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SUMMARY

of

MINES AND PROPERTY

of

COLAMER CORPORATION

in the

GRANTS DISTRICT

Kelsey Boltz
Geological Engineer

The Grants District is located in the high mesa country of northwestern New Mexico, the altitude varying from 6500 feet to 7500 feet above sea level. The mesas are formed by erosion resistant limestones, sandstones and basalts. Most of the vegetation in this area consists of juniper and pinon trees with occasional pine trees at the altitude increases. The mesa tops are generally flat affording little difficulty in the construction of access roads. In many instances these areas can be navigated in a truck without the benefit of roads. Because of the altitude and geographical position, the climate is mild and dry, making for ideal working conditions the year round.

The center of the Poison Canyon area of the Grants district is about 12 to 15 miles north of the town of Grants, New Mexico and about 75 miles west of Albuquerque, New Mexico, from which mining supplies are easily obtained. State Highway #2 (county maintained), leads from Grants through the middle of the Poison Canyon area. Numerous dirt roads lead from Highway #3 to the various mining properties in the district.

All the ore from the Grants district is hauled to the mill operated by Anaconda Copper Corporation, at Bluewater, New Mexico 12 miles west of Grants.

General Geology of Grants District

The Grants Uranium District is situated on the northeast flank of the Zuni uplift ~~giving~~ the beds a

a general 3 to 5 degree dip to the north-east. Map "C" shows idealized cross section of the stratigraphic section, indicating the mesa and bench capping formations; it also indicates the horizons most favorable in the Grants district for uranium mineralization.

This district is divided into three distinct areas: The Laguna area in which is located Anaconda Copper's famous Jackpile mine, reportedly the largest in the world; the Poison Canyon area which includes Santa Fe's "Poison Canyon" and "Haystack" mines with a reported combined reserve of well over a million tons of ore; and the "Hogback" area, near Gallup, New Mexico. The Brushy Basin and Westwater Canyon members of the Morrison formation are the producing horizons at the Jackpile and Poison Canyon mines. At Haystack the ore is localized in the Todilto limestone.

Ore Controls

In the Brushy Basin and Westwater Canyon members, uranium mineralization is concentrated at the intersections of north-south trending shear zones with north-east southwest trending sedimentary zones. These sedimentary zones are marked thickening of the favorable sandstone horizons. The ore thus formed is of the sandstone-shale variety, being sometimes almost asphaltic in nature due to the high carbon content in some areas. The Poison Canyon, Lea Exploration and Blue Peak Mines (Map "A") all exhibit this type of occurrence. These ore-bodies are generally long and narrow although Santa Fe's Poison Canyon mine does show one area of considerable width (500 feet).

The Todilto limestone ore-bodies generally localize in the crests of northeast-southwest trending drag folds. These folds probably occur as a result of flowage within the limestone, and represent zones of weakness through which the mineral solutions could pass. Within the folds the mineralization is controlled laterally by conjugate shear fractures and vertically by preference of certain horizons within the limestone, due probably to electrochemical favorability. This type ore-body is generally long (400 feet to 800 feet) and narrow, (10 feet to 30 feet) and is quite often very thick (10 feet to 20 feet).

COLAMER PROPERTY

Christmas Day, Deep Rock and Section 28 Groups (See Map "A").

Christmas Day Group

Five claims covering the E² of the NE⁴ of Section 4, T. 13 N., R. 9 W.

Deep Rock Group

Four claims covering the W² of the SW⁴ of Section 34, T. 13 N., R. 9W.

Section 28 Group

Eleven claims covering the E³ of E² of Section 28 T. 13 N., R. 9 W.

These three groups are situated on a mesa the top of which is easily navigable by jeep, truck or car and is accessible by a maintained county roads.

This mesa is capped by Todilto limestone on the south in the vicinity of Section 4 and on the north at

Section 26 by Bluff Sandstone. The objective horizon in these groups in the Todilto since the Brushy Basin and Westwater Canyon members have been eroded away in this area.

Colamer Corporation is now actively engaged in producing uranium ore from the Christmas Day #1 ore-body (Map "B"). In the exploration for and the development of this ore-body, certain geologic facts were discovered which have proved quite valuable for determining probable areas of ore localization. Following are conclusions based on these facts.

The ore-bodies of this area are very characteristic structurally. They are long and narrow, the long axes showing a definite northeast-southwest trend. A definite "rhythm" of occurrence" of these parallel folds can be shown. In the vicinity of Section 4, this frequency is about 500 to 600 feet apart. (Map "A"). Within the trends a rhythm of occurrence of the commercial ore zones has been discovered. These are undoubtedly controlled by the conjugate and extension fracture patterns resulting from the orogeny of the Zuni Uplift.

The most important tool yet found by this writer is the evidence of hydrothermal alteration of the limestone in the immediate area of the ore-body. In tracing these alteration patterns it became evident that although the commercial ore may be intermittent, the alteration is still present. A pattern of drilling was developed to trace these zones and follow them to commercial mineralization.

This method was used to a great degree of success on Christmas Day #1 ore-body. This zone can be traced for commercial ore was encountered in the last four holes drilled at the north end of Phil Claim, (Map "B"). Because of the terrain, drilling was stopped pending construction of access roads.

Section 8, 10 and 18 Groups

Section 8 group- all of Section 8 T. 13 N., R. 9 W., except the east 800 feet.

All of Section 10, T. 13 N., R. 9 W.

Section 18 Group-3 claims in southwest corner of Section 18, T. 13 N., R. 9 W.

All of the claims in these groups are easily accessible by passenger car the year round. Again, the typical flat, mesa-top terrain exists here, with a coverage of juniper and pinon trees. Drilling road and access road problems in this area are nil. The State Highway #3 passes within one mile of Section 8 and a half mile from Section 10. Dirt roads lead from the highway directly on to the properties.

The claims of these groups are all situated on top of a mesa capped with Dakota sandstone, making the Brushy Basin and Westwater Canyon members the objective horizons. These beds are prolific in the Jack-pile, Poison Canyon and Lea Exploration mines. (Map "A"). These mines show an obvious ore control of shear faults intersecting thickening sands in the favorable horizons. The long axes of the zones of sand thickening, which may be ancient stream channels, have a definite northeast-southwest trend swinging to directly east-west in some areas. The shear zones trend almost due north-south

Detailed geologic mapping of this area indicates probable intersections on Sections 8 and 10. In the center of State Claim #1 in the southwest corner of Section 8 in the approximate area of an above mentioned intersection, a Mayhew Rotary Rig hole was drilled to a depth of 204 feet. At 197 feet, four feet of uranium mineralization was encountered. The hole was drilled for assessment work and geologic information in March 1954. No further work has been done in this area since that time. In July 1954 one hole was drilled by Colamer Corporation in the center of each of the three claims in Section 18 for assessment work and geologic information. The holes on the two western-most claims showed considerable thickness of sand-stone, but no actual uranium mineralization. On the eastern-most claim, 2 feet of 0.08% U_3O_8 was encountered in a very carbonaceous sandstone at a depth of 178 feet.

HISTORY

Geologists of Colamer Corporation arrived in Grants, New Mexico, in March 1954, to conduct a geological investigation of the district to determine the extent and size of possible mineralized areas and the availability of property. Within two and one half months the investigation was completed and the foregoing described property was obtained. More geologic mapping and exploration drilling was conducted which resulted in the discovery and development of the Christmas Day #1 ore-body. Details of ore reserve calculations are attached at the end of

this report. Stripping (average; 22 feet of overburden) and production drilling operations were begun in November. At this writing the project of opening up the mine is almost completed; the production goal, set at from 1000 to 1200 tons per month, can easily be reached by utilizing the versatility in operations offered by the development of three different working faces. A plan of ore blending has been set up by the engineering department to take advantage of the low grade ores. Approximately \$80,000 has been invested in heavy stripping equipment and lighter production tools; this includes a caterpillar D-8 and dozer, Model 70 caterpillar scraper, caterpillar D-4 and hydraulic loader, wagon drill, jack hammers, complete welding equipment, 365 Jaeger Compressor and numerous smaller equipment and maintenance tools.

CALCULATION OF ORE RESERVES ON
 CHRISTMAS DAY AND PHIL CLAIMS
 Section 4, T. 12N., R. 9W., McKinley Co., N. M.
 BLOCK "A"

Hole Number	Thickness of Ore	Grade U ₃ O ₈
21	3'	0.18%
22	7'	0.29%*
23	11'	0.27%
24	19'	0.33%
25	17'	0.31%
26	12'	0.18%
27	5'	0.22%
28	2'	0.14%
29	6½'	0.27%
30	14'	0.23%*
31	10'	0.26%
32	6'	0.23%
33	5½'	0.11%*
34	2'	0.21%
35	2½'	0.25%
36	3'	0.19%
37	4'	0.21%
38	3'	0.20%
39	2½'	0.16%
40	3'	0.19%*
41	3'	0.24%
42	5½'	0.34%*
43	4'	0.27%
44	3'	0.34%
45	6'	0.36%*
46	2'	0.33%
47	4½'	0.30%
48	4'	0.31%
49	5'	0.17%
50	11'	0.26%*
51	5'	0.29%
52	3'	0.11%*
53	3'	0.44%
54	5'	0.76%*
55	2½'	0.55%
56	2'	0.20%
57	2½'	0.19%
58	3'	0.10%
59	2'	0.16%*
60	3'	0.47%
61	5'	0.32%
62	5½'	0.38%*
63	4'	0.24%
64	4½'	0.34%
65	3'	0.15%*
66	3'	0.27%*
67	2'	0.11%
71	6'	0.39%

* Chemical assays of hole cuttings.

CALCULATION OF ORE RESERVES ON CHRISTMAS DAY AND
 PHIL CLAIMS SEC 4, T 12 N, R 9 W McKinley Co., N. Mex.
 BLOCK "B"

HOLE NO.	THICKNESS	GRADE U_3O_8
1.	2'	0.20%*
2.	3'	0.18%
3.	2½'	0.21%*
4.	1'	0.16%
5.	10'	0.50%*
6.	10'	0.41%*
7.	4½'	0.32%
8.	4'	0.18%
9.	5'	0.41%
10.	3'	0.15%*
11.	5'	0.16%
12.	4'	0.23%*
13.	8'	0.36%*
14.	6'	0.18%
15.	5'	0.22%*
16.	10½'	0.39%*
17.	4½'	0.22%
18.	3'	0.25%*
19.	3½'	0.28%
20.	2½'	0.21%

Chemical assays of hole cuttings *

THE FOLLOWING CALCULATIONS OF ORE RESERVES OF CHRISTMAS DAY #1 IN SECTION 4, T. 12 N., R. 9 W., VALENCIA COUNTY, NEW MEXICO, ORE BASED ON CHEMICAL ASSAYS OF HOLE CUTTING AND CALIBRATED RADIOMETRIC PROBE READINGS:

BLOCK "A"

<u>Section</u>	<u>Area Ft.</u>	<u>Thickness</u>	<u>Grade</u>	<u>Tonnage</u>
1	3,938	8.4'	0.263%	3,306
2	33,037	4.2'	0.251%	12,976
3	2,938	2.6'	0.185%	664
<u>Total</u>				<u>16,946</u>

Weighted Average Grade for Block "A"

<u>Section</u>	<u>Grade X Tonnage</u>
1	869.48
2	3,256.98
3	<u>111.84</u>

Total
 Tt = 4,238.30 : 16,946

Grade = 0.249% U₃O₈
 Gave = (G X T)

<u>Section</u>	<u>Area</u>	<u>Thickness</u>	<u>Grade</u>	<u>Tonnage</u>
1	6198 ft ²	3.4'	0.24%	1754
2	9491	6.6	0.31	5221
3	4458	4.3	0.27	1536
4	3949	10.0	0.46	3290
5	3159	2.1	0.19	553
Total				<u>12,426</u>

WEIGHTED AVERAGE GRADE FOR
BLOCK "B"

<u>Section</u>	<u>Grade X Tonnage</u>
1	40,000
2	161,200
3	43,200
4	151,800
5	11,000
Total	<u>408,000</u>

$$G \text{ Average} = \frac{(G \times T)_t}{(T)_t} = \frac{408,000}{12,426}$$

$$G \text{ Average} = 0.329\% \text{ U}_3\text{O}_8$$

TOTAL TONNAGE FOR CHRISTMAS DAY NO. 1

BLOCK "A" : 16,046 Tons @ 0.249% U₃O₈

BLOCK "B" : 12,426 Tons @ 0.329% U₃O₈

GEOLOGICAL EVALUATION
of the
OLJEHO AREA, NAVAJO COUNTY, ARIZONA
for
Columbus Uranium & Oil Corporation

By

Fred C. Hohne

January 13, 1956

GEOLOGICAL EVALUATION

of the

COLUMBUS URANIUM & OIL CORPORATION PROPERTY

OLJETO AREA, NAVAJO COUNTY, ARIZONA

Introduction

On January 10, 1956, an investigation was made by Fred C. Hohne and Jim C. Standard on the land allotted from the Navajo Tribal Council to Columbus Uranium & Oil Corporation. Adjacent areas in tract 23 and 24 were also investigated.

Purpose

The purpose of the investigation was to determine the amount and extent of mineralization found in U.S.G.S. drill holes and to see if geological conditions were favorable for a bid for tract 23 or 24.

Geology

The property investigated is located on the eastern flank of the Organ Rock Anticline. About a quarter of a mile west of the area there is a fault with approximately 600 feet displacement. The Shinarump formation has been down-dropped until it is in contact with the Organ Rock member of the Cutler formation. South of this area the fault terminates and the Shinarump forms a gradual monoclinical fold over the uplift. The dip of the formation ranges from 10°-30° to the east.

The formations exposed in this area are the Hoskinnini, De Chelly, and Organ Rock members of the Cutler formation of Permian age, and the Moenkopi and Shinarump formations of Triassic age. The only commercial uranium-producing formation in the Monument Valley region is the Shinarump, therefore this was the only formation studied in detail.

