the portal of tunnel No. 4 is 12,033 ft. The highest elevation on the property is about 12,400 ft. The terrain is not particularly rugged. The climate is about like that of the nearby Leadville district.

ACCESS AND MARKET The property is now accessible to truck haulage, but by long disuse the last ½ mile of the road needs some repair. Access to the Champaign workings from Fairplay is by State Highway 9 for 5 miles, thence for 5½ miles over a non-surfaced but well maintained County Road (North London Road), then for the above mentioned ½ mile road now requiring repairs. The distance to railroad at Buena Vista is about 65 miles. The distance to the Leadville smelter, the market for any gold-silver ores, is about 95 miles by highway.

GEOLOGY All of the sedimentaries have been scored away from this area, leaving only pre-Cambrian rocks. The country rock is granite, with some gneisses and shists.

The Fanny and other veins have been described to some extent above. The strike of the Fanny vein is S. 37° W. and the dip is northwesterly. The Imperial and General Canby veins approximately parallel the Fanny strike and dip. As mentioned before, these three paralleling veins are cut by a number of cross veins, generally paralleling each other, and with an approximate strike of N. 75° E.

Porphyry is absent from that portion of the Fanny vein so far developed by the Champaign workings, but a quartz-monzonite porphyry dike crops on the surface a short distance

ahead of the breast of tunnel No. 3, near the Little Newton shaft. In my opinion this porphyry dike is very likely the mineralizer for the uranium. Some pegmatite having a small radiation count also outcrops near this shaft.

The principal deposition appears to be primary, both in the gold-silver ores, and judging from the few small specimens of pitchblende found on the dumps, so is the uranium.

CHARACTER AND GRADE OF PREVIOUSLY MINED ORE The ore previously mined occurred in shoots at or near the junction of the Fanny with cross veins. The width of commercially mined ore in these shoots appears to have been from 2 to 9 ft. The principal sulphides were argentite, pyargyrite, chalcopyrite, argentiferous galenta and sphalerite.

The commercial values of the ore previously mined were gold, silver and lead.

PRODUCTION Complete records of Champaign production are not available, as all records prior to 1890 were lost. Some original smelter settlement sheets are in the possession of the corporation, representing $61,830 in net smelter returns. The total production is estimated by the corporation at about $250,000.

HISTORY Some of the claims were located prior to 1880. The Champaign Mine was operated by small scale lessees from some time around 1888 to 1917. The last operation was that of a lessee in 1930.

CONCLUSION Judging from the geological possibilities as represented by the vein and dike systems, and the small amounts of pitchblende found on the dumps; and the high radiation count as more fully interpreted in the enclosed report by Dr. Locher, the exploration of the uranium possibilities of this property is a very worth while project.

/s/ R. D. Wilfley

R. D. Wilfley, M. E.

Radioactivity Report
on
Tunnels No. 3 and No. 4
on
Treasury Vault Uranium Corp.
Property

TO: Mr. Ben L. Wright
718 Symes Building
Denver, Colo.

FROM: J. G. Freeman
1717 N. Weber St.
Colorado Springs, Colo.

SUBJECT:
Radioactivity measurements in two mine tunnels (Champaign) No. 3 and No. 4 of the Treasury Vault Uranium Corp. property located on Treasury Vault Mountain, near London Fault, Mosquito Mining District, Park County, Colorado.

TIME: July 23, 1954

EQUIPMENT:
Three Geiger Counters were used to take radiation activity. Two counters of same manufacture having single high sensitivity tubes, with ranges of 0.2 and 2.0 and full scale of 20 divisions, indicating mr/hr.
One counter was equipped with 12 high sensitivity tubes, with ranges of 1,000, 10,000, 100,000 counts per minute. Counters were checked for background count approximately a mile from portals of the mine. The count was established as 5. mr/hr. with 0.2 scale of single tube instruments. The multi-tube counter indicated 15. CPM on 10,000 scale or 1500 counts per minute. Single tube counters will be referred to as "A", "B". Multi-tube as "C".

MEASUREMENTS:
Start of measurements began at portal of tunnel No. 4 at 2 P.M., July 23, 1954.
The following radioactivity was recorded:

Tunnel Station	Instrument "A"	Instrument "C"
4	5.0 on 0.2 Range....	20 ..... 10,000X
13	10.0 " " "	18 ..... "
14, 1st stope.....	10.0 " " "	20 ..... "
21-22 Winze.....	10.0 " " "	25 ..... "
23-24 Water fall,chute	12.0 " " "	28 ..... "
23+30 feet.....	15.0 " " "	50 ..... "
16	16.0 " " "	80 ..... "
25 + 10 feet.....	18.0 " " "	92 ..... "
25 + 20 feet.....	20.0 " " "	100+.....
Breast of tunnel	8.0 on 2.0 Range	10 + on 100,000 Range

(Due to station markers having been removed or lost, all stations referred to have been scaled from map.) Party returned to mouth of tunnel at 3 P.M. Both counters were contaminated to full scale indication. Clothes and skin of personnel were fully contaminated.

Instrument "C" was washed and dried, in order to decontaminate it for further use in tunne No. 3. It was not fully cleared but reduced, and a setting was established at 40 CPM on 10,000 Range.

Party entered Tunnel No. 3 at 3:30 P.M.
Fresh counter "B", and Multitude Counter used.
Counter "B" indicated 5.0 mr/hr. background.
Counter "C" indicated 40 CPM. background.

The following measurements of radioactivity recorded:

Tunnel Station	Instrument "B"	Instrument "C"
33, at cave in.....	10.0 on 0.2 Range.....	46 .....
34, 1st drift to right.	18.0 " " "	88 .....
37	15.0 " " "	68 .....
46	8.0 on 2.0 scale.....	100 .....
52	8.0 " " "	10+ on 100,000X
Breast of tunnel, Sta. 62+	13.0 " " "	10+on 100,000X

Party returned to portal of tunnel at 4:15 P.M.
Both instruments fully contaminated, also, clothing of personnel. Instrument "C" remained fully contaminated 5 hours later.

Two automobile inner tubes were filled with air at highest indicated radiation, in each tunnel. Tubes were labeled and taken to Colorado Springs where they were checked with a Super Nuclear Survey Meter. Both tubes indicated a high radiation of .23 mr/hr. 5 hours after filling with air. 3 days later radiation had reduced to .06 mr/hr.

SUMMARY:

From analysis and comparison of measurements taken in the tunnels of the Treasury Vault Uranium Corp. mine, there is no doubt in the writer's mind that an important and powerful source of radioactive mineral is buried in and around the tunnels of this property, due to the great quantities of radon gas ever present in the tunnels, this alone indicates the presence of Uranium. It is not possible to pin point any position in which the Uranium might be buried without making a careful surface survey and grid map. To determine location of source beyond tunnel walls, special equipment is necessary, and can be used in the tunnels. However, Grid mapping, followed with core drilling is recommended because the area can be checked above and beyond the present tunnel area. This is indicated in a small way by the fact that a rise in radiation was observed when an observation was made of the area above the tunnels. A rise of 2 points was observed at the Little Newton Shaft. Attached is a report made by Dr. Gordon L. Locher, an eminent authority on Radiation. His report and analysis was made from measurements forwarded to him by the writer of this report.

/s/ J. G. Freeman
J. G. Freeman

CC: J. N. Redman
Robt. Wilfley

REPORT:

To: Mr. John G. Freeman, 1717 N.Weber St., Colorado Springs, Colo.
From: G. L. Locher, Western Radiation Laboratory
1107 W. 24th St., Los Angeles 7, Calif.

SUBJECT: Radioactivity measurements made in two mine tunnels, and an interpretation of the observations.

Distribution: All copies transmitted to Mr. Freeman, except one filed by the author. Duplication done in W.R.L.

(1) Measurements.

The measurements reported were made at different points in two tunnels: Upper tunnel and Lower tunnel.

Three counter instruments, of two types, were used:

a) A single tube counter, with scales of 0.2 and 2.0 mr/hr, FSD
b) A second instrument, same as above (20. scale divisions).
c) A multi-tube counter, with 100. scale divisions and ranges of: 1000; 10,000; and 100,000.

Background readings of instruments a) and b), before use in the mines were: 5. scale divisions, or 0.05 mr/hr (50 microroentgens per hour). This appear to be about normal, or a trifle high, on the assumption that the elevation was 8000 to 10,000 feet.