A channel approximately 110 feet wide, with a 35-foot scour into the underlying Moenkopi, cuts across the property. At the rim the trend of this channel is approximately S. 80° E.; about 1,000 feet back from the rim the channel turns and trends approximately S. 20° E.

Geophysical Research

In the summer of 1955 the U.S.G.S. drilled approximately 100 diamond drill holes in the immediate area. The purpose of this

drilling program was to check the accuracy of geophysical methods of tracing Shinarump channels and not to block out ore. No more than a trace of mineralization was found in any of the 30 drill holes probed. The depth of the holes ranged from 60-120 feet. The above information was obtained from the U.S.G.S. in Grand Junction.

Conclusions

1. A channel about 135 feet wide cuts across the property. This channel trends approximately S. 80° E. at the rim. Inward, away from the rim, it curves until it is trending about S. 20° E.
2. The drilling depth to the base of the channel is approximately 110 feet.
3. No mineralization was found in any of the U.S.G.S. holes probed.
4. No mineralization was noted along the rim exposure.

Recommendations

It is recommended that no further drilling be done on the allotted plot of land at the present time and that no cash be paid on tract 23 or 24.

By Fred C. Hohne,
Consulting Geologist.

SHADE TREE CLAIMS
Saguache County, Colorado

Location

This group consists of eleven unpatented mining claims in sec. 32, T. 46 N., R. 9 E. This is in the Noland Gulch area of the Kerber Creek Mining District. The claims were located June 10, 1955 and the assessment work has been done for this year.

Recommendations

Try to make a deal with the owners to acquire the property. They talked as if they would be reasonable to deal with.

If a lease is obtained, start an exploration program with an isorad map of the area.

Get a set of aerial photos and work out the structural geology, including fault intersections, thickness of beds, and contacts.

From this information, plan a drilling program.

Accessibility

The claim area can be reached in any type of car. It is 14½ miles north of Saguache on U.S. 285 and about 5 miles west over a gravel and sand road. There is a Jeep road from the base of the claims to the drift on claim #1. The rest of the area can be reached only on foot.

Roads necessary for exploration could be built by a D-8 Cat. The formation is soft enough so that no drilling and blasting would be required.

Geology

The claims lie in an area of isolated Paleozoic sediments in contact with granite. Two faults were observed on the claims which should intersect just south of the drift on claim #1, and the entire area is cut off on the south by an east-west thrust fault that has been traced for a number of miles.

The host rock is a fine grained, highly carbonaceous sandstone that has been subjected to mineralizing solutions. The surface outcrop is iron stained due to the weathering of pyrite which occurs throughout the formation penetrated by the drift.

The entire area is from two to four times background on a scintillator and spots were found off the third scale. Assays, according to the owners, contained up to 0.5% U₃O₈ from surface outcrop.

Geologically this area is similar to the Marshall Pass country, just across the Continental Divide, which is getting a lot of attention at the present time.

June 14, 1956

EXPLORATION IN THE MARSHALL PASS AREA
GUNNISON AND SAGUACHE COUNTIES, COLORADO

The discovery of uranium in the Marshall Pass area of Gunnison and Saguache Counties was made in the spring of 1955 by Warren Goff and Clyde H. Hackney, local Gunnison prospectors. After their original discovery, they and their associates located approximately 9,000 acres of ground. These claims are not held by the Monarch Exploration - Gibraltar Minerals combination and by Vulcan Silver-Lead Corporation. Other important claim groups are held by Uncompahgre Exploration Company, the Cotter Corporation, and smaller groups by individuals. All known favorable ground in the entire district of course is located.

The exploration area in question runs from an elevation of about 9,000 ft. on Marshall Creek just east of Sargents, Colorado to an elevation of 11,700 ft. at a point just west of the Continental Divide between Monarch and Marshall passes. The terrain is rugged, with deep canyons. The entire area is timber-covered and has something over 6 feet of snow at present.

Prospect work to date on the area totals about 7,000 feet of drilling, one 300-foot drift along the Chester Fault, numerous cat cuts to dip down structure and the attendant road building necessary. Results of this work at the present time are not conclusive, and while we have located some commercial ore, work for the coming summer is not entirely based on extension of these areas, but at least in part is continued wildcat, with somewhat higher chances of success, as certainly we have gained some additional knowledge of the area, making target areas more definite.

Over most of the area the rocks range from pre-Cambrian to late Paleozoic in age. Paleozoic rocks outcrop in an area about 3 miles in diameter as shown on the slide. They are bounded on the north and east by pre-Cambrian rocks and on the south and west by a cover of tertiary volcanics. A major reverse fault dipping to the east forms the eastern contact. Outcrops of pre-Cambrian are few, and in mapping so far all pre-Cambrian rocks have been lumped together. Probably schist predominates, but there are large intrusions of pegmatite that outcrop boldly.

Moving up into the sediments we have the Manitou (Lower Ordovician) formation. This is composed of a uniformly massive grey dolomite containing much chert. This is roughly 250 feet thick.

The Harding formation (Middle Ordovician) overlies the Manitou and has an average thickness of about 40 feet. The Harding is composed of sandstones that weather readily, and in most cases, forms a sloping bench between the cliffs of the Manitou and overlying Fremont formations. Due to this fact, outcrops of the Harding are rare, with the only good exposures the result of bulldozer work.

The Harding is of particular interest to us, as uranium mineralization occurs in a 3' to 5' bed in the upper half of the formation. It was an outcrop of this bed that constituted the first discovery of uranium in the area. This slide shows general attitude of the sediments and gives an idea of the remainder of the column. Next above the Harding is the Fremont (Upper Ordovician), and next what shows in the slide as the Chaffee formation, which includes all sediments present above the Fremont in this area. It actually includes at least four formations -- the Devonian Chaffee formation, the Mississippian Leadville limestone, the Pennsylvanian Kerber formation and the Permian Maroon formation. This has a total thickness of about 1700 feet.

In general the sediments of the area are but little disturbed. They strike almost due East and dip about 18° south. Mapping is still incomplete on the bedding and the importance of the rather weak structures noted in reconnaissance work is not known yet.

Considerable distortion of the beds can be seen in several places along the major Chester Fault and up to 1,000 feet west of the fault. This is undoubtedly caused by drag along the fault, which has a large displacement of something over 2,000 feet vertically.

This Chester Fault is by far -- at least with present knowledge -- the most important structure pertaining to mineralization in the area.

Early geological work was concentrated on exposures of the Harding sand, but was transferred to the Chester Fault after high-grade float in silicified limestone was located at this point on the property.

Several northwest-striking faults cut and offset the Chester Fault, but to date we know very little about their attitude or other characteristics, as they do not outcrop and have little topographic expression.

There are two distinctly different types of uranium mineralization at Indian Creek, so far as mode of occurrence is concerned; these are no doubt genetically related. One is the wide-spread low-grade mineralization in the Harding sandstone and the other the higher-grade mineralization along the Chester Fault.

In the Harding sand, mineralization is confined to the relatively thin bed mentioned before. This bed is 4' to 5' thick and contains appreciable amounts of organic material, principally asphaltum; this has been identified as bits of fish. To date autunite is the only uranium ore mineral that has been positively identified in the area of the Harding not adjacent to the fault.

Exploration to date on the Harding sand has been wildcat drilling in relatively shallow ground. During 1956, 34 diamond drill holes were drilled into the formation in the areas designated here. Most of the information gained

was negative, and it is now evident that beds in the area are almost completely leached. You can see that the areas drilled are certainly susceptible to the action of ground water, as they are surrounded by outcrops. This was borne out by the fact that the mineralized section of the Harding was completely oxidized in all core recovered. In this group of holes, however, with slightly less oxidation evident, some mineralization was encountered, with one hole showing 4' of 0.14% U_3O_8 . As this is commencing to dip deeper below the surface, we plan to do some offset drilling in the immediate area, with possibly some follow-up drilling in even deeper ground to the east of this location. This planned work, coupled with some additional drilling by Gibraltar Minerals in this area, should give us the answer to the question of commercial ore possibilities in the Harding Sand.

Bulldozer work along the Chester Fault located two outcrops containing relatively high-grade ore. The first -- at the E 28 Site -- was near the spot where the pitchblende float was located. The fault was opened up here with a bulldozer and at about 10' below surface located several pods of relatively high-grade ore. These pods were composed of irregular veinlets and disseminations of uranophane through crushed pegmatite on the hangingwall or pre-Cambrian side of the fault. These pods had a maximum length of about 3', about the same strike length, and were less than two feet thick. Channel samples indicated values in excess of 1½% U_3O_8 . About three tons of ore of a like grade were taken from them. Mineralization on the opposite or sediment side of the fault was in Leadville Limestone, which was thoroughly oxidized, porous and iron-stained.

While uranium assays from the pre-Cambrian side of the fault were nearly in exact balance, the mineralization in the oxidized lime was out of balance in favor of radiometric assays, sometimes as much as 13 : 1.

Three hundred feet of drift were driven from this point south along the Chester Fault. This drift out two zones of strong mineralization, all of which

was in the Leadville lime in the footwall of the fault. In most cases, this mineralization in just under the gouge zone in either shattered or impure limestone or massive limestone that has been altered to a porous brown clayey rock. The mineralization is erratic, with channel sample assays ranging from 0.02% U_3O_8 to 1.57% U_3O_8 within a few feet. In general, mineralization is found only where the fault dip is less than 70° . The drift is all above the water table and is in almost completely oxidized material. A single exception was a pod of ore encountered in the adit at 130 feet from the surface. This pod -- 2' wide and 4' long -- is composed of fine-grained limestone with numerous stringers and small patches of fine-grained limestone with numerous stringers and small patches of fine-grained pyrite and pitchblende. A channel sample across it assayed 1.45% U_3O_8 and 1.57% U_3O_8 .

From information gained in drifting, we believe that we have reasonably good chances of locating orebodies adjacent to the fault at points below the oxidized zone.

The other location on the Chester Fault where uranium ore is exposed is on the Little Indian No. 36 claim at this point on the plan.

At this outcrop two veins are opened up by surface bulldozer work. This is a plan of the outcrop. Ore minerals are uranophane and autunite and ore is in the Harding sand. One vein more or less parallels the hangingwall of the sand, while the other outcrop is on the footwall. The hangingwall exposure has about 150 feet of strike length, almost continuously mineralized. Ore widths average 5 feet and values in the 0.40% range. The footwall exposure has a strike length on surface of only 40 feet, with widths also averaging 5 feet. 67 tons shipped from this vein assayed 0.77% U_3O_8 .

Two diamond drill holes have been drilled below the outcrop; one cut ore at 75 feet below surface and the other at 130 feet. Both of these intersections were mineable ore. Needless to say, considerable additional work is projected for this area during the coming summer. This will probably consist of additional

drilling and a drift from surface at the 75' level.

A short distance east and roughly parallel to the Chester Fault several outcrops have been discovered in the pre-Cambrian rock. One of these -- discovered by Monarch Exploration, now included in the Gibraltar Minerals operation -- has produced 42 tons of everburden that shipped at 4.39% U_3O_8 . 5 tons of hand-picked rock from this shipment were sacked and crushed; this assayed 48.6% U_3O_8 . The extent of this outcrop has not been determined, due to early heavy snow. The presence of other smaller showings in the same pre-Cambrian area gives some promise of other possibilities of uranium ore in the Marshall Pass pre-Cambrian rocks.

Results of work to date are not conclusive but have helped to consolidate theory regarding commercial possibilities of the district.

We now believe that aside from known tonnage at the LI 36 outcrop, we have good possibilities of orebodies, not only in the limestone along the Chester Fault, but in sandstone beds as secondary enrichment below the oxidized zone.

We planned during the coming summer will check the Harding sand at greater depths, with offset drilling from known mineralized zones and deep drilling to check the Chester Fault at depths that should be below the oxidized zone at the E 28 Site. This, plus some drifting under the LI 36 outcrop, road improvement and continuation of a rather ambitious program of surface mapping, promises to keep our staff in Colorado on the jump.

I wish to acknowledge the assistance of Dr. Arthur Baker III, our Chief Geologist, in preparing this material. He unfortunately could not be here for this meeting.

PRELIMINARY GEOLOGICAL EVALUATION

of the

ENGEHRETSSEN CLAIM GROUP, MESA COUNTY, COLORADO

for

The Goldfield Development Company

by

Fred C. Hohne.

August 22, 1955.

PRELIMINARY GEOLOGICAL EVALUATION

of the

ENGBRETSEN CLAIM GROUP, MESA COUNTY, COLORADO

LOCATION

Eleven contiguous claims, the Star Dust, Sun Down, Peter Pan, Golden Fleece, Tommy, Duke, Dana, Dinny, Judge, Justice, and Kent, lie in Section 34, T51N, R18W, N.M.P.M., Mesa County, Colorado. The claims are approximately 55 miles from Grand Junction via the Taylor Ranch turn-off, and are approximately 12 miles to Gateway via the Calamity Hill road.

PROPERTY

The eleven claims are owned by Norma S. Engebretsen and are leased to the Goldfield Development Company.

HISTORY AND PRODUCTION

Drilling has been conducted by the AEG and by private interests. No production has come from the claims. A drift on the Peter Pan and Sun Down claims was driven 125 feet with no ore being encountered; however, there is some doubt that the drift was driven on the proper elevation. The Calamity mining area lies approximately one mile south of the claims and produced ore for several years.

DEVELOPMENT

The holes drilled by the AEG showed good sandstone thickness and color, and some mineralization. The true results of the drilling by the owners is unknown. Several of the holes were reported to be in ore; however, the drift failed to disclose it.

Drill roads and access roads have been constructed.

FACILITIES

Roads: The claims are located approximately one mile from an all-weather access road. Maintainers are kept on the roads during winter and travel is not hampered by snow for more than a day or two.

Water: Domestic and drilling water must be hauled. Several springs in the area flow enough water for domestic use and reservoirs are available for water for mine use.

Ore Shipment: The ore could be shipped to the mills at Uravan, Naturita, or Grand Junction. The Climax mill in Grand Junction is located the shortest distance from the mine (approximately 60 miles).

Timber: Mine timber is available in the area. Pinon is available on the property.

GEOLOGY

General Geology: The claims lie on the west flank of the Uncompahgre Anticline. The apex of the anticline is approximately 9,000 feet in elevation; the property is 1,500 feet lower. The ore formation is the Salt Wash member of the Morrison. The claim group is situated on the highly mineralized Uravan Mineral Belt. The Calamity District is known for its good grade ore and numerous ore bodies.

The claims are staked at the bottom of the Erusky Basin formation or in the very top of the Salt Wash. From one to three horizons are mineralized; however, the upper rims are most productive. The drilling depths are shallow (50 to 200 feet).

i) Stratigraphy:

(See Stratigraphic Section.)

ii) Structural Geology:

The major structural features of the area are the Salt Anticlines, the La Sal Mountains, and the Uncompahgre Anticline. The Calamity Mesa area is situated on the southwest flank of the latter.

Most uranium production has come from positive structures, which are in the proximity of the Tertiary laccolithic intrusives. The Engbretsen property is therefore favorably located.

CONCLUSIONS

1. Past wide-spaced drilling has disclosed mineralization in a thick host sand.
2. The property is located in an area which has produced large tonnages of high grade ore.
3. Costs of exploration are low.
4. The property is located on the Uravan Mineral Belt.

RECOMMENDATIONS

1. Make a survey of the holes which were reported to contain ore, and the drift which was driven to mine the ore. Calculate the proper depth for the drift.
2. Re-probe all drill holes, both AEC and company holes.
3. Plan a limited exploration drilling program.
4. Drill on trend around present ore and mineralized holes.
5. If no ore is found after drilling 25 holes, abandon the property.
6. Work should begin immediately upon acquiring all the claims, because of the approaching winter weather.

by Fred C. Hohne.

PRELIMINARY GEOLOGICAL EVALUATION

of the
JUDY CLAIM GROUP,
GRAND COUNTY, UTAH

by
Fred C. Hohne

July 20, 1955.

PRELIMINARY GEOLOGICAL EVALUATION

of the Judy Claim Group

LOCATION

The Judy Claim Group is located in Section 12, T24S, R20E, and Section 7, T24S, R21E, in Grand County, Utah. The driving distance to the claims is 100 miles from Grand Junction, Colorado or 17 miles from Moab, Utah.

INVESTIGATION

The claims were examined by Mr. Fred Hohme and Mr. Norman Vote in the company of Mr. H. Rice of the Goldfield Development Company. One day was spent on the property, examining the Salt Wash for favorable criteria of uranium ore localization.

GEOLOGY

Regional Setting: The Judy Claim Group lies on the southwestern flank of the Salt Valley Anticline and on the northeastern flank of the Court House Syncline. The Salt Valley Anticline is one of a group of northwest-trending salt anticlines of southern Colorado and southern Utah. The region lies in the inter-river area between the Colorado and Green Rivers.

Local Geology: The beds on the southwest flank of the Salt Valley Anticline dip 3 to 4° to the southwest. The only productive unit in the area is the Salt Wash member of the Morrison formation. Ore was found in the Salt Wash at the contact with the Summerville formation which lies conformably below. The ore noted was in a conglomerate, only 1½ feet thick, and was associated with fossil carbon trash and fossil bones. This conglomerate was found to pinch out north and south from the open pit, and simultaneously the background count reduced from .03 to .005 and less. A white, favorable-looking sandstone was noted in one of the upper rims. Although the background count was low, the sandstone appeared to have been bleached by hydrothermal or groundwater action. The lens contains abundant carbon and a vanadium "bloom" was found, intermittently, laterally for 50 feet and vertically for 12 feet. This "bloom" is a yellow to orange scale which accumulates on the outcrop as evaporation occurs. It is a water soluble vanadium. The mineral is probably pascoite. Since vanadium is associated with uranium the presence of pascoite will classify the lens as very favorable for exploration. If a drilling program is contemplated this lens should certainly be checked.

Drill roads will be needed in both areas. Drilling depths vary from 20 to 60 feet. A wagon drill is sufficient for this program.

CONCLUSIONS

If rim exposures are available, most uranium properties can be evaluated by making a rim scintillometer survey. The first and second rims were so examined on this property. The percentage of mineralization was low; however, two favorable areas were found.

One is ore grade on the surface. The mineralization is associated with carbonaceous material in a conglomerate, which is exposed for approximately 300 feet. The other favorable area is a bleached sandstone lens which contains abundant carbon and a scale deposit of pascoite, a water soluble vanadium.

The drilling and dozer work necessary to evaluate this property will cost approximately \$5,000.

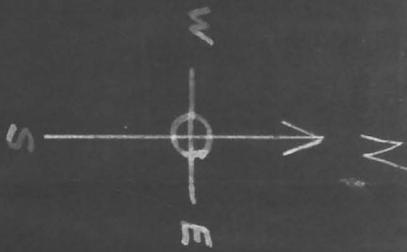
The history of the area indicates rather small ore bodies (less than 1,000 tons) and medium grade ore (\$25 to \$30). The property is geologically a fair prospect and warrants further work, if the preliminary monetary outlay is not too great.

RECOMMENDATIONS

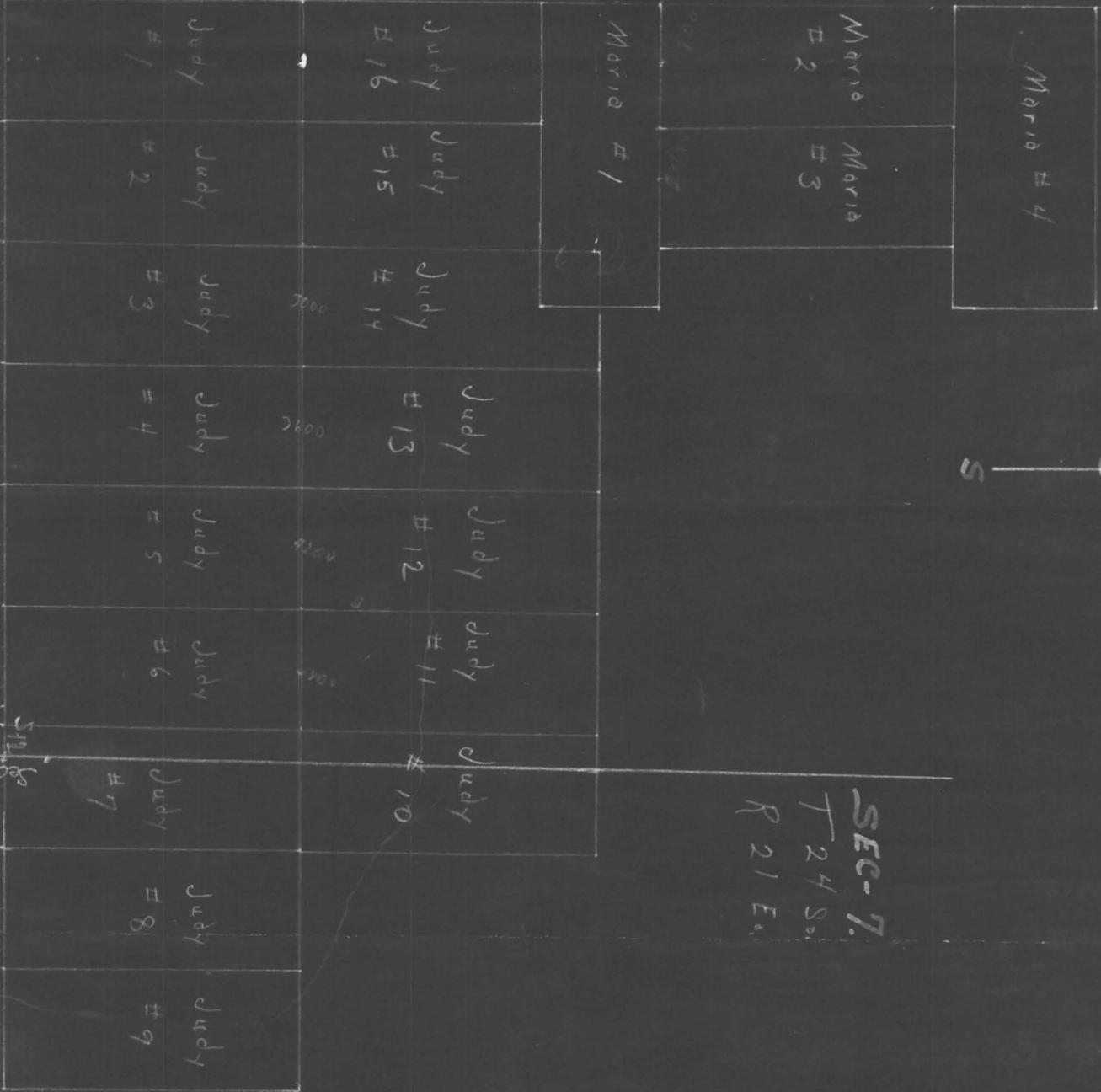
1. Attempt to tie up the property for a \$5,000 drilling commitment.
2. Drill the two favorable areas described in the report. Twenty holes are necessary.
3. Simultaneously with the drilling program, make a grid scintillometer survey. An isorad map may disclose shallow ore bodies which are not exposed on the rims.

Fred C. Hohne
by Fred C. Hohne.

Scale 1/8 inch to 100 feet



SEC-7.
T 24 So.
R 21 Ea.



51

4

PRELIMINARY GEOLOGICAL EVALUATION

of the

LUCKY STRIKE CLAIM GROUP,

MESA COUNTY, COLORADO

for

Mr. E.R. Rice

by

Fred C. Hohme

July 21, 1955.

PRELIMINARY GEOLOGICAL EVALUATION

of the

LUCKY STRIKE CLAIM GROUP

INVESTIGATION

One day was spent in the field by Mr. Fred Hohne, who was accompanied by Mr. E.R. Rice and Mr. Dan O'Connor. Mr. Hohne had previously written a report in October, 1954, on the Kanarado property adjoining the Lucky Strike Group.

LOCATION

The claims are located in the Hard Scrapple Mining District on the southwest corner of Calamity Mesa, T51N, R18W, in Mesa County, Colorado.

ADJOINING PROPERTIES

The closest production to this property is over two miles away. Three groups have been very good producers. They are the Maverick, Calamity, and Outlaw Groups. The largest ore body, called G-2, is being mined by Climax Uranium. It is an AEG lease; the estimated tonnage was approximately 75,000 tons. Several other orebodies contain over 10,000 tons of ore. The value of ore per ton in this area varies from \$25 to \$125, the average being \$35.

PRODUCTION

Five loads of ore have been mined. The average grade of ore was .17% U₃O₈ from one small mine. The ore produced was from the intermediate rim which is a thin sandstone, ranging in thickness from one to six feet.

FACILITIES

Roads: Ore may be hauled to Uravan or Grand Junction by truck. The nearest all-weather road is seven miles away. The present access road to the mine should be repaired for ore haulage. Two or three days of bulldozer work are necessary for this repair.

Water: No water supply is available on the property. Mine water could be gotten from small reservoirs in the area. A reservoir could be made on the property. Drinking water will have to be hauled in.

DEVELOPMENT

Seven miles of road were built for access to the property. Short roads have been built to the portals of some of the small workings. One small adit has been opened up and one exploratory drift driven.

GEOLOGY

Regional Setting: The property is located on the southwest flank of the Uncompangre uplift. The ore horizon is the Salt Wash member of the Morrison formation. From five to seven rims or lenses are visible in the canyon near the claims. Most mineralization occurs in the top lenses; however, ore can be found periodically throughout a zone of 100 feet. Occasionally two or more mineralized lenses can be found in one drill hole.

The Dakota sandstone and the Brusky Basin mudstone are also present over a small area of the claims.

Local Geology: Mineralization on the property occurs in thin, limy sandstone members, which are encased in green mudstones. The thickness of the host rock varies from one to six feet. According to AEC bulletins, a good host rock should be between 20 and 40 feet thick. The ore is fairly low grade and is high in CaCO_3 (10%). The Uravan Mineral Belt passes to the east of this property. The property is located in a fringe area, in which ore bodies are small and few in number.

The area was once withdrawn by the AEC. It was restored after exploration to the north failed to disclose mineable reserves.

Several holes have been drilled behind the mine workings. The results of the drilling are unknown. The mine has no ore in any of the three headings; however, several small streaks were found along the ribs.

The ore rims were checked with a scintillometer during the previous examination. Very little mineralization was found.

Stratigraphy: (See Stratigraphic column.)

CONCLUSIONS

The property is located in a fringe area, which indicates few and small ore bodies. The mine on the property has produced five loads of ore, which have been low grade. The lime content is over the allowable limit, so a lime penalty is put on the ore.

The host rocks are thin and possibilities for a profitable company operation are slim. The property might be profitable if worked as a small leasor operation.

Drilling depths vary from 10 to 200 feet. Two lenses in the intermediate horizon are mineralized, neither of which appears to be commercial

RECOMMENDATIONS

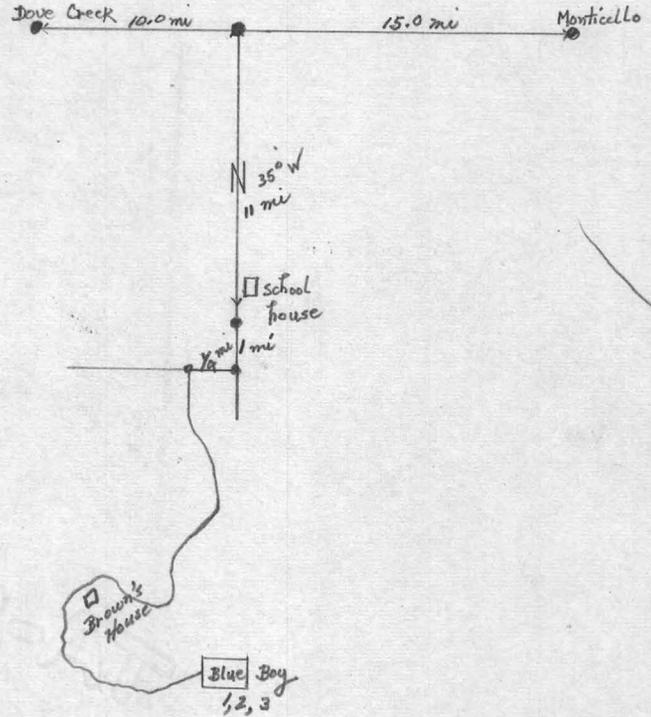
Dispose of the property.

by Fred C. Hohne

BLUE BOY CLAIMS

near Dove Creek, Colo.