Background reading of instrument c) was 15. scale div. on the 10,000 cpm scale, or 1500. cpm, if I have the data properly in mind. If 12 tubes are used in this instrument, they must be about twice the size of the customary tube in 1-tube prospecting counters. This remark is made on the basis of the observed counting rate outside the mines.

It will be assumed, here, that all instruments were in good order, and were correctly calibrated, when the measurements began, and that they remained in good order except for radioactive contamination during use. On c), 1500 cpm will be taken as 0.05 mr/hr--from a) and b).

Measurements reported are as follows. Arbitrary serial numbers are assigned to the observations, corresponding to successive stations.

LOWER TUNNEL:

Station	a) Reading	a) mr/hr	c) Reading	c) mr/hr
1.	10.	0.10	20.	0.067
2.	10.	0.10	18.	0.06
3.	10.	0.10	23.	0.076
4.	12.	0.12	26.	0.087
5.	15.	0.15	50.	0.166
6.	17.	0.17	70.	0.23

Station	a) Reading	a) mr/hr	c) Reading	c) mr/hr
7.	20.	0.20	92.	0.307
8.	20.	0.20	100. -	0.333-
9.	80.*	0.80	100.**	0.333

*8. on 2.0 mr/hr scale, transposed to 0.2 mr/hr scale
**10. on 100,000 cpm scale, transposed to 10,000 cpm scale

UPPER TUNNEL:

1.			80.	0.267
2.			68.	0.23
3.			100.	0.333
4.	80*	0.80	100 -	0.333+
5.	130.*	1.3	100 **	0.333

In the Upper Tunnel, a new instrument, the same as a) was substituted, since the previous instrument a) was contaminated by previous use. The background reading on instrument c) was doubled by previous use in the Lower Tunnel. So the last set of readings is subject to this correction.

Also reported: A sample of air was taken from one of the tunnels, by inflating an inner tube in the tunnel. This showed considerable activity, 5 hrs. after collection. Clothing worn in the tunnels showed strong contamination.

(2) Initial comments.

There can be no doubt about the presence of radon gas in the tunnels. Radon could only come from radium in uranium. So there is uranium present.

Increase of activity as the distance into the tunnels increased suggests, but does not definitely prove, that the source of the radon is relatively deep into the mines. Because it is a gas, the radon near the entrances might have been partially blown away, leaving a smaller effect near the entrances. More specific location of sources of radon is a matter to investigate later.

The sample of air taken outside in the tube shows that the activity is due to radon, and not active deposit left from the decay of radon. It would be well to wash off the external surface of the tube very well, to remove any deposit picked up by contact with the floor of the tunnels. The best general washing material for most radioactive contamination is hydrochloric acid, following washes with detergents or with soap or trisodium phosphate.

A decay table for activity of radon will be given on p. 3. From this, identity of any sample can be checked, even several weeks later.

Observation of data taken with instruments a), b), and c) suggest that instrument c) reached the limit of its counting speed at approximately 10,000 counts per minute (cpm). This is believed due to circuit limiations. I am not familiar with this instrument.

Since radon was shown to be present, and since the half-life of radon is 3.85 days, and since it leaves a long-lived product of its decay: Radium-D (22 years half-life), it is reasonable to assume that the walls of the tunnels will be coated with Radium-D, Radium-E and Radium-F (Polonium) in radioactive equilibrium with the Ra-D. These decay-products variously emit soft gamma rays, beta rays, and alphas (from the Po). They are solids, but the parent radon was a gas and the decay products will be distributed wherever the radon went. Since this deposit has doubtless accumulated over some years, it is a complicating factor in present exploration in the tunnels.

When the radon content is being examined, the moistness of the mine becomes a consideration. Radon is freed from its source by water. Dry radium, or dry uranium containing radium and radon, does not liberate much of the radon, except at very high temperatures (red heat frees most of the gas). But if the material is wet, the radon is set free much more easily. Radon is also fairly soluble in water (like oxygen). So water percolating thru uranium-bearing rock may carry radon out in solution. In practical cases, it is expected that some moisture may reach the uranium ore, but some of it will not be moist. It is impossible to make any estimate of uranium from the radon found in the tunnel, even if the latter were measured accurately.

The physical condition of the rock may have important bearing on the escape of radon from uranium ore not penetrated by previous mining. If the rock has been fractured by blasting, or if there are porous seams in it, egress cf the radon would be easier thru these than by other paths.

The table given below shows the decay rate of radon gas, starting at any arbitrary zero time. The table is abridged to save space:

DECAY OF RADON: % initial strength after various elapsed times:

0 hr.	100.0%	1 day	83.4%	15 days	6.5%
2	98.5	2	69.6	20	2.7
4	97.0	3	58.1	25	1.1
6	95.6	4	48.4	30	0.4
8	94.1	5	40.4	60	0.0016
10	92.7	6	33.7		
12	91.3	7	28.1		
		8	23.5		
14	90.0	9	19.6		
16	88.6	10	16.3		
18	87.3	11	13.6		
20	86.0	12	11.3		
22	84.7	13	9.5		
24	83.4	14	7.9		

It is evident that any given influx of radon gas is decomposed rather completely in a month. From this fact, an important observation can be made: Radon found in a mine shaft has been liberated in that location, or has migrated there, within

the last month or two. It is reasonable to assume that it has not traveled very far, since the volume of radon generated by, say, 1 gram of radium (which is in 3,000,000 grams, or about 3 long tons of primary uranium) is almost incredibly small in volume--a negligible fraction of a cubic millimeter at normal pressure and temperature. So radon must be 'helped to move', and should be found in highest concentration nearest the source.

Deposits of RaD, with RaE and Po, on the other hand, have half-lives of about 22 years. So they will persist in appreciable strengths for several hundreds of years after the radon has been dead.

It is accordingly very important to be sure that the activity located is live radon, and not active deposit left by radon in the past. Measurement of the relative strengths of samples at regular intervals, say 1 day apart, will allow decision as to whether the sample has appreciable live radon in it.

3) Possible means of localizing the source of radon found in the mines.

The radon shows the unmistakable presence of uranium in the vicinity, but impedes location of the exact spots of high ore activity, and even damages the radiation instruments used and renders them useless. So other means must be used to spot the ore.

If the terrain permits, the entire area outside the mines should be surveyed extensively for radiation measurable on top of the ground. Core holes, or drill holes, would be of great help, if they are practical.

Inside the shafts, it should be possible to make a point-to-point survey with an appropriate radiation meter, but a special one would be required. The following characteristics are suggested:

A. Encasement of the counter tube or tubes in a lead shield, at least ¼" thick. This is to exclude all betas and all gammas, or nearly all, from emitters other than radium and radon.

B. Exploration of the walls of the tunnels with this receiver.

C. Use of the probe on a sufficiently long cable to allow the indicating instrument to be outside the mine shafts, to avoid ruining it by soaking with radon and active deposit.

The reason for use of the lead shield is to get away from the active deposit, which may lead to fast counting with ordinary prospecting counters. This shield is ineffectual against radon itself, since the gamma-rays from immediate descendants of radon are very penetrating. But it would eliminate response to much of the "diffuse" activity in the mines. Radon could only be eliminated by ventilation.

Unfortunately, the thick shield would cut down the response of the counters a great deal, to the gamma rays sought. The ideal arrangement would be to use a scaler which adds up the counts over any desired length of observation; the counter tubes would be set in position during the scaler run.

The possible objection to a long run of this type is that the man in the mine would be exposed a long time. If he used a portable oxygen breathing apparatus, and breathed none of the air in the shaft, the danger would be reduced to almost nothing.

(4) Health hazard from breathing radon.

The increases of counting rates over background rates shown in the measurements reported are all less than a factor of 10. So the radioactivity is not high, compared with that of medical radioactive sources, for example.

Nevertheless, radon is classed as a highly poisonous material, and even small quantities should not be ignored. A Handbook (#52): National Bureau of Standards (Govt. Printing Office, 20¢), gives a value of 10^{-8} microcurie per cc of air, as the maximum concentration that could be safely breathed, continuously. To give you an idea of the smallness of this concentration: 1. microcurie is 37,000 disintegrations per second. So 10^{-8} microcurie is only 0.002 disintegrations per minute. This is per cc of air, and the lungs handle many cc per minute, of course. The danger lies in the daughter products of radon, especially the alpha-emitting Polonium.

I believe that the Radioactivity Section of the Bureau of Standards will supply evacuated bulbs for collecting air samples, and will run radon analyses of such samples. This safety precaution might be considered, in the event that mining operations were undertaken in the shafts.

(5) Conclusion.

Since I have not seen the locations under consideration, I am not in a position to make very positive statements. But on the basis of the data submitted, it appears to me that these mines and the surrounding area should be explored extensively, for the purpose of finding and mining uranium ore which I believe must be present, and not too far from points previously mined.

Signed: Gordon L. Locher
Gordon L. Locher, Ph.D.,
Physicist

APPLICATION OF TREASURY VAULT URANIUM CORPORATION

ITEM 6 - Estimate of Cost

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1.	**Engineering:**		
	Engineer-Geologist - fee $100 per day, 30 days	$3000.00	
	Ass't Eng. - fee $50 per day 30 days	1500.00	
	Two Helpers - at $1.50 per hr. 30 days	720.00	
	Assaying and Analyses	3000.00	
	Miscellaneous and contingencies	1000.00	$ 9,220.00
2.	**Geophysical Surface Survey, by Lundberg Explorations Ltd. of said 240-acre area**		
	One Engineer and One Geologist, combined fee $125 per day 40 days	$5000.00	
	Two Helpers at $1.50 per hr. 40 days	960.00	
	Transportation - $12.50 pr.day 40 days	500.00	
	Expenses of Lundberg Engineers - $15 per day 40 days	600.00	7,060.00
3.	**Road Work**		5,000.00
4.	**Reopening Old Workings:**		
	Coney Mine, estimated	$2000.00	
	Misc. mine workings, on north slope of Treasury Vault Ridge	3000.00	5,000.00
5.	**Core Drilling from Surface:**		
	20,000 ft. on said 240 acre area, contracted at $7.50 per foot		150,000.00
6.	**Core Drilling from Champaign Mine Workings:**		
	6,000 ft. contracted at $7.50 per ft., core drilling Lundberg Anomalies A, A', and D shown on Map 22-377-1. Remainder of core drilling will be governed by results of proposed geophysical survey (see Par. No. 2 above)		45,000.00
7.	**Underground Development from Champaign Mine Workings:**		
	1,400 ft. of drifting or cross-cutting contracted at $35 per foot		49,000.00
8.	**Supervision of Core Drilling:**		
	Salary $500.00 per mo. for 12 months		6,000.00
9.	**Assaying and Analyses of Drill Cores and Sludge**		3,000.00
10.	**Bookkeeping and Auditing** - estimated		2,000.00
		Total	$281,820.00

APPLICATION OF TREASURY VAULT URANIUM CORPORATION

ITEM 7 - Sub-Item (b)

Applicant understands that if the project is approved, applicant will be reimbursed approximately 75% of the expenditures made under the project in accordance with the regulations on government participation (Sec. 7, DMRA No. 1). Applicant's share of these funds will be derived from the sale to the public of applicant's stock.

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APPLICATION OF TREASURY VAULT URANIUM CORPORATION

ITEM 5 - Current Work at Applicant's Expense (Not Included in Project)

As stated in Item 4, Sub-Item (a), applicant, in the fall of 1954, started to carry out a preliminary portion of its plans, with its own funds, by reconditioning and equipping with air-powered drills the Champaign No. 4 Tunnel, and providing for housing of men and machinery at the portal of that adit.

This operation was suspended December 15, 1954, when the road was snowed in, and was resumed April 1, 1955, after the purchase of a weasel, to permit transportation over snow. As stated in Item 4, Sub-Item (b), No. 4 Tunnel is now being advanced as a 5' x 7' heading on one of the fractures of the Fanny system, parallel to and southeast of "main" Fanny vein. As of this date, the adit has been continued for 120' in vein material from which samples have been taken which run from .04 to .11% U_3O_8; and recently a sulphide streak of undetermined width and mineral content, resembling the high-grade gold-silver ore heretofore produced in Champaign, has been encountered in the bottom of the drift. See map of Champaign workings, submitted as exhibit with Item 4, Sub-Item (c).

Applicant recently purchased a machine drill adapted to "long steel" drilling, and intends to "fan out" a series of exploratory "long holes" as the heading is advanced. A few "long holes" have already been drilled on either side of the vein now being followed. The cuttings from these holes have shown no high uranium mineralization.

Since April 1, applicant has expended about $10,500.00 of its funds in the above installations and exploration work. The adit advance is contracted and costs applicant about $22.00 per foot. "Long hole" drilling will cost around $1.25 per foot.

Referring to said Champaign Mine workings map, applicant, with its own funds, independent of this application, intends to continue advance of No. 4 Tunnel about 285' to cut Roberts vein, concurrently drilling approximately 470 feet of "long holes."

Sub-Item (b) - The Proposed Work Under this Application

Although so far no uranium ore occurrences of commercial grade or size have been encountered either underground or on the surface of applicant's holdings, applicant believes, based on uranium mineralization recently encountered in No. 4 Tunnel advance and on the engineering opinions and anomaly maps of Lundberg, Wilfley, and Freeman, that the intense volume of radon gas encountered in the Champaign tunnels and the radioactivity observed on the surface and from the air by some of these engineers, has its source in several uranium deposits, some in the immediate vicinity of the Champaign workings and to the southeast thereof, and in others on both slopes of Treasury Vault Ridge. In other words, applicant believes its holdings may contain a potential new uranium field, rather than a single deposit, or one immense deposit at depth.

Applicant's objective, in this exploration project, is to explore its holdings by core drilling both from the surface and from underground, as well as by "long steel" drilling from present underground workings and extensions thereof; and, by advance of one of these workings, the Champaign No. 4 Tunnel, to cut the cross veins showing radioactivity

in the upper or No. 3 Tunnel, as well as to drift and cross-cut from No. 4 Tunnel to explore Anomalies A and A' of the Lundberg ground survey. See Item 4, Sub-Item (c) (Map 22-377-1).

It will be advisable first to have additional geophysical surveys on the surface made by Lundberg Explorations, Ltd., or by some similar organization, in order to lay out additional grid mapping before a full surface core drilling program can be evolved on the remainder of the anomalies shown by the Lundberg airborne survey. It will also be necessary further to blow out radon gas from the two Champaign tunnels and to obtain the information resulting from more effective Geiger readings at the vein crossings and from long steel drilling before a program of underground core drilling can be laid out. For these reasons it is impossible now to estimate intelligently the total number of core drill holes which may be required or the angle and depth of these holes and the total core drilling footage required. However, some surface drilling in Anomalies A, A', and D (Map 22-377-1) could be commenced sooner. Therefore, at this time it is possible only to set up the project in stages and to use round figures in the estimates.

Applicant has been advised that, prior to laying out a surface core drilling program, it should employ competent engineers to make a detailed surface examination of the area included in Lundberg's principal airborne anomaly in order to attempt to determine possible connection between the noted radioactivity and the numerous porphyry dikes, faults, and veins which traverse Treasury Vault Ridge in several directions. Assays and analyses are, of course necessary on sampling by the engineers engaged in this work.

Applicant believes that important information might be obtained by reopening several short adits driven in earlier days in the anomaly area, particularly on Treasury Vault Ridge. As most of these workings are in the perma-frost zone, reopening would consist mainly of ice removal.

Applicant believes that the project should be carried out in the following order:

1. Examination by engineers, as described hereinabove in the fourth paragraph under Sub-Item (b), of the surface of approximately 240 acres contained in the "core," or area of highest radioactivity of Lundberg's principal anomaly resulting from his airborne survey. See Item 4, Sub-Item (c) (Map 22-372-1).

2. To employ Lundberg Explorations, Ltd., or some similar organization, to make a ground survey in order to lay out grid map for core drilling of the said 240-acre area. If this ground survey shows anomalies comparable to those of Lundberg's 1954 ground survey, it would be advisable, later, to continue the ground survey over the area covered by the remainder of the principal anomaly shown on the airborne survey map, representing an additional area of about 600 acres.