1. Road Log to the property
 - a. Appr. 35 mi from Monticello.
 - b. Fair road (unpaved)
 - c. If rain or snow, the ~~effect~~ ^{result} is bad road.
2. Claim Map
 - a. The client has one.
 - b. West side - Bottom group (Brown)
 - c. NW - 50 Goldfield claims
 - d. South - Federal
 - e. East - Empire group (Vanadium Queen)
 - f. North - Phoenix group (Goldfield)
3. Production (none)
 - a. Empire is producing (NE side)
 - b. Vanadium Queen produces 20^{tons} a day.
 - c. Happy Jack (original) produces a load every other day.
4. Grade of ore
 - a. U_3O_8 .05 Vanadium Queen .40 ore av. V_2O_5 - yes
lots of lime.
5. Drift
 - a. None
6. Bonus
 - a. Not certified yet.
7. Milling mileage
 - a. To Monticello is 35 miles.
8. Nearby properties (see 2)
9. No facilities, equipment, or machinery
10. Drill holes (none on the property)
 - a. No AEC hole.
 - b. There is 2 holes on west side.
 1. Phoenix no. 48 is 150' (min.- little over back ground count)
 2. West of Phoenix is the Tulsa group. 50' depth holes (no count)
11. Water
 - a. Drilling use only.
12. Rims
 - a. B. Basin rims
13. Producing rims
 - a. Sandstone and lime rim below the conglomerate has ore (autunite, vanadium, and other U_3O_8 .)
14. Trend
 - a. Major fault intersected by 2 minor faults.
15. Surveyed (?)
 - a. posts are up.

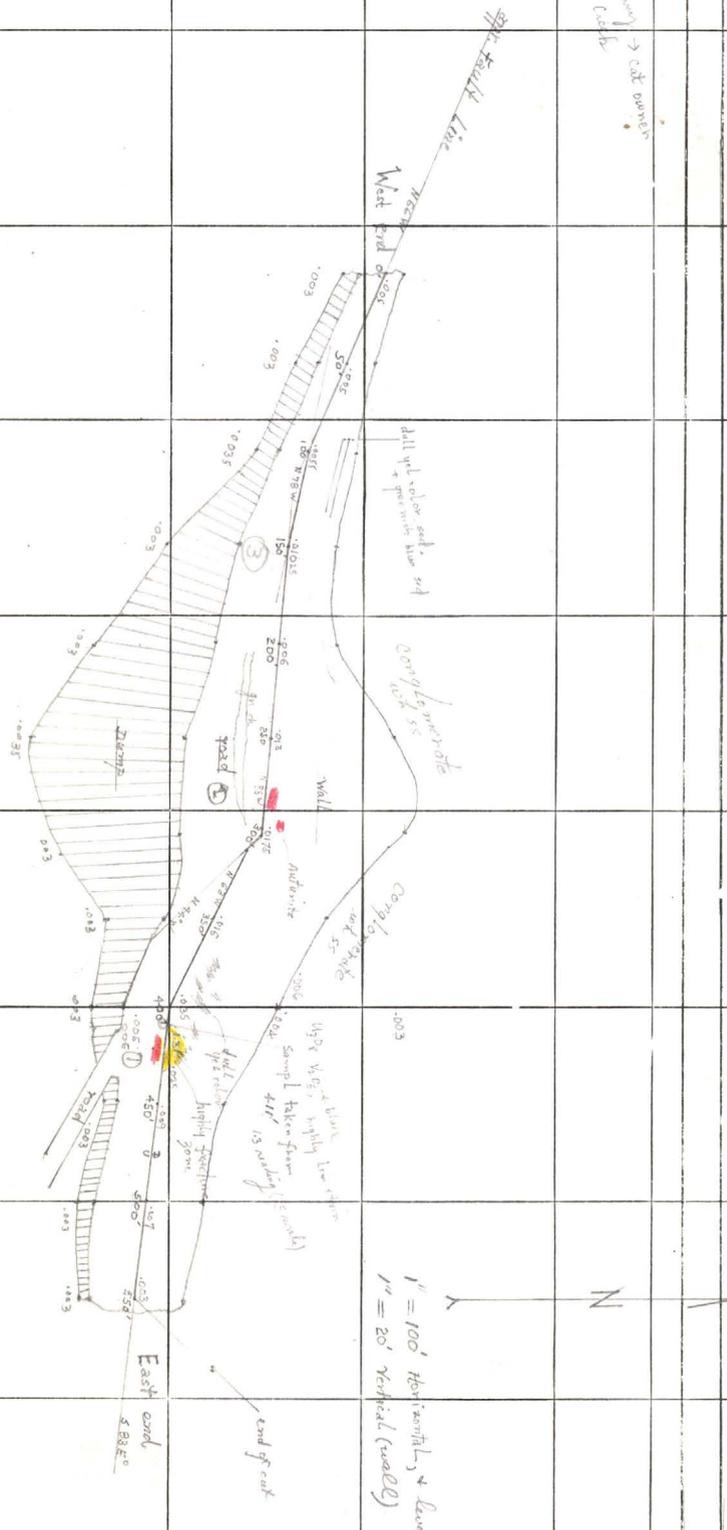


COORDINATE VALUES of initial point in any area determined from lat. and long. conversion tables ("Grid System for Progressive Maps in the United States," Special Pub. No. 59, U. S. Coast and Geodetic Survey. Tables adaptable to entire long. circumference of earth and lat. interval 24°-49° N. and S. hemisphere). Yard values converted to feet and 10 million added to N. value (to eliminate negative numbers at 24° lat.). Value initial point predetermines sheet boundary coordinates, which are evenly divisible by E-W and N-S linear interval of sheet. (Copyright 1952 by K. S. Herness)

1" = 10' 1" = 40' 1" = 50' ENGLISH SCALE BOUNDARY 1" = 200' 1" = 1000' 1" = 2000'

BOUNDARIES: _____
 ENGLISH UNITS _____
 METRIC UNITS _____
 1: MILLION FRAC. _____
 SECTIONS _____
 PLANE OF SEC. _____
 RANGE _____
 LONG SEC. VEIN _____
 TOWNSHIP _____
 RANGE _____
 SECTION _____
 1/4 SEC. _____
 STATE _____
 COUNTY _____
 DISTRICT _____
 COMPANY _____
 MINE OR PROP. _____
 LEVEL _____
 FLOOR _____
 SCALE _____
 ZONE REF. M. ER. _____
 0 000 RD _____
 E _____
 EL _____

1. Took conventional reading
 2. Adjusted indicators
 3. 438 + 1/2 of finding
 4. cat found pt at 2100000 Thursday 10/10/52
- 1 am call, grass (thick obf 15)
 a. taking angle (1 day)
 1. Trouble with my spirit level
 & within west loop



Blue Blumby
 Road cut by
 cat owner

1" = 100' horizontally & level
 1" = 20' vertical (walls)

RECEIPT FOR CERTIFIED MAIL—15¢

No 246521

SENT TO		POSTMARK OR DATE
E. R. RICE		
STREET AND NO. GOLDIE, GLEES. 5723 WILSHIRE		
CITY AND STATE LOS. ANGELES		
<input type="checkbox"/> If you want a return receipt, check which 7¢ shows to whom and when delivered	<input type="checkbox"/> 31¢ shows to whom, when, and address where delivered	<input type="checkbox"/> If you want restricted delivery, check here 20¢ fee

POD Form 3800
July 1955

Replaces previous editions of
this form which MAY be used.

1. **Stick postage stamps to your letter to pay:**
 - 15-cent certified mail fee
 - First-class or airmail postage
 - Either return receipt fee (*optional*)
 - Restricted delivery fee (*optional*)
 - Special-delivery fee (*optional*)
2. If you want this receipt postmarked, stick the gummed stub on the address side of the letter, leaving the receipt attached, and present the letter to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the address side of the letter, detach and retain the receipt, and mail the letter.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card and attach it to the back of the letter.
5. Save this receipt and present it if you make inquiry.

RESULTS OF DRILLING
ON
BLUE BOY #1, MCINTYRE CANYON AREA,
SAN JUAN COUNTY, UTAH

RESULTS OF DRILLING

on

BLUE BOY #1, MCINTYRE CANYON AREA,

SAN JUAN COUNTY, UTAH

INTRODUCTION

Three inclined drill holes were drilled on this property by the De Core Drilling Company. The purpose of these holes was to test at depth a fault zone which was mineralized at the surface. On January 13, 1956, the Blue Boy #3 hole was bottomed in red mudstone and the drilling was stopped. Only a trace of mineralization was noted in any of the holes.

GEOLOGY

A mineralized fault, which trends N. 70° W. and dips approximately 20° to the east, cuts across the southwest corner of the Blue Boy #1 claim. The northern side of this fault has been down-dropped about 600 feet; this brings the Brushy Basin member of the Morrison formation in contact with the Summerville and Entrada formations.

The fault is not a continuous, single fault; instead, it is a series of smaller en echelon faults which form a fault zone that gives the impression of a single fault. Locally, smaller blocks of the Burro Canyon formation, which lies on top of the Brushy Basin, have been further down-dropped between the smaller faults. It was along one of these down-dropped blocks of Burro Canyon that autunite mineralization was noted, as well as the highest radioactivity in the area.

DRILLING

Three inclined drill holes, on 50-foot centers, were drilled in order to test the fault at depth, for mineralization at depth. Two 60° inclined holes, one 94 feet and one 75 feet, and one 70° inclined hole, 145 feet deep, were drilled. These holes were cored with NX core. The average core recovery was about 85%.

The core in all three holes was different and no correlation of the holes can be made. Only #3 hole, which was a 60° inclined hole, 74 feet deep, showed a good fault zone in the core (40.1 to 45.4 feet). This zone carried only a trace of mineralization. Asphaltic material, calcite stringers, and altered sulphides were

noted in fractures in some thin sandstone seams. Near the bottom of the hole a thickness of 20.4 feet of light-green medium-grained sandstone was encountered. This sandstone unit carried no mineralization.

Hole #2, a 70° inclined hole 145 feet deep, nearly parallels the dip of the fault. The hole was collared in the red silty mudstone of the Summerville formation and except for a 50.2-foot unit of green silty mudstone located between 91.1 and 141.3 feet, the hole was all red mudstone. The green mudstone unit may have been near the fault zone but no gouge material or mineralization was noted in the core.

Hole #1, a 60° inclined hole 95 feet deep, showed no gouge material in the core. This hole was started in a down-dropped block of Burro Canyon. The hole probably left the fault zone at about 35 feet. The hole showed some asphaltic material, copper stains, calcite seams, and pyrites, but no uranium mineralization was noted.

CONCLUSIONS AND RECOMMENDATION

1. The only favorable zone for mineralization in this area is along the fault zone.
2. The fault cuts only the southwest corner of Blue Boy #1 claim.
3. Drilling was done at the place of highest radioactivity along the fault zone.
4. Only a trace of uranium mineralization was noted in any of the drill holes.

It is recommended that no further work be done on the property.

By

Minerals Assay Laboratory

Phone 1441

Date 11/8/55

549 Noland Avenue

Grand Junction, Colorado

L#2632

NAME Fred C. Hohne Inc.

ADDRESS Box #1834 City _____

LAB. NO.	SAMPLE RECEIVED	PERCENT URANIUM	PERCENT VANADIUM	PERCENT LIME <small>As. Mo</small>	PERCENT TUNGSTEN OXIDE	PERCENT MOLY AS. MO
	11/7/55					
6227	Sample #608 Specimens of Visible Antunite	0.08		Radiometric 0.04		
6228	Sample #609 3' Channel Sample At Fault intersection Antunite	0.04		0.02		

R. E. Morris
By B. Rowles
Lab. asst.

TOTAL CHARGES \$ 12.00

November 25, 1955.

PROGRESS REPORT ON THE BLUE BOY CLAIMS

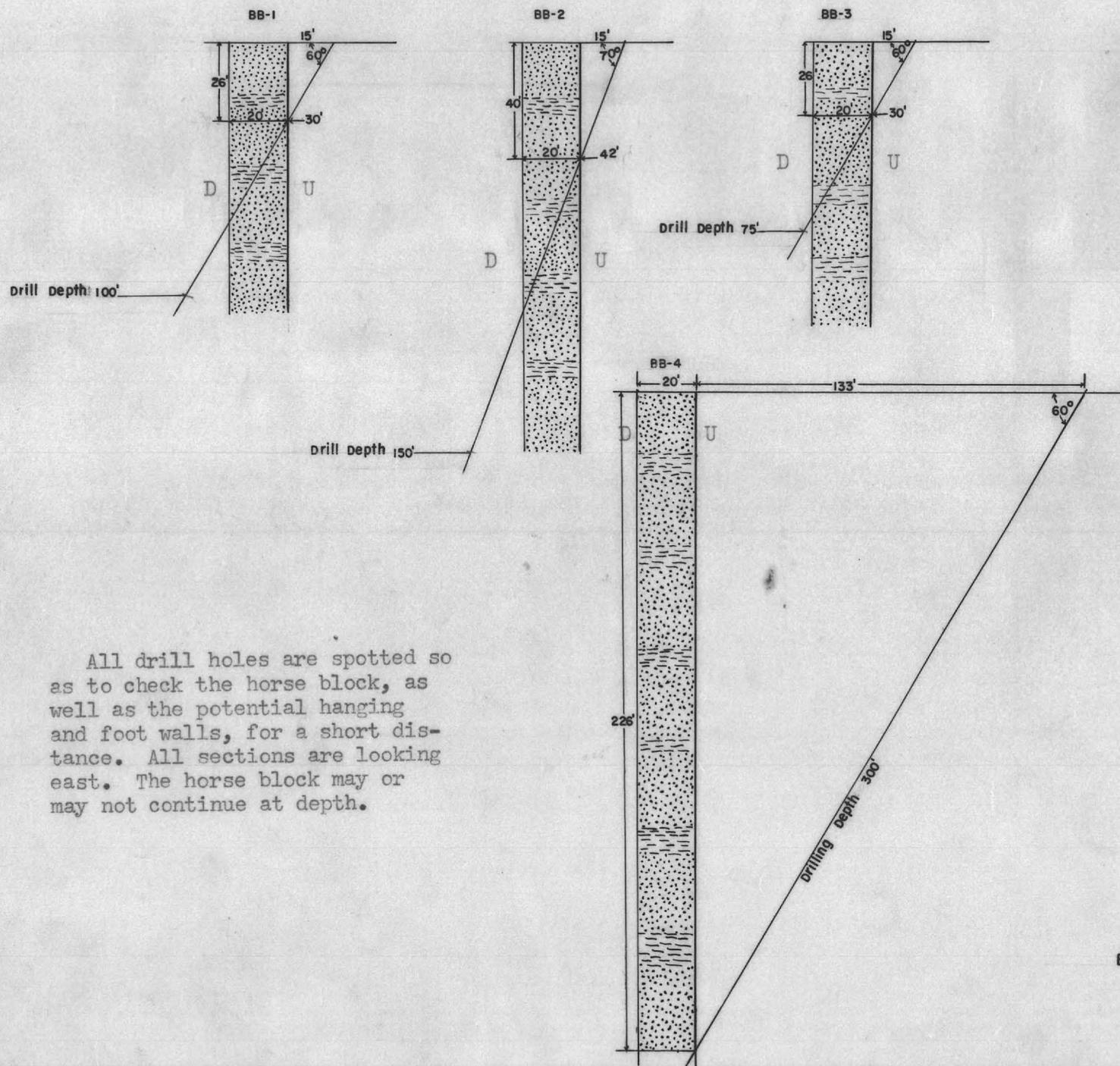
The initial work on this area was described in a report on the Phoenix Claims. Because of title difficulties and conflicts, the same area is referred to as the Blue Boy Group.

Since the surface scintillometer survey was completed, several days of bulldozer work were completed. The bulldozer was used to make a cut along the fault trace, to check for the mineralization which produced the surface anomalies. The cut was made and mapped. Autunite crystals were found in several places in the cut. Several samples were assayed, with the following results:

The most recent sample was taken from an area which gave a radiometric reading of 2.0 MR/hr, which usually indicates shipping ore. The sample was from a heavy, limonite, friable sandstone. Upon examination with a glass, numerous small black specks were visible. These may be uraninite. No autunite or carnotite was found in the sample.

Four holes are recommended (see enclosed sections).

Fred C. Hohne.

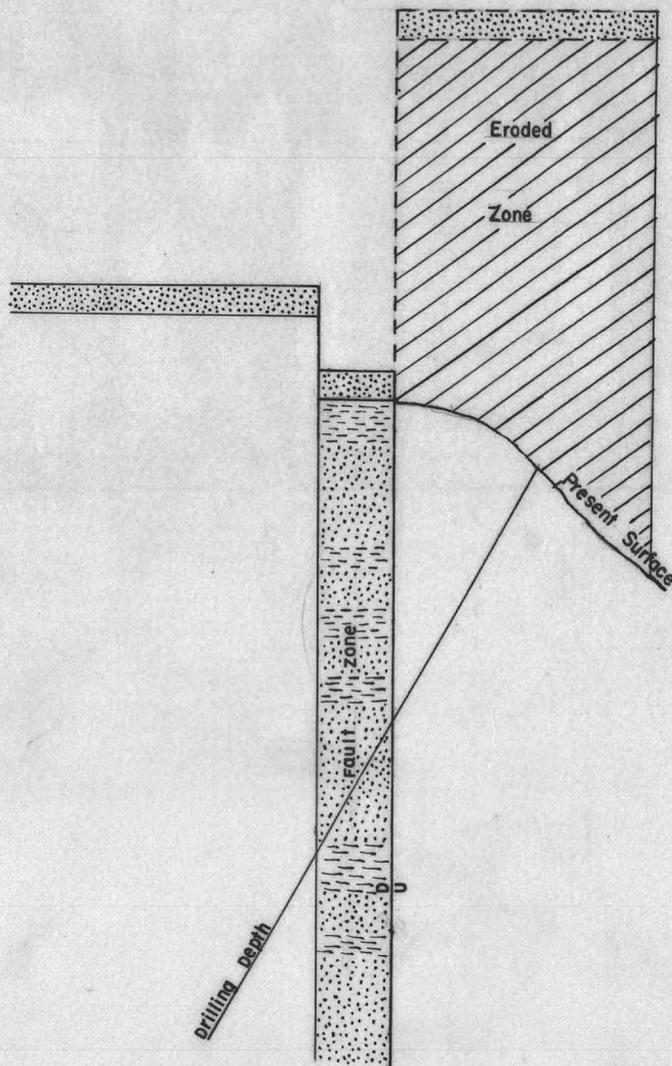


All drill holes are spotted so as to check the horse block, as well as the potential hanging and foot walls, for a short distance. All sections are looking east. The horse block may or may not continue at depth.

BLUE BOY NO. 1
Scale 1" = 50'

This is a cross section of the fault zone on the Blue Boy Group. The north side of the fault is the down-thrown side. The horse block in the fault zone plus a few feet of sandstone on either side of the fault are mineralized. All holes are to be drilled to include this mineralized zone.

This section shows a horse or sliver block which has fallen off the down-faulted side into an opening in the fault zone. This section is drawn as a result of field mapping.



BLUE BOY NO. 1

Looking East

ORE _____
 MIN. _____
 BARREN _____

FAV. _____
 UNFAV. _____

HOLE NO. BB#3
 60° Inclined

PROJECT Rice

LOCALITY Mc Intyre Canyon CLAIM Blue Boy #1

COLLAR ELEV. _____ DEPTH 75 feet

COORDINATES _____

DATE COMPLETED _____

LOGGED BY J. C. Standard DATE _____

RECOVERY 92 %

RECOVERY	GEOLOGIC COLUMN	COLOR	BEDDING <i>Lithology</i>	TEXTURE	GRAIN COATINGS	CARBON	ORE MINERALS	MISCELLANEOUS	DEPTH
								Plug Bit	
98%		l. red-br	SS	f	CaCO ₃			lim Spks MnO ₂ Spks A sharp frac	10'
		l. gn	SS	f	CaCO ₃			MnO ₂ -lim A	
		bl-gn	SS	f	CaCO ₃			Altered sulfide fill vugs	
95%		gn	md						
		buff	SS	m	SiO ₂			Asphaltic Jasper Seams / lim A	20'
		bl-gn	md					Asphaltic + lim A in frac.	
		gn	md	f-m	CaCO ₃				
		buff	SS	m	CaCO ₃			Jasper A. Asphaltic in frac.	
		wh-gn	SS	f-m	CaCO ₃			horz. layers of lim in core MnO ₂ Spks	
87%		gn	md					horz. layers of lim in core MnO ₂ Spks	30'
		buff	SS	m	CaCO ₃				
		bl-gn	md					lim Spks	
		bl-gn	md					Sandy	
83%		l. gn	SS	f	CaCO ₃				40'
		gn	md					Sandy - highly frac. lim A - <u>Fault Zone</u>	
89%									50'
		l. gn	SS	m-c	CaCO ₃			Small seams of Jasper .2' seam of Cpt. pebbles up to 1/2" in diam found at 53.0-53.2 - mostly Jasper	
86%									60'
		l. gn	SS	m-c	CaCO ₃			Seams of CaCO ₃	
100%		mottled red-gn	md						70'

ORE MIN. BARREN

FAV. UNFAV.

HOLE NO. BB #2
70° Inclined

PROJECT Rice

LOCALITY 4th Intyre Canyon CLAIM Blue Boy #1

COLLAR ELEV. _____ DEPTH 145 Feet

COORDINATES _____

DATE COMPLETED Jan. 13, 1956

LOGGED BY J. C. Standard DATE Jan. 13, 1956

RECOVERY 97 %

RECOVERY	GEOLOGIC COLUMN	COLOR	BEDDING	TEXTURE	GRAIN COATINGS	CARBON	ORE MINERALS	MISCELLANEOUS	DEPTH
3.6'		red	md.					lim along frac	10'
3.8'		bl-grn red red	md md md						
4.0'		bl-grn	md					MnO ₂ & FeO ₂ along cracks	20'
7.2'		red	md						
7.2'		red	siltst.		CaCO ₃			FeO along frac bl-grn along frac.	30'
1.8'		l. red	ss	m	SiO ₂			Highly frac. frac. filled with SiO ₂ & lim MnO ₂ spots A	
8.7'		mottled red-bl-grn	md					Lim A	40'
7.8'		mottled red-bl-grn	md					Silty lim A	
7.8'		white- buff	ss	f	CaCO ₃			CaCO ₃ , FeO ₂ , lim & MnO ₂ filling frac. - calcite up to 1/8" thick	50'
		red	md					Sandy	
		l. red	ss	f	SiO ₂			CaCO ₃ filling frac lighter red near bottom lim A	
9.9'		red	md						60'
		white	ss	m	CaCO ₃			CaCO ₃ & lim along frac	
1.7'		red	md					CaCO ₃ in frac. & vugs.	
9.4'		red	siltst.		CaCO ₃ & SiO ₂				70'
9.5'		red	md					lim filling frac.	80'
10.0'		red	md					silty	90'
6.0'		bl-grn	md					sandy probably nearing fault zone	100'
4.0'									
8.3'									110'
8.4'		bl-grn	md					Probably in or very near fault zone but no fault gouge found in core	120'
7.5'									130'
8.4'		red	md					silty	140'

ORE
MIN.
BARREN

FAV.
UNFAV.

HOLE NO. B.B #1

60° Inclined

PROJECT Rice

LOCALITY McIntyre Canyon

CLAIM Blue Boy #1

COLLAR ELEV. _____

DEPTH 94.0 Feet

COORDINATES _____

DATE COMPLETED _____

LOGGED BY F. C. Hohne

DATE _____

RECOVERY 6 %

RECOVERY	GEOLOGIC COLUMN	COLOR	BEDDING Lithology	TEXTURE	GRAIN COATINGS	CARBON	ORE MINERALS	MISCELLANEOUS	DEPTH
								Plug Bit	10
70%		Tan	SS	cap				lim stn	
90%		Tan	SS	m	CaCO ₃			angular to subangular q lim stn	
		Tan	SS	cap	"			chert pebbles	
95%		gy-qn	SS	m-e	"			cyl. chert pebbles qn ms galls	20
		gy-qn	SS	cap	"			chert	
		gy	SS	m	"			asphaltic material	
		gy	SS	f	"			lim spks & stringers	
		gy	SS	f	"				
		gy	SS	m	"			lim spks MnO ₂ dendrites CuO stain spks.	30
		gn	md					lim stn	
		red	md						
		mottled red-qn	md						40
		gn	SS	m	"			chert pebbles pink CaCO ₃ stringers	50
		red	md						
		gy	SS	m	"			chert pebbles, red	
		mottled gy-qn-red	md						60
		gy	SS	m	"				
		red	md						
		gy	SS	md	"			muddy	
		tan- gy	SS	m	"			lim in frac Cu. stn.	70
		tan	SS		"				
		red	md						
		gy-qn	SS	f	"				
		red	md						
		gy-qn	SS	f	"			Fe ₂ S ₃ spks 20 lim	80
		red-qn	md					Pyrite in frac	90

PRELIMINARY EVALUATION
Of The
CAMEL AND HORSEHAIR CLAIMS
BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

By
Harold W. Blakely

April 20, 1955



MINERALS EXPLORATION RESEARCH CORPORATION

CONSULTANTS AND CONTRACTORS IN MINERAL EXPLORATION EVALUATION DEVELOPMENT AND EXPLOITATION

MAIN OFFICE 2120 FORD STREET GOLDEN, COLORADO PHONE 937

DISTRICT OFFICE 1103 WHITE STREET GRAND JUNCTION, COLORADO PHONE 241

PRELIMINARY EVALUATION
Of The
CAMEL AND HORSEHAIR CLAIMS
BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

LOCATION:

The Camel claims 3, 4, 5, & 7 lie in section 12 T45N, R18W, NMPM. The Horsehair No. 1 lies in section 1 T45N, R18W, and section 36 T46N, R18W across the canyon from Teapot Dome No. 2 Mine. Both groups of claims are in the Bull Canyon Mining District which is approximately 23 miles from Naturita.

OWNERSHIP:

These claims are owned jointly by Mr. Dwight Royer of Norwood and Mr. William Cassidy of Uravan.

GENERAL GEOLOGY:

The sediments in the region are generally flat lying being disrupted by faulting or folded into northwest trending monoclines and salt core anticlines.

The salt core anticlines are the Paradox Valley, Sinbad Valley, Gypsum Valley and probably the Dolores anticlines. The salt core is exposed in Sinbad, Paradox and Gypsum Valley. There is also a great deal of faulting parallel to the strike of the anticlines along the valley walls.

The initial formation of the anticlines occurred during the early Pennsylvanian caused by mild compressive forces. With following accumulation of sediments of the cutler formation in the area, the plastic salt began to follow the pattern of initial deformation and ruptured the overlying cutler formation. The upswelling continued to Morrison time when probably the source of the expanding salt had become exhausted. The area then remained in a relatively static condition until the Laramide revolution when the original structures were further accentuated.

Dissolution of the salt core and flowage of the plastic salt from parts covered by overlying sediments to other locations where the sediments were removed created a void which ultimately caused the collapse of the axial portion of the anticlines.