3. The last half mile of the road to the Champaign should be reconstructed to permit year-around transportation, and rehabilitation work should be done on the long-disused road which gives access to the terrace above the Champaign cliffs, and on the several old wagon roads branching off therefrom, which in turn give access to the foot of Treasury Vault Ridge, all of which have to be used in transportation of core drilling equipment, etc.

4. Reopening old mine workings as mentioned above.

5. Core drilling from surface on locations, which now, or which may hereafter, appear to be favorable as a result of the engineers' surface examination and the proposed Lundberg ground survey. Since surface operations are limited to summer and fall months, it seems advisable to commence this drilling as soon as it is practicable. As each hole is put down, the information so obtained would to a large extent determine the position, angle, and depth of future holes. Before the first "pilot" hole is put down on Anomalies A, A', or D, a geologist should determine as well as possible the dips and strikes of fissures and fractures in these anomalies, pending actual determination through the core drilling.

6. Following blowing out of radon gas from Champaign mine workings and the long steel drilling program now in process, to lay out, with advice of competent engineers and, if possible, by consultation with engineers of Defense Minerals Exploration Administration, Atomic Energy Commission, and United States Geological Survey, a program of core drilling from Champaign workings. Applicant considers it advisable to contract all core drilling.

7. If favorable results are obtained from applicant's current long hole drilling program, the project should include 300 feet of drifting or cross cutting from Champaign No. 4 Tunnel into Anomaly G (Map 22-377-1) so that core drilling can be done from the most advantageous positions.

Champaign No. 4 Tunnel should be advanced by drifting approximately 700 feet to explore the horizon under No. 3 Tunnel, where the Fanny vein system is joined by Canham-Nelson, Roberts, Edna, and Sunny South veins; then a cross-cut of around 400 feet should be driven from Champaign No. 4 Tunnel to explore Lundberg Anomalies A and A' (Map 22-377-1).

8. Applicant believes it necessary to employ, on a monthly basis, a competent supervisor (preferably a graduate engineer) to oversee the core drilling and to make logs thereon as well as to attend to sampling and assaying of cores.

9. The expense of assaying and analyses of drill cores and sludge is included in cost estimate.

10. Applicant has included in cost estimate the services of bookkeepers and auditors in connection with this project.

Sub-Item (c) Date of Starting and Completing Project

As stated elsewhere in this application, due to the elevation and climate, geological examination and core drilling from the surface can only be accomplished in the period between June 1 and October 15 of each year. If this application had been filed earlier and if Defense Minerals Exploration Administration had approved the loan, this work could have been started by June 1, 1955. Under the circumstances it is impossible to state a precise date of starting this work. As also stated elsewhere herein, if the entire project, as outlined in this application, should be carried out, it would take two "summer" periods of 4½ months each to complete this work. Actually underground exploration by long hole drilling, core drilling, or by drifting and cross cutting can be carried on at all times of the year and therefore could be started at any time after this application might be approved.

Sub-Item (d) - Operating Experience and Background of Applicant

The applicant is a recently incorporated company, and therefore has no operating experience or background, but believes that it can, in short order, assemble an organization capable of carrying out the proposed exploration project.

Applicant's president and legal counsel, Ben L. Wright, Jr., is a Denver attorney with considerable familiarity with mining law. In the course of his practice he has done legal work for mining clients including Leadville Lead Corporation, and for others with properties on the Colorado Plateau. He therefore has a somewhat wide acquaintance with uranium operators. He can be of considerable assistance to applicant in the selection of an operating organization. He has been an officer of Leadville Lead Corporation since 1950, during which time it conducted exploration work under a Defense Minerals Exploration Administration loan.

So far, the rehabilitation work at Champaign Mine has been under the direction of Robert R. Hale of Fairplay, a practical miner but not a mining engineer. Mr. Hale is a vice-president of applicant. Mr. Hale owns and manages the B & B Motor Company in Fairplay, which, in addition to buying and selling automobiles and tractors, operates a machinery repair shop. This enterprise has been managed successfully by Mr. Hale for around 15 years. He has a wide acquaintance in the Fairplay and Leadville districts, and is in a position to engage a competent mine superintendent and a capable crew. Mr. Hale is serving at present as the applicant's General Manager, and it is the intention of applicant to employ as soon as possible a full time mine superintendent to work under Mr. Hale's direction. Mr. Hale is one of the principal stockholders of applicant.

James N. Redman, one of the principal stockholders and a consultant of applicant, has practiced mining engineering in Colorado for more than 25 years, and has an intimate knowledge of the Alma-Horseshoe District, and particularly of the Treasury Vault area. Mr. Redman served as an engineer and General Manager for Leadville Lead Corporation from 1947 to 1949 and as President of that company in 1948-49. He has a wide acquaintance in the mining engineering profession and among the miners of the Alma-Horseshoe and Leadville districts; therefore, he can assist applicant in selecting mining engineers to help in laying out a core drilling and underground exploration program, as well as in selection of an operating organization.

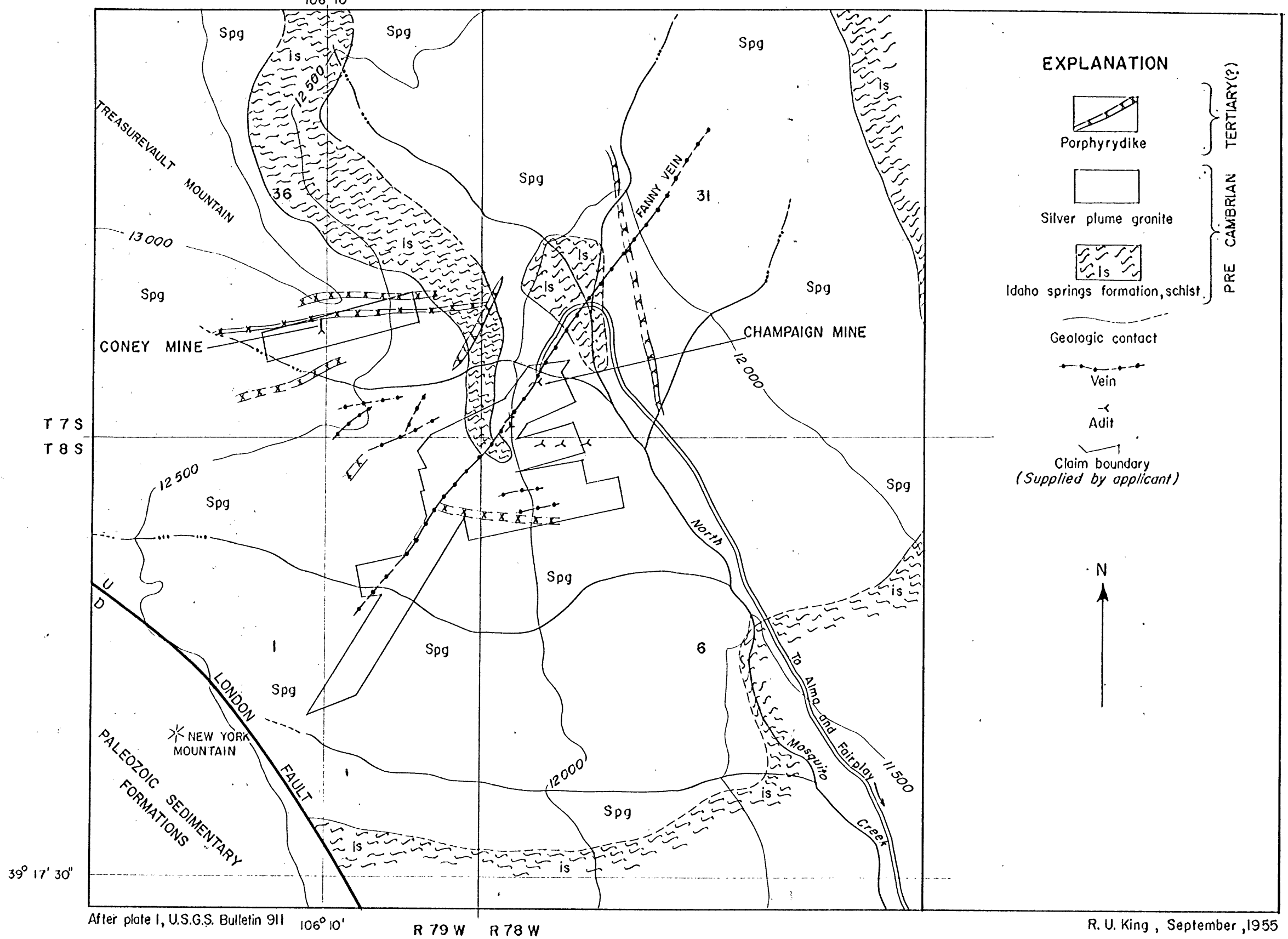
Leroy A. West, a vice president of applicant, is a practical miner, although not a mining engineer. He formerly resided in the Alma District, and at one time had a lease on the dumps of the Champaign Mine. He also conducted mining operations on other properties in the Alma District. He has an intimate knowledge of the Treasury Vault area.

Applicant also hopes to have engineering advice from the Atomic Energy Commission and the United States Geological Survey and Defense Minerals Exploration Administration.

UNITED STATES DEPARTMENT OF THE INTERIOR

DMEA 3887

PREPARED FOR THE
DEFENSE MINERALS EXPLORATION ADMINISTRATION



After plate I, U.S.G.S. Bulletin 911

R. U. King, September, 1955

FIGURE 3.– GEOLOGIC MAP OF THE CHAMPAIGN-CONEY MINES AREA SHOWING THE OUTLINES OF THE PRINCIPAL CLAIMS OF THE TREASURY VAULT URANIUM CORPORATION.
PARK COUNTY, COLORADO

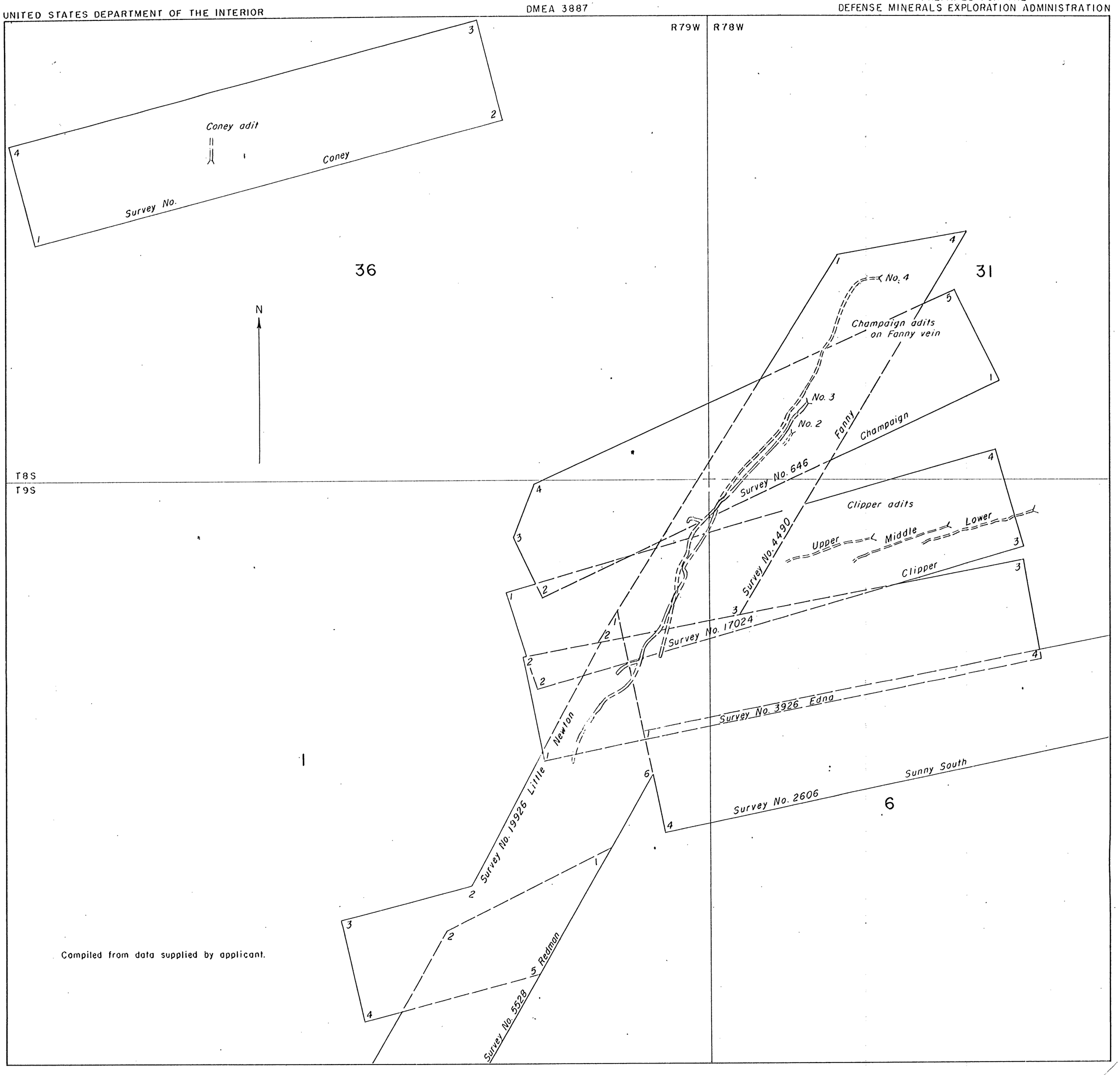
0' 500' 1000' 2000' 3000' 4000'

Contour interval 500 feet

UNITED STATES DEPARTMENT OF THE INTERIOR

DMEA 3887

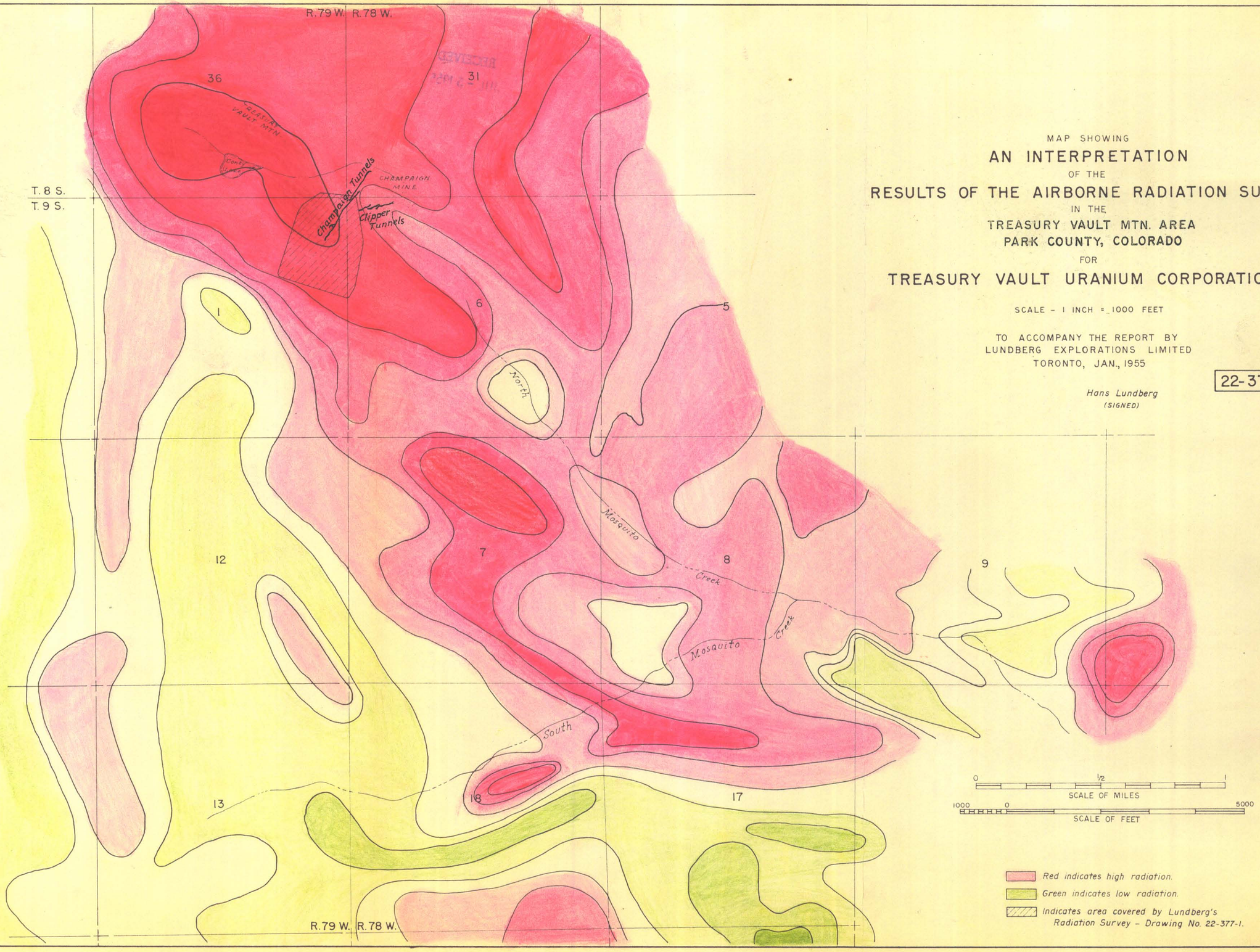
PREPARED FOR THE
DEFENSE MINERALS EXPLORATION ADMINISTRATION



Compiled from data supplied by applicant.