The Bull Canyon Mining area lies between the Paradox valley and the Gypsum Valley anticlines. The Dry Creek Basin syncline also noses out in the district.

No local faulting or folding occurs in the Bull Canyon Mining District.

LOCAL GEOLOGY

Structure:

The sediments are flat lying beds in an area between the Paradox and the Gypsum valley anticlines. The area shows an absence of faulting or folding.

Stratigraphy:

Formations present are the Dakota, the Burro Canyon, the Morrison, the Summerville, the Entrada, and the Navajo.

Ore deposition occurs in the Salt Wash member of the Morrison formation and is confined to the 1st and 3rd rims. The uranium-vanadium deposits occur in irregular pods with a trend of N75°W being noted at the Teapot Dome No. 2 Mine in the 3rd rim. AEC personnel at the Bull Canyon camp state that to their knowledge, no ore trends can be determined from available information. They also state that 70% of Bull Canyon ore production comes from the 3rd rim. Production from the 1st rim has increased and appears to become more important in the future.

The 1st rim is extremely thick in this area being approximately 120 feet which may be a criteria for uranium mineralization.

The second rim is lenticular and is not important as a ore producer in this area.

The 3rd rim is the large producer at this time and appears to have a good thickness.

The 4th rim is also lenticular and is not considered as a favorable bed for mineralization.

No detailed geologic publications are available at this time. All government reports are of a classified nature and are not available to the public.

GEOPHYSICAL:

The rims were walked on both properties using a scintillation counter. The Camel claims showed radioactivity above background in the upper twenty feet of sandstone and radioactivity above

background at the Summerville Salt Wash Contact. No high readings were observed, but the counts show weak mineralization to exist on the property.

The Horsehair No. 1 claims showed good counts along the horizon of the present ore body in the first rim and looks very good as a drilling property.

CONCLUSIONS:

The Camel claims are first rim Salt Wash and are in an area that is relatively undeveloped at this time. One small operation flanks the property on the east and production appears to be relatively meager. However, due to the types of irregular occurrence of ore bodies in the general area these claims should be considered as a favorable drilling ground. Drilling may be conducted on a pattern of staggered drill holes with the approximate depth being about 130 feet near the rims to 160 feet near the southern extremities of the claims, however, twenty holes on 200 foot spacings for a total footage of approximately 30,000 feet would be sufficient to prove or disprove the claims.

The Horsehair No. 1 Claim is primarily first rim Salt Wash and is considered a very good property. It appears as though the spotty type of ore deposition prevails here as in the general area. The suggested trend of N75PW from the Teapot Dome #2 Mine projects onto the Horsehair #1. Considering the location of the property, scintillation results, and the existence of ore on the property, this claim has excellent exploration possibilities. An estimated total footage of 350000 feet can be considered sufficient to prove the property. Drilling depths will vary from 130 to 200 feet.

RECOMMENDATIONS:

1. Geologic mapping of the properties should be undertaken.
2. A scintillometer survey should be conducted.
3. All the drill holes that are open should be probed.
4. Drilling based on information derived from geology scintillation data and probe results of old holes should be conducted.

APPENDIX:

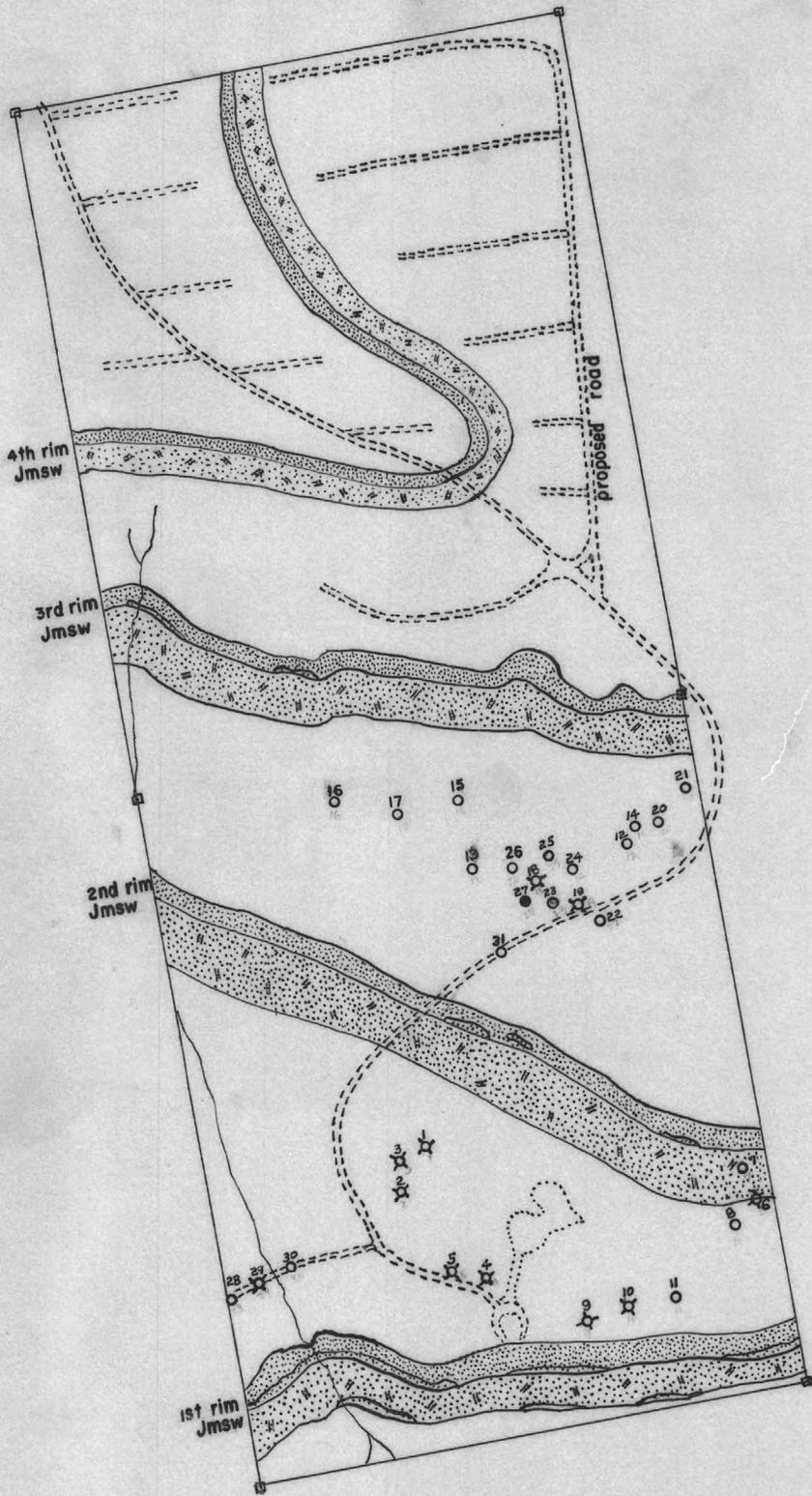
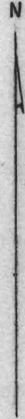
Two maps accompany this report. One map is the Bull Canyon Quadrangle showing the Camel and Horsehair claims along with approximate location of the John Daniels claims owned by Bud Carr. Fred Hohne knows Bud Carr and information can be obtained from Fred. The John Daniels claims are in a favorable

area and are considered as having good potential as a producer.

The other map shows the Camel and Horsehair claims and location of drill holes and workings on the properties.

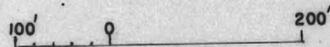
Submitted by Harold W. Blakely
Harold W. Blakely

HORSE HAIR NO. 1



SYMBOLS

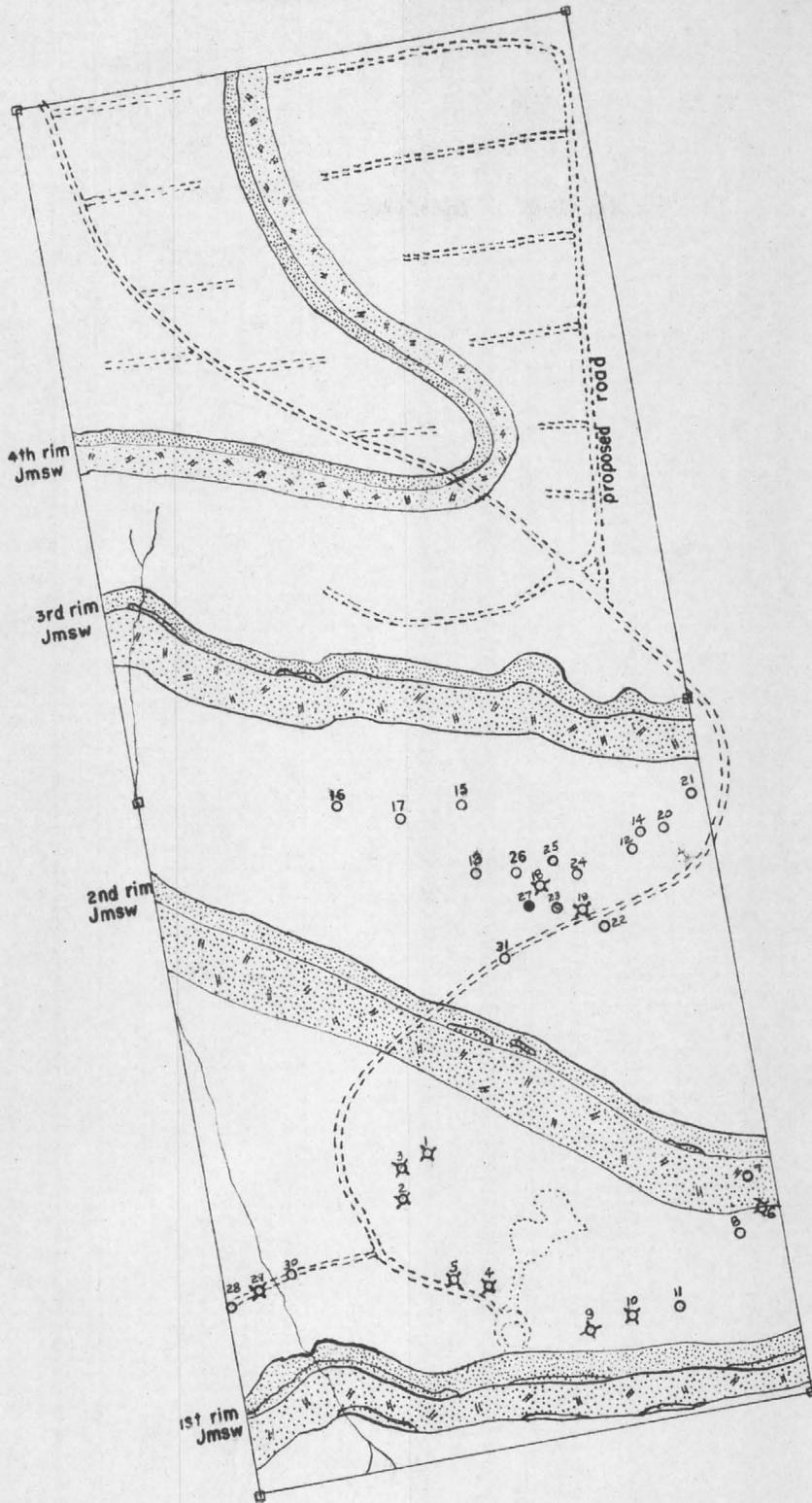
-  massive ss
-  rock slides
-  road
-  drainage
-  drift
-  altered ss
-  over 1' thick seam
-  less than 1' thick seam
-  no ore



Drill Holes

HORSE HAIR NO. 1

N



SYMBOLS

massive ss

rock slides

road

drainage

drift

altered ss

over 1' thick seam

less than 1' thick seam

no ore

Drill Holes

Copied from Harold's sheets

Bull Canyon Nicoli-Putnam Minerals.

Mineralized holes

Camel Group

C #1 weakly min. 182'
C #4 min. at 148'

C 1 drillers lost count
C2, C3, C4, & C5. (not
recorded as to depth although
somewhere total footage of
each hole is available.

Horsehair Claim

Old hole #1 min. @ 15' & 28'

New Holes

DH 1 min. @ 98.5'
DH 2 min. @ 104.0'
DH 3 min. @ 99.0'
DH 4 min. @ 98.0-100 & 105.5'
DH 5 min. @ 105.5'
DH 6 min. @ 96.0'
DH 9 min. @ 100.0'
DH 10 min. @ 102.0'
DH 18 min. @ 137.3' $\frac{1}{2}$ @ .22%
DH 19 min. @ 136.0'

HORSE HAIR #1

Drill Hole Log

	Total footages		Approximate ↓ footages
- DH 1 ✓	95'	cutting irregular	
- DH 2 ✓	120'	gn sh & wh ss at	100'
- DH 3 ✓	117'	"	95'
- DH 4 ✓	108'	"	90'
- DH 5 ✓	cutting mixed		
- DH 6 ✓	104'	"	90'
- DH 7 ✓	102'	unkn.	
- DH 8 ✓	115'	"	90'
- DH 9 ✓	114'	"	90'-114'
- DH 10 ✓	116'	"	105-116'
	<u>991'</u>		
	991'		
- DH 11 ✓	117'	"	100'
- DH 12 ✓	174'	"	150'-165'
- DH 13 ✓	166'	"	145'-150'
- DH 14 ✓	150'	"	145'
- DH 15 ✓	178'	"	140'
- DH 16 ✓	170'	"	unkn.
- DH 17 ✓	160'	"	140'
- <u>DH 18</u> ✓	162'	"	140, 145, 160'
- DH 19 ✓	164'	"	150'
- DH 20 ✓	170'	"	145, 160-170'
	<u>1611'</u>	1611'	
- DH 21 ✓	158'	"	140, 150, 158'
- DH 22 ✓	150'	"	140, 150'
- DH 23 ✓	150'	458'	140-150'

DH 27 min @ 134.5' 7"-1' seam
DH 29 min @ 102.5' 2' seam

5000'
-3060'
1940' to go
1600'

3060' total footage as of now.