FIGURE 2-PARTIAL CLAIM MAP SHOWING DEVELOPMENT, TREASURY VAULT URANIUM CORPORATION
PARK COUNTY, COLORADO

100 0 100 200 Feet



MAP SHOWING

AN INTERPRETATION

OF THE

RESULTS OF THE AIRBORNE RADIATION SURVEY

IN THE

TREASURY VAULT MTN. AREA
PARK COUNTY, COLORADO

FOR

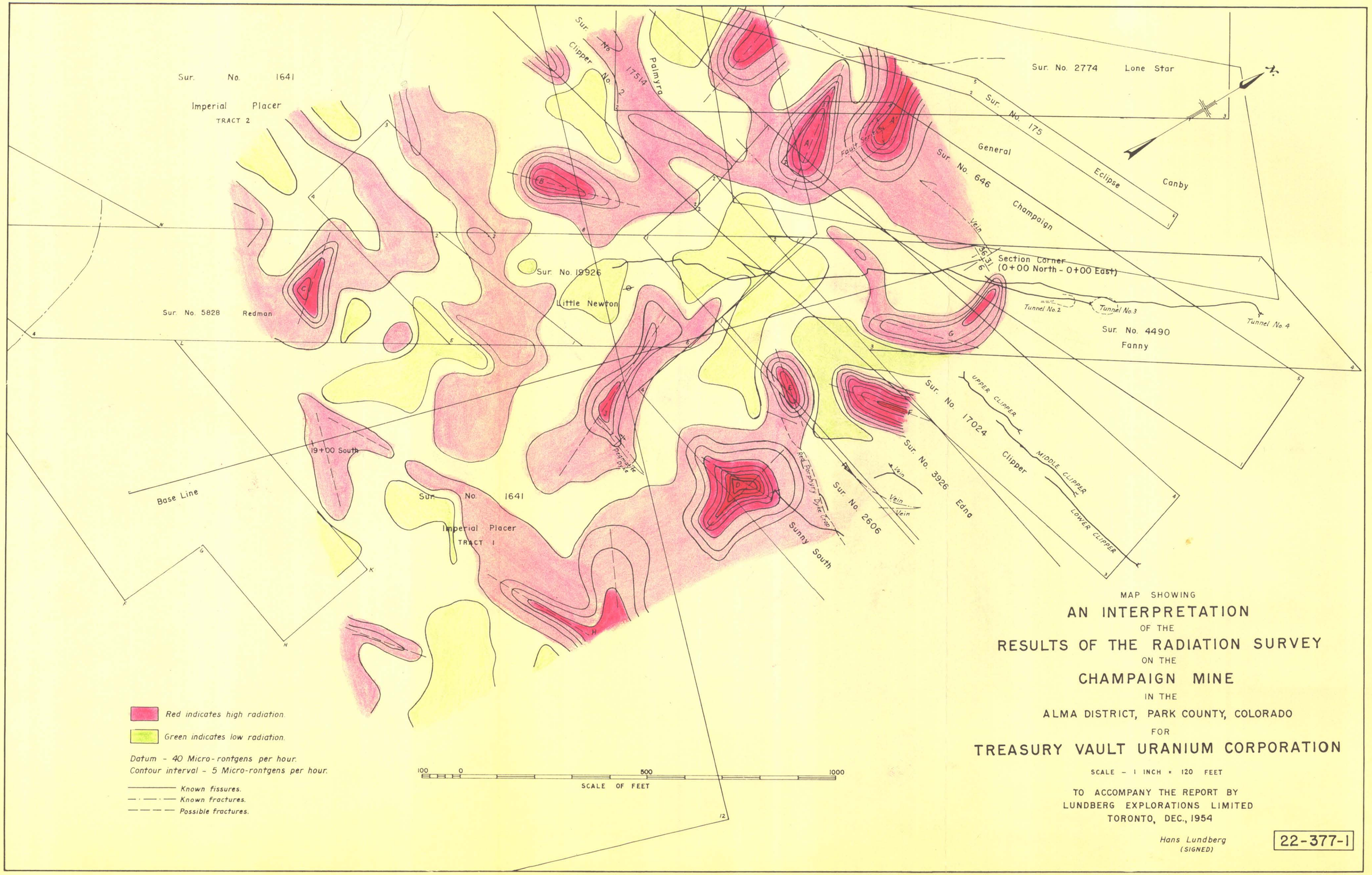
TREASURY VAULT URANIUM CORPORATION

SCALE - 1 INCH = 1000 FEET

TO ACCOMPANY THE REPORT BY
LUNDBERG EXPLORATIONS LIMITED
TORONTO, JAN., 1955

22-372-1

Hans Lundberg
(SIGNED)



MAP SHOWING

AN INTERPRETATION

OF THE

RESULTS OF THE RADIATION SURVEY

ON THE

CHAMPAIGN MINE

IN THE

ALMA DISTRICT, PARK COUNTY, COLORADO

FOR

TREASURY VAULT URANIUM CORPORATION

SCALE - 1 INCH = 120 FEET

TO ACCOMPANY THE REPORT BY
LUNDBERG EXPLORATIONS LIMITED
TORONTO, DEC., 1954

Hans Lundberg
(SIGNED)

22-377-1

TREASURY VAULT URANIUM CORPORATION

TREASURY VAULT MOUNTAIN, PARK COUNTY, COLORADO

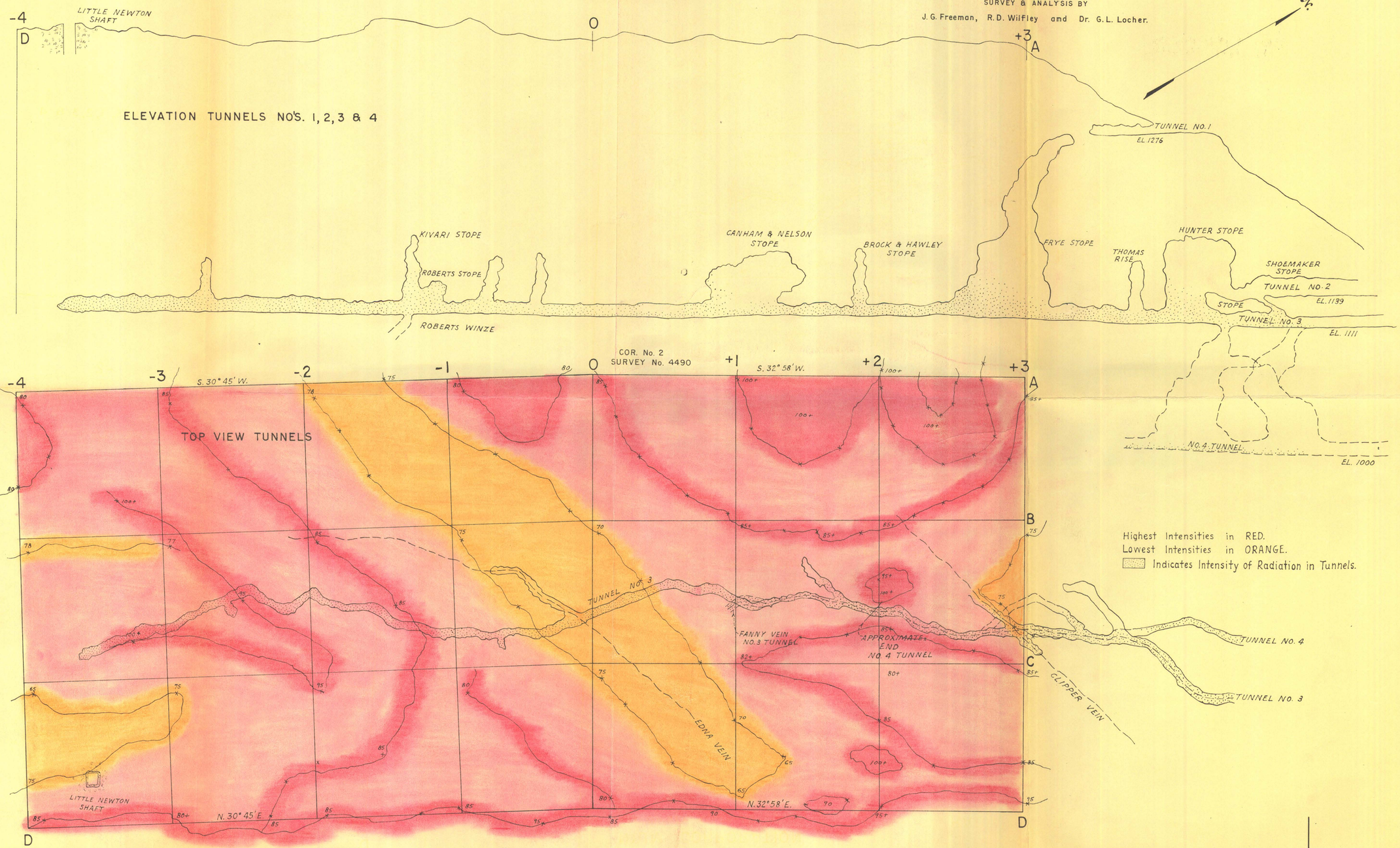
SCALE 3 IN. = 100 FT.