1206
4266' total footage Aug. 10, 1955

Saturday Aug 5, 1955
Scotty's Drill Rig
DH 24 ✓
DH 25 ✓
DH 26 ✓
DH 27 ✓
DH 28 ✓
DH 29 ✓
DH 30 ✓
DH 31 ✓

170'
170'
170'
168' 1 foot
120'
120'
128
1046'
160'
1206'

BOND
WPT
STOMACH

Nicoli
Putnam Minerals

BULL CANYON HORSE HAIR #1
CAMEL group

HORSE HAIR #1

As of June 17, 1955 total footage is 2,170 feet drilled. Total of 11 holes. Holes are located near stope and on good rim. There is no ore in holes. Several holes are mineralized.

Total of 23 holes drilled. 10 holes are mineralized. 1 ore hole has .22 % U_3O_8 , radiometric assay. The seam has 6 inches in thickness.

All holes have been probed. The cuttings are all logged ~~for~~ for visible mineralization.

CAMEL CLAIMS Cassidy and Royer

5 holes drilled. They are slightly mineralized. \$1195.00 expenditures for group of 4 claims. These 4 holes are located within a group of old drill holes.

Total footage 956 feet drilled.(5 drill holes). \$1.25 cost per foot.

The assessment work ^Gconsists of drillings. Holes nos. 3,4,5, and 7 completed in June 17, 1955.

Recommendations

Horse Hair

Complete drilling holes about DH #18.

Run scintillator survey on upper rim.

Probe holes to the northeast on nearby property. This will give drilling depths to ore horizon in upper rim.

Survey all drill holes for control.

Camel

Anomalous counts were found at the Salt Wash-Summerville contact. No other counts were observed.

If drilling is planned on these claims, I suggest a 200' grid. This would represent a wild cat program. I cannot see a better method for the property.

Harold Blakely,

Future Expl.

Dozer is needed to clear road for drill sites on upper rim.(northern half of the claims). It will cost about \$120.00 for dozer and operator for one day work.

Future drilling should be irregular fence pattern running roughly north-south. Lower rim of Salt Wash has mineralization. (It has been thoroughly investigated) by Geologists and the AEC geologists.

The Intermediate Rim is lenticular in the area. It has been said unfavorable bed for ore occurrence. (local operators).

Upper rim Salt Wash is present. Drilling program necessary or advantageous.

Adjacent Property
Rough Sketch

Neck

500 yds?



- #64 22'
- #62 35.7'
- #51 31'
- #52 34'
- #48 27'
- #47 28'
- #44 31'
- #43 34'
- #42 28'
- #41 30'
- #40 32'
- #39 35'
- #31 28'
- #30 31'
- #28 30'
- #26 33'
- #23 31'
- #22 22'

3rd rim Tmsw

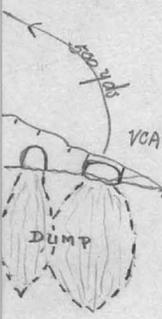
Deep - CANYON

2nd rim Tmsw

Across Property

VCA workings

DUMP

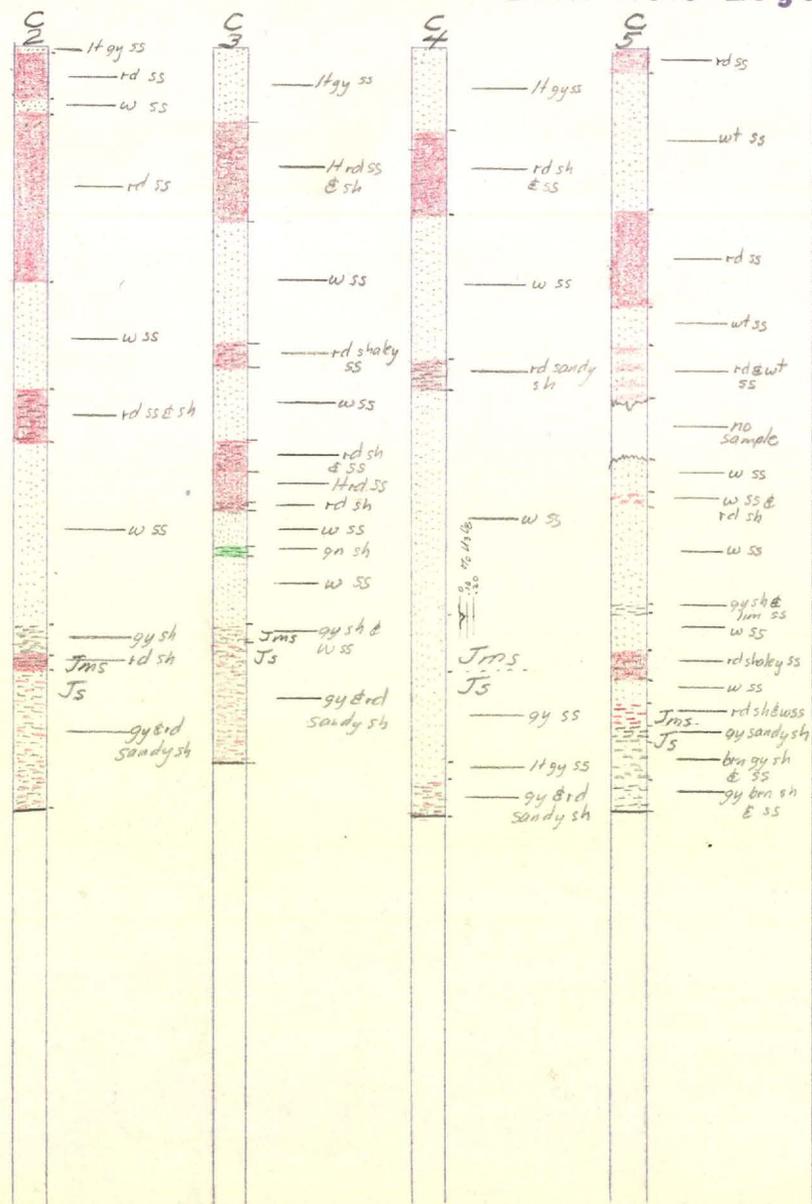


CAMEL CLAIMS

Drill Hole Logs

Driller lost count on footage

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

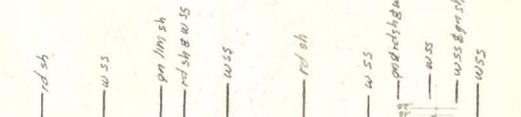


HORSEHAIR I

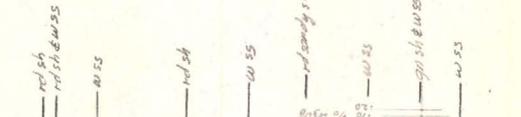
Drill Hole Logs

DH 1
not able to log - cuttings irregular

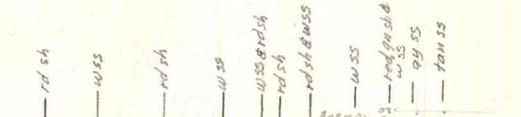
DH 2
120'



DH 3
117'

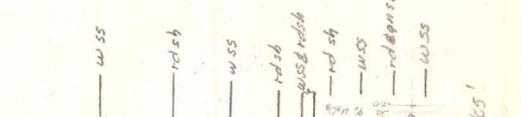


DH 4
108'

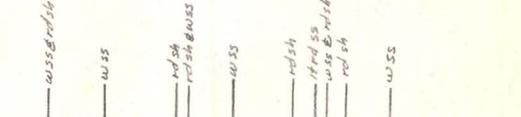


DH 5
not able to log - cuttings mixed - ran over

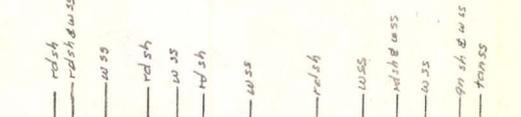
DH 6
104'



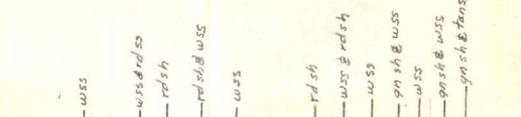
DH 7
107'



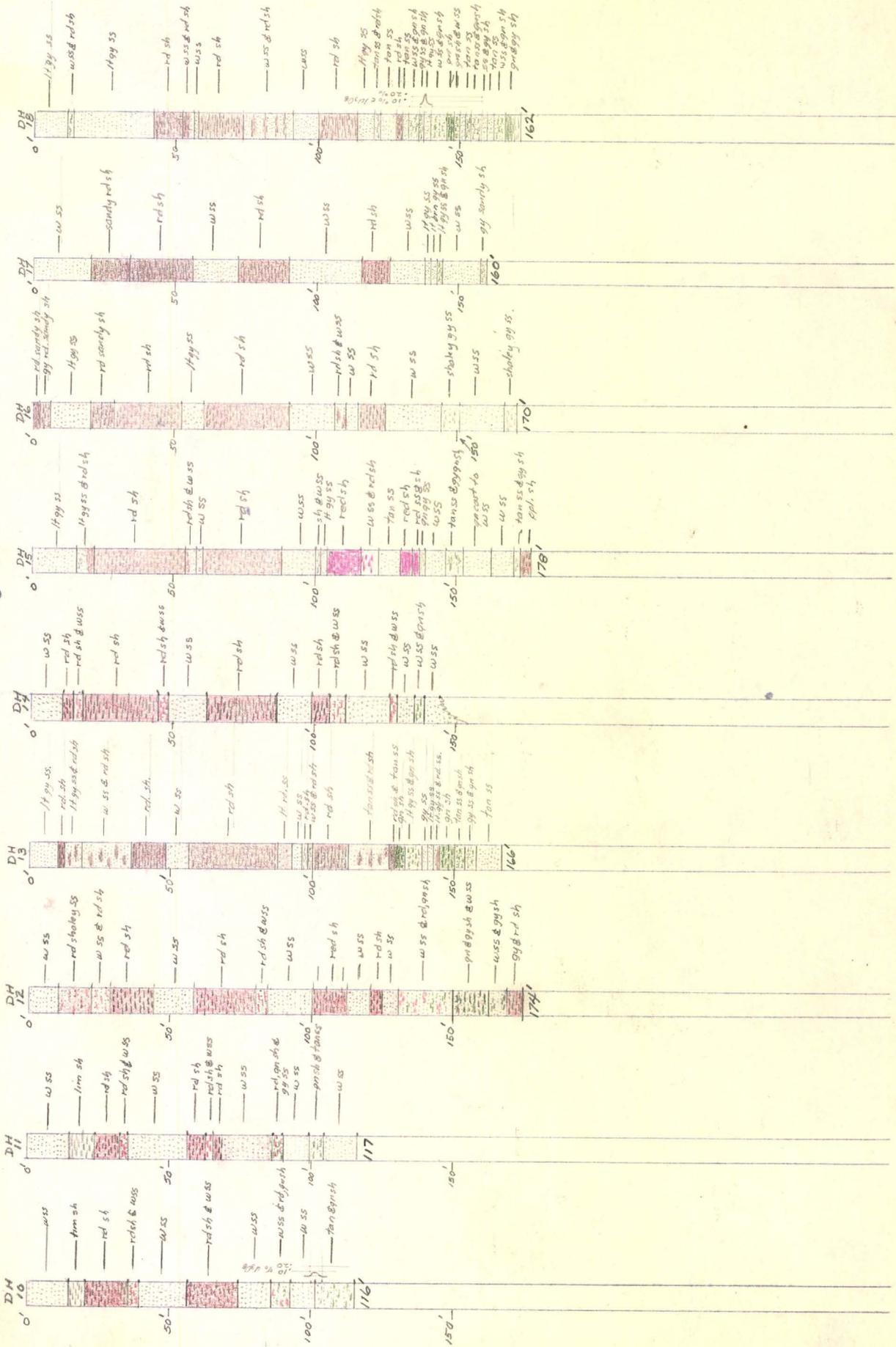
DH 8
115'



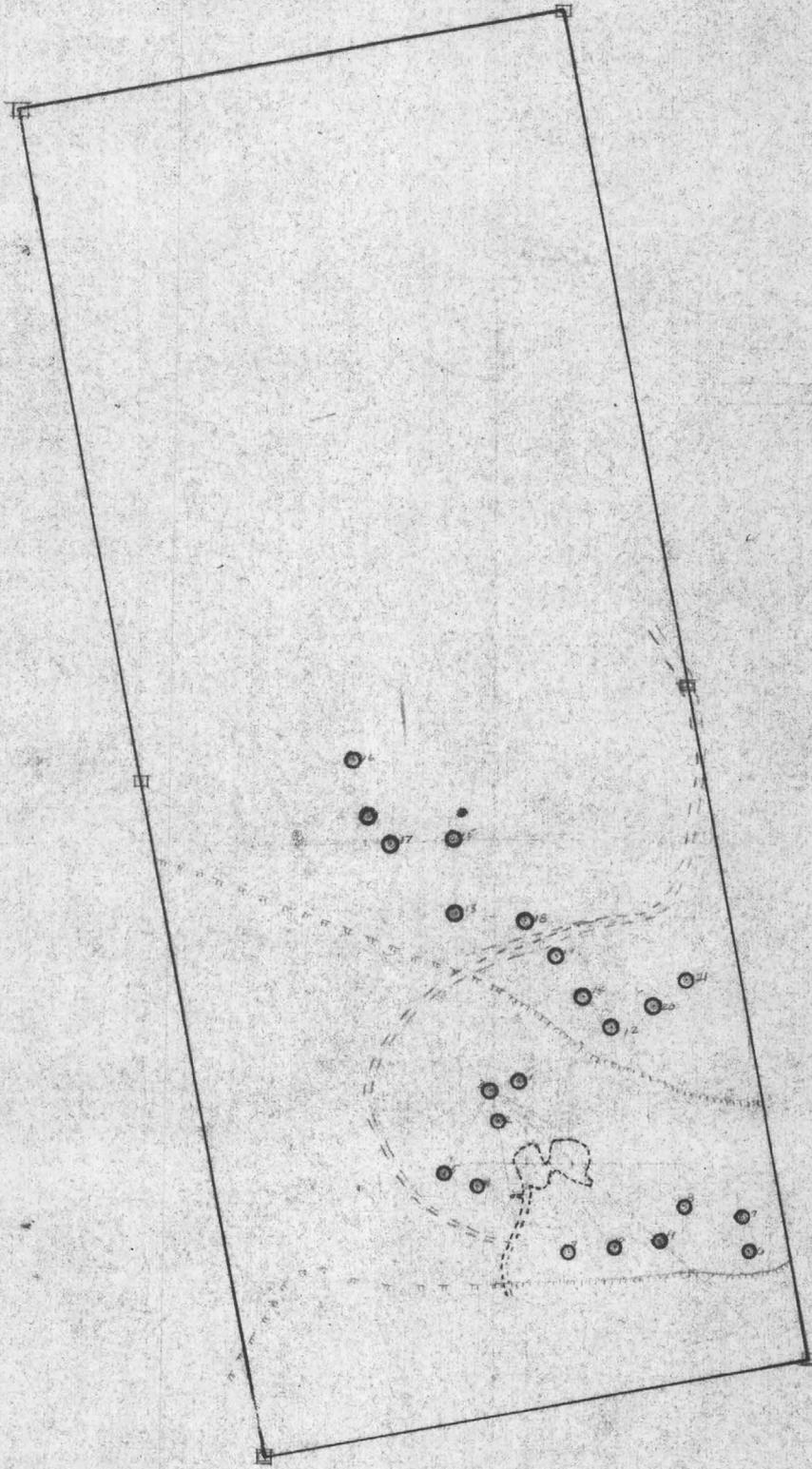
DH 9
114'