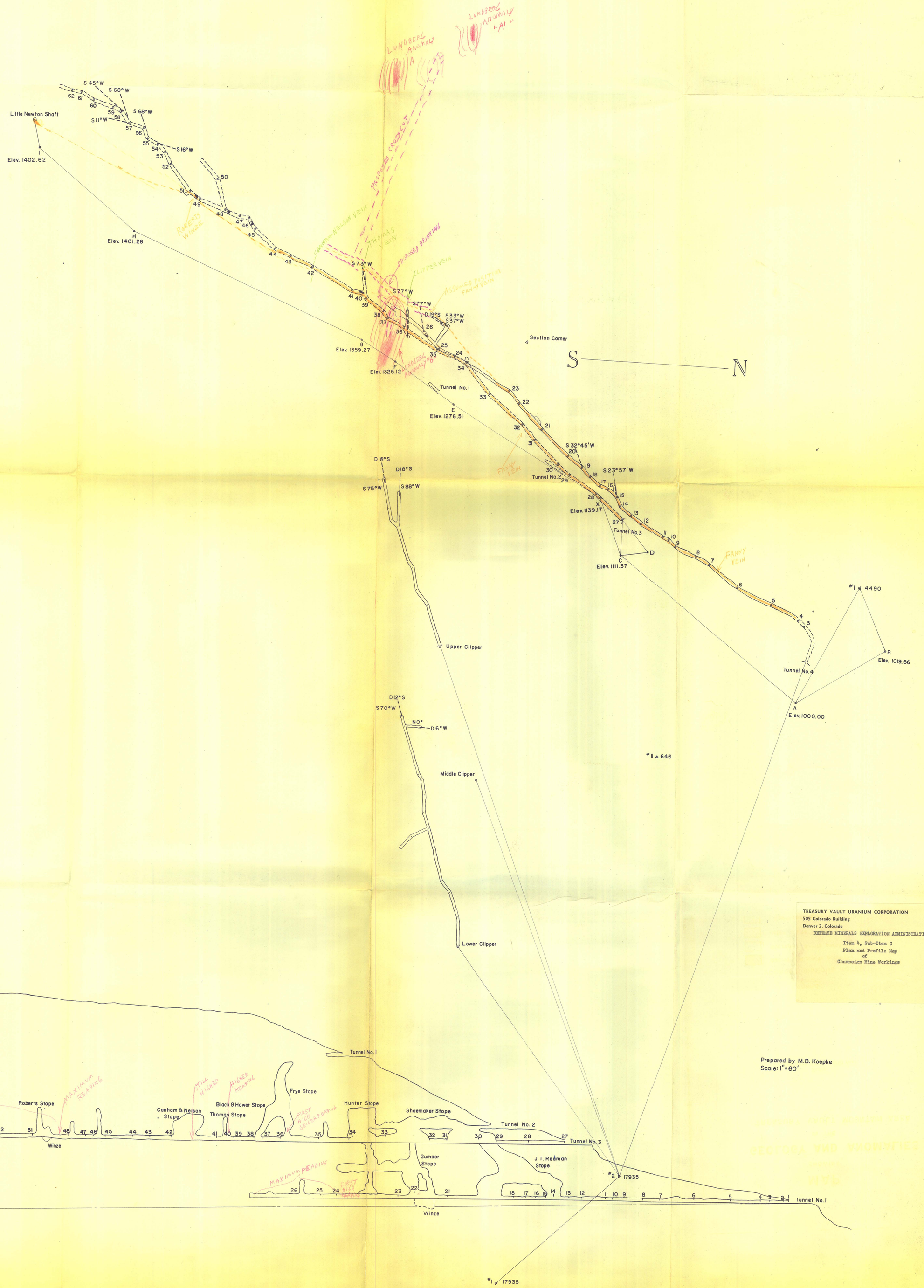
RADIATION SURVEY

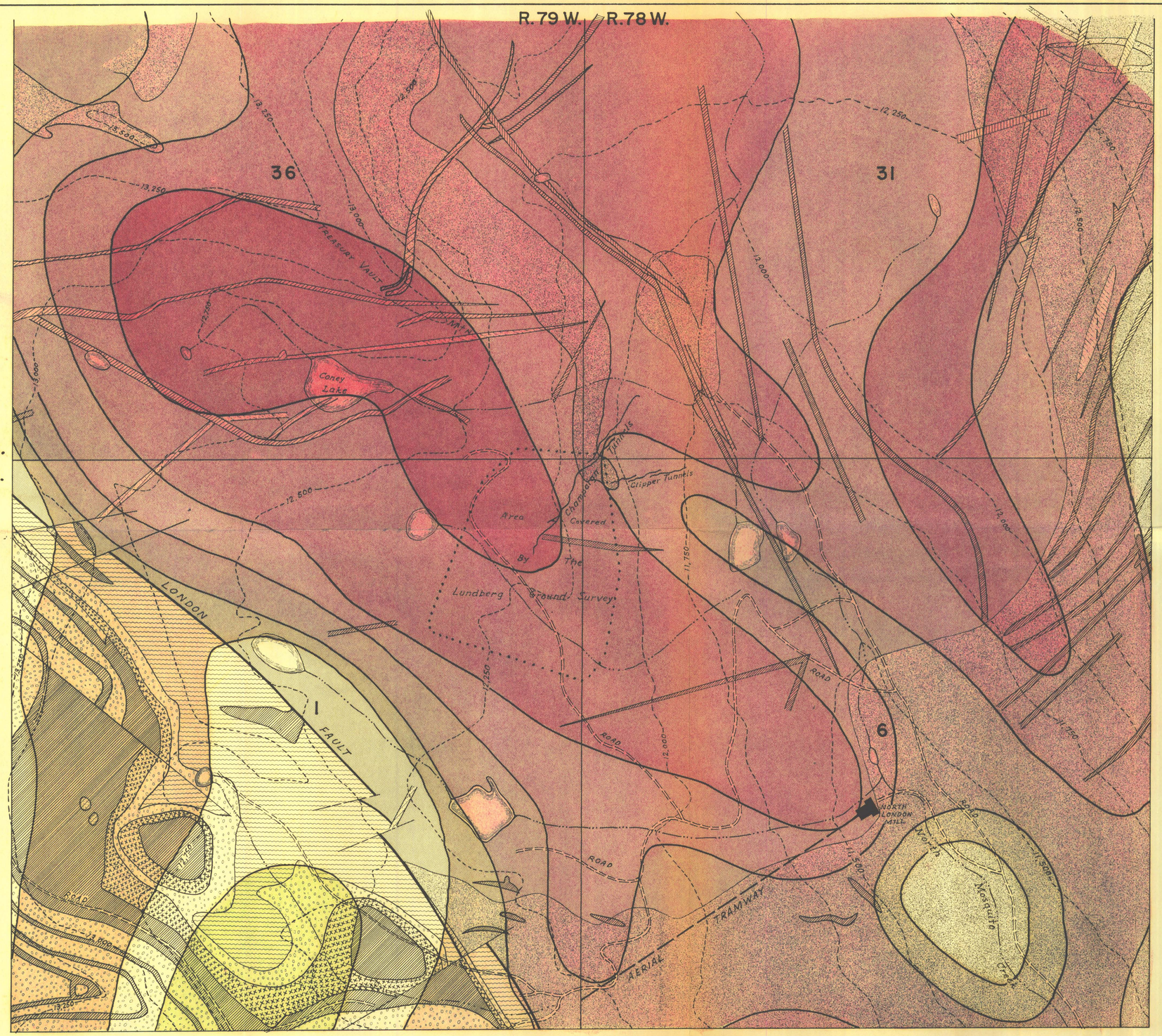
TOP & SECTIONAL VIEW

SURVEY & ANALYSIS BY

J. G. Freeman, R. D. Wilfley and Dr. G. L. Locher.




Little Newton Shaft
Elev. 1402.62
Elev. 1401.28
Elev. 1359.27
Elev. 1325.12
Elev. 1276.51
Elev. 1139.17
Elev. 1111.37
Elev. 1019.56
Elev. 1000.00
Tunnel No. 1
Tunnel No. 2
Tunnel No. 3
Tunnel No. 4
Section Corner
S
N
LUNDBERG ANOMALY "A"
LUNDBERG ANOMALY "A'"
PROPOSED CROSS CUT
PROPOSED DRIFTING
CANYON-NELSON VEIN
THOMAS VEIN
CLIPPER VEIN
ASSUMED POSITION FANNY VEIN
FANNY VEIN
POWERD WINZE
S 45°W
S 68°W
S 11°W
S 16°W
S 73°W
S 77°W
S 33°W
S 37°W
S 32°45'W
S 23°57'W
D16°S
D18°S
S 75°W
S 88°W
D12°S
S 70°W
N0°
D 6°W
#1 ▲ 4490
#2 ▲ 17935
#1 ▲ 17935
#11 ▲ 646
Upper Clipper
Middle Clipper
Lower Clipper
TREASURY VAULT URANIUM CORPORATION
505 Colorado Building
Denver 2, Colorado
DEFENSE MINERALS EXPLORATION ADMINISTRATION
Item 4, Sub-Item C
Plan and Profile Map
of
Champaign Mine Workings
Prepared by M.B. Koepke
Scale: 1"=60'
Little Newton Shaft
400
300
200
100
0
GEIGER STAYED AT MAXIMUM READING
MAXIMUM READING
STILL HIGHER
HIGHER READING
FIRST HIGH GEIGER READING
MAXIMUM READING
FIRST HIGH READING
Roberts Stope
Canham & Nelson Stope
Thomas Stope
Black & Hower Stope
Frye Stope
Hunter Stope
Shoemaker Stope
Gumaer Stope
J. T. Redman Stope
Winze
Winze
Tunnel No. 1
Tunnel No. 2
Tunnel No. 3
Tunnel No. 1



MAP

SHOWING

GEOLOGY AND ANOMALIES

IN THE

TREASURY VAULT MOUNTAIN AREA

Scale:
One inch equals 500 feet.

Legend:

YOUNGER IGNEOUS ROCKS

- Quartz monzonite porphyry
- Monzonite-diorite porphyry
- Later white porphyry
- Lincoln porphyry
- White porphyry

} *TERTIARY*

SEDIMENTARY ROCKS

- Weber Formation
- Leadville Limestone

} *CARBONIFEROUS*

OLDER IGNEOUS AND METAMORPHOSED SEDIMENTARY ROCKS

- Pegmatite dikes
- Silver Plume granite
- Schist and injection gneiss

} *PRE-CAMBRIAN*

Land Owned
Land Held By Location
Leased Land
Partly Owned
Partly Leased
Partly Owned & Partly Leased
COLORADO
STATE
SCHOOL
LAND
LEASE
TREASURY VAULT NO. 20
TREASURY VAULT NO. 19
TREASURY VAULT NO. 18
TREASURY VAULT NO. 17
TREASURY VAULT NO. 16
TREASURY VAULT NO. 15
TREASURY VAULT NO. 14
TREASURY VAULT NO. 13
TREASURY VAULT NO. 12
TREASURY VAULT NO. 11
TREASURY VAULT NO. 10
TREASURY VAULT NO. 9
TREASURY VAULT NO. 8
TREASURY VAULT NO. 7
TREASURY VAULT NO. 6
TREASURY VAULT NO. 5
TREASURY VAULT NO. 4
TREASURY VAULT NO. 3
BABY McKEE
GOLCONDA
DICKEY
ODELL
STEELE NO. 1
STEELE NO. 2
STEELE NO. 3
GRAND PRIZE
DIORITE
HALE NO. 2
HALE NO. 3
JACKIE
VULCAN
WONDER
BONANZA KING
BRIGHTON
ST. LOUIS
ONTARIO
EMMA
SNOW FLAKE
RAVIN
COBURN
TRUMAN
GRACE
LOVELAND NO. 1
LOVELAND NO. 2
GRIMSBY
JEROME B. CHAFFEE
HOODUM
BELLE FONTAINE
WEALTH
TUNNEL
PRINCE OSCAR
BONANZA QUEEN
DIEFENDORF
RESERVE PLACER
WONDER HOME PLACER
MANSON
WALLACE
ROSE
WANDA
PALMYRA
JANIE
DOROTHY
DAVID
MOINIE
LONDON
LEWIE
SHERWOOD
SHERWOOD NO. 1
SHERWOOD NO. 2
SHERWOOD NO. 3
BOYNTON
VERNER
IMPERIAL
PLACER Tract 1.
THREE BROTHERS NO. 5
THREE BROTHERS NO. 2
THREE BROTHERS NO. 3
THREE BROTHERS NO. 4
JO DANDY
LONDON M.S.
LEHIGH VALLEY PLACER
PILGRIM
EMERALD
AERIAL TRAM
FAULT
ACCOMMODATION
COMSTOCK NO. 2
COMSTOCK NO. 1
ASPEN NO. 1
ASPEN NO. 2
GREY EAGLE
BALTIC
GOLDEN EAGLE
RICHARD
HARD TO BEAT
VENTURE
MINNESOTA
OTTAWA VALLEY
TWIN BROTHERS
MINERS HOPE
MICHIGAN NO. 1
MICHIGAN NO. 2
MICHIGAN NO. 3
MICHIGAN NO. 4
MICHIGAN NO. 5
MICHIGAN NO. 6
MICHIGAN NO. 7
MICHIGAN NO. 8
MICHIGAN NO. 9
ELEANOR
Coney Lake
Champion Tunnels
Clipper Tunnel
SUNNY SOUTH
LITTLE NETTIE
ARBITRAN
IMPERIAL
CLIFF
TRIANGLE
FOUNDOUT
HUMBO
NEW YORK
OLIVER
ADVANCE
BUN
BOB
MINNESOTA
EAGLE
LONDON NO. 1 M.S.
LONDON NO. 2 M.S.

MAP
SHOWING
GEOLOGY AND ANOMALIES
IN THE
TREASURY VAULT MOUNTAIN AREA

Scale:
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YOUNGER IGNEOUS ROCKS
- Quartz monzonite porphyry
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SEDIMENTARY ROCKS
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OLDER IGNEOUS AND METAMORPHOSED SEDIMENTARY ROCKS
- Pegmatite dikes
- Silver Plume granite
- Schist and injection gneiss

PRE-CAMBRIAN

TREASURY VAULT URANIUM CORPORATION
505 Colorado Building
Denver 2, Colorado
To Defense Minerals Explorations Administration
Item 4, Sub-item C

U.S. G.S. Geology Map Bulletin 911 with Lundberg Anomalies Superimposed, Colored as to Geology

(Please return to applicant)