HORSEHAIR I Drill Hole Logs



HORSEHAIR I

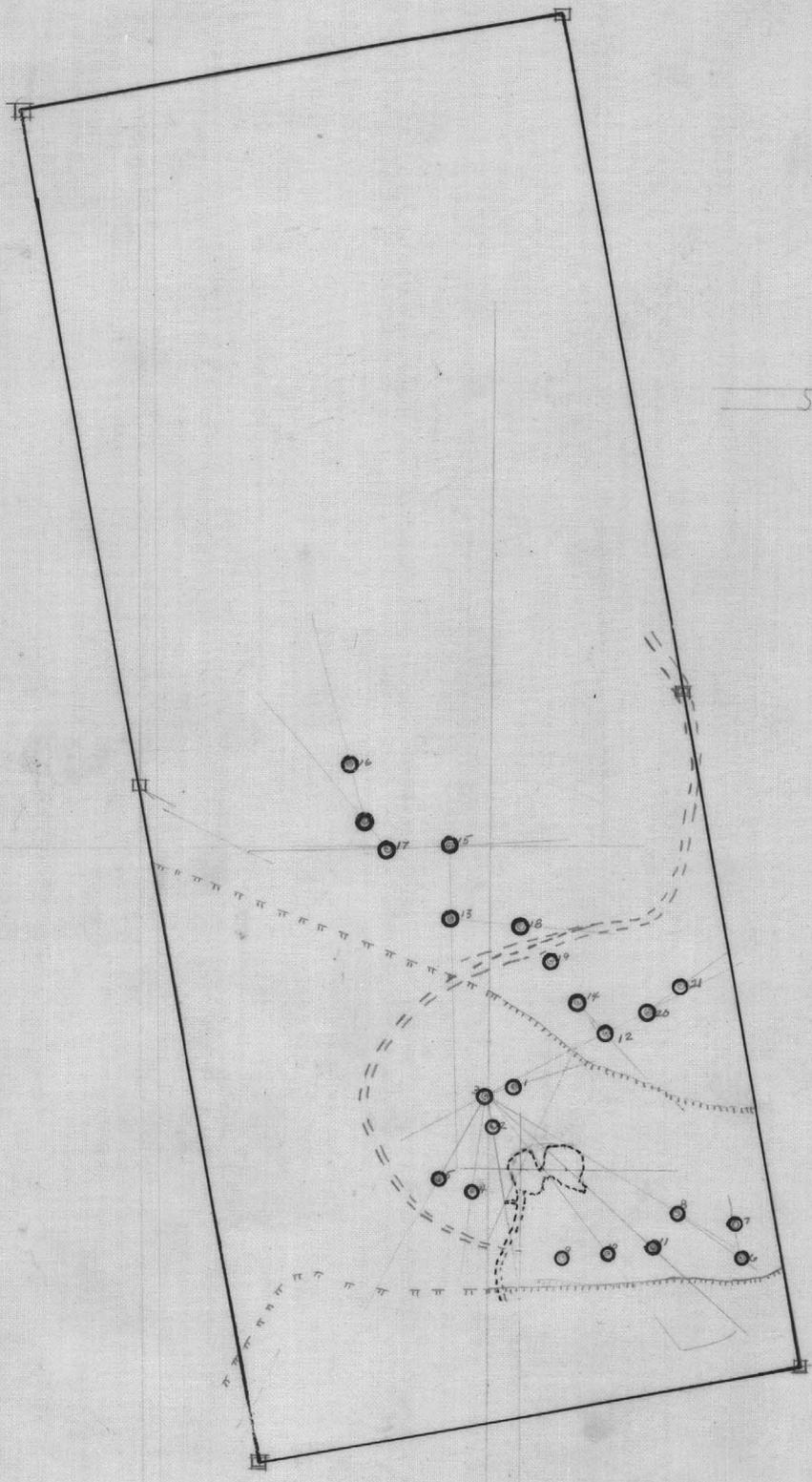


HORSEHAIR I



Scale 1" = 200'

HORSEHAIR I



PRELIMINARY GEOLOGICAL REPORT of PATENTED LAND⁴¹

owned by MR. GORDON McBETH, Santa Fe, New Mexico
in

The SPUD PATCH AREA of SLICK ROCK MINING DISTRICT
S $\frac{1}{2}$ of S $\frac{1}{2}$, Sec. 24, N $\frac{1}{2}$ of N $\frac{1}{2}$, Sec. 25, T43N, R19W,
San Miguel County, Colorado

Submitted by:

Harold Blakley

geologist

COPY

INTRODUCTION:

On November 18, 19, 20 and 21, 1954, the property consisting of the $S\frac{1}{2}$ of $S\frac{1}{2}$, Section 24 and the $N\frac{1}{2}$ of $N\frac{1}{2}$ Section 25 T43N, R19W BN PM was examined by Harold Blakley for radioactivity by use of the Model 111 Scintillator.

The scintillometer survey consisted of walking the top of the mesa on a definite grid to insure a maximum coverage. Rim exposures were covered completely and the talus slopes were walked along contour intervals. This type of coverage has proved to be the most efficient method for locating radioactive anomalous areas.

ADJOINING AND NEARBY PROPERTY:

The Slick Rock District as a whole may be classified as an excellent area. The grade of ore is good and ore bodies are numerous and have a considerable size. Within the Slick Rock District there are areas or trends of intense mineralization; also some areas are only weakly mineralized. The claims known as the "Upper Group" which are immediately to the north and west of this patented land have been good producers. Also, the Spud Patch Group has been an extremely good producer. This group is to the east of the patented land. Both these groups were worked in the early days for vanadium. In both groups the ore was either found on rim exposures or the surface. Few rim exposures between the Spud Patch and Upper Groups have been found, however, much of the rim is covered by soil. Very little exploration drilling has been done in the area between the two groups. The possibilities of finding ore are good.

GEOLOGY:

The producing sandstone in the Spud Patch area is the Salt Wash member of the Morrison formation. The Salt Wash consists of approximately 125 feet of intermittent mudstones and sandstones. The sandstones are lenticular and are not continuous. In one area there may be two or three "rims" or lenses; however, in a nearby area there may be as many as seven distinct lenses. The upper sandstones are mineralized locally.

Ore is found in bleached sandstones which contain a certain amount of carbonaceous material and which are enclosed in an impermeable mudstone.

Structurally, the property is located on the northern flank of the Dolores River anticline.

CONCLUSIONS:

The scintillometer survey shows a few anomalies; none, however, show a major trend. The mild highs shown on the map may be due to mineralization or to green mudstones which have a high background. The scintillometer survey of the rim is inconclusive since the outcrops are covered by a thick soil mantle. According to the AEC, one foot of sandstone will cut out 90 % of the gamma rays, as will 2½ feet of loose soil.

An exploration drilling program of 10,000 feet could evaluate the property. The scintillometer survey is complete but is probably not sufficient information to begin the drilling program. Some rolls and trends were checked on the Dalpes property, but all information on existing drill holes should be compiled and studied before drilling. A certificate and request for drill hole information is enclosed with this report.

The information will be sent by the U S G S but it may take considerable time, in which case the holes could be probed prior to the drilling program.

The property is in an area which is favorable from the standpoint of drill depths, geology and past production of the district. A few holes were drilled on the property by the USGS but not nearly enough to evaluate the property.

The following recommendations are submitted:

1. Write for logs of existing holes.
2. If too much time is required for obtaining the information, request permission for your geologist to go to USGS files and copy the logs of holes on the property. A notarized affidavit proving ownership of the property may be included with the request.
3. Either utilize USGS information on existing drill holes, or probe the holes prior to drilling.
4. Begin an exploration drill program in the area of cheapest drilling.
5. Evaluate the exploration program and initiate a development drilling program to block out a reserve.
6. Some courthouse work should be done at Telluride to determine the validity of the Telluride claim.

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owned by MR. GORDON McBETH, Santa Fe, New Mexico

in

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S $\frac{1}{2}$ of S $\frac{1}{2}$, Sec. 24, N $\frac{1}{2}$ of N $\frac{1}{2}$, Sec. 25, T43N, R19W,
San Miguel County, Colorado

sec 4 -

Submitted by:

Harold Blakley, Consulting
Geologist



MINERALS EXPLORATION RESEARCH CORPORATION
CONSULTANTS AND CONTRACTORS IN MINERAL EXPLORATION, EVALUATION, DEVELOPMENT AND EXPLOITATION

MAIN OFFICE 2120 FORD STREET COLDEN, COLORADO PHONE 937
DISTRICT OFFICE 1103 WHITE STREET GRAND JUNCTION, COLORADO PHONE 241

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5. Evaluate the exploration program and initiate a development drilling program to block out a reserve.
6. Some courthouse work should be done at Telluride to determine the validity of the Telluride claim.

Haverly Hanson

**GEOLOGICAL AND GEOPHYSICAL EVALUATION
OF THE TENGO ORO CLAIMS
COCHETOPA MINING DISTRICT
SAGUACHE COUNTY, COLORADO**

JANUARY 18, 1955

A. LOCATION

The Tingo Oro Claims are located approximately 7 miles Southeast of Gunnison, Colorado in Sections 13 & 14, T48N, R2E.

B. HISTORY

Gold and silver mining were conducted during the early history of the area. Uranium was discovered early in 1954.

C. PURPOSE AND SCOPE OF INVESTIGATIONS

The Tingo Oro claims were located due to an aerial anomaly found in the area. A ground scintillometer survey was conducted, being followed by geological mapping and "lamping" of the claims using a portable ultraviolet lamp.

The purpose of these investigations was to evaluate the possible occurrence of uranium mineralization, and if present, to outline an exploration program.

D. CONCLUSIONS

1. No substantial mineralization was found on the Tingo Oro claims.
2. Scintillometer readings showed no anomalous counts, indicating absence of radioactive minerals.

3. Examination with the ultraviolet light gave negative results.
4. No uranium ore bodies have been found in the Pre-Cambrian of the Cochetopa Mining District.
5. An aerial anomaly can be affected by a ground mass or topography. A clean granite exposure surrounded by a thick mantle of soil usually gives an anomaly to airborne investigation.

E. GEOLOGY

1. Regional Geology

Low intensity mineralization favorable to the occurrence of uranium minerals is found in the Cochetopa Mining District.

This district is an area of Pre-Cambrian gneisses and granites which are overlain by sediments of Jurassic and Cretaceous age. Tertiary quartz latite flows from hill capings in some areas. Intrusive dikes of intermediate and basic composition are also found.

2. Local Geology

a. Petrology

The Tingo Oro claims are in the Pre-Cambrian gneisses and schists with absence of sediments. The schistosity of the gneiss strikes $N25^{\circ} - 45^{\circ}W$ with the dip being essentially vertical except where the dip is 60° to the west.

b. Structure

One main fault is reflected at the base of the west slope of the Pre-Cambrian ridge. The fault cannot be definitely located due to the alluvium at the base of the slope. The general strike of the fault runs parallel to the ridge. One small fault was found in a prospect pit on Tenge Ore No. "2" with the strike being parallel with the ridge with a vertical dip. Gauge clay about 1.0 feet in thickness was observed in the pit.

A flexure disrupting the general strike and dip of schistosity of the gneiss was found in the north corner of Tenge Ore No. "2", but no slickenside, fault gauge, or other indications of faulting were present.

c. Alteration and mineralization

Chloritization was noted in a biotite schist near an old prospect pit on Tenge Ore No. "2". Some koalination was found in prospect pits and float fragments. Weak sericitization was indicated by altered condition of soil near south end of Tenge Ore No. "1".

Mineralization consisted of a very small showing of specular hematite plastered on the joint surfaces of the intermediate gneiss in the north corner of Tenge Ore No. "2".

A weak Pyrite showing was found disseminated in the gneiss also on Tenge Ore No. "2".

No uranium mineralization was observed.

d. Results of Scintillation and Ultraviolet Light investigations.

A ground scintillometer survey was conducted on the two claims with no anomalous readings being observed.

As a check on the scintillometer survey an investigation was made at night using an ultraviolet portable unit. Autunite (a lime uranite) found in the upper leached zone of vein deposits in the area, has a florescence color of light yellow green under ultraviolet light. No flaskes of color were observed on the Tingo Oro claims, indicating the absence of autunite.

F. RECOMMENDATIONS.

The results of the investigations should be considered before further exploration is planned.

Harold W. Blakely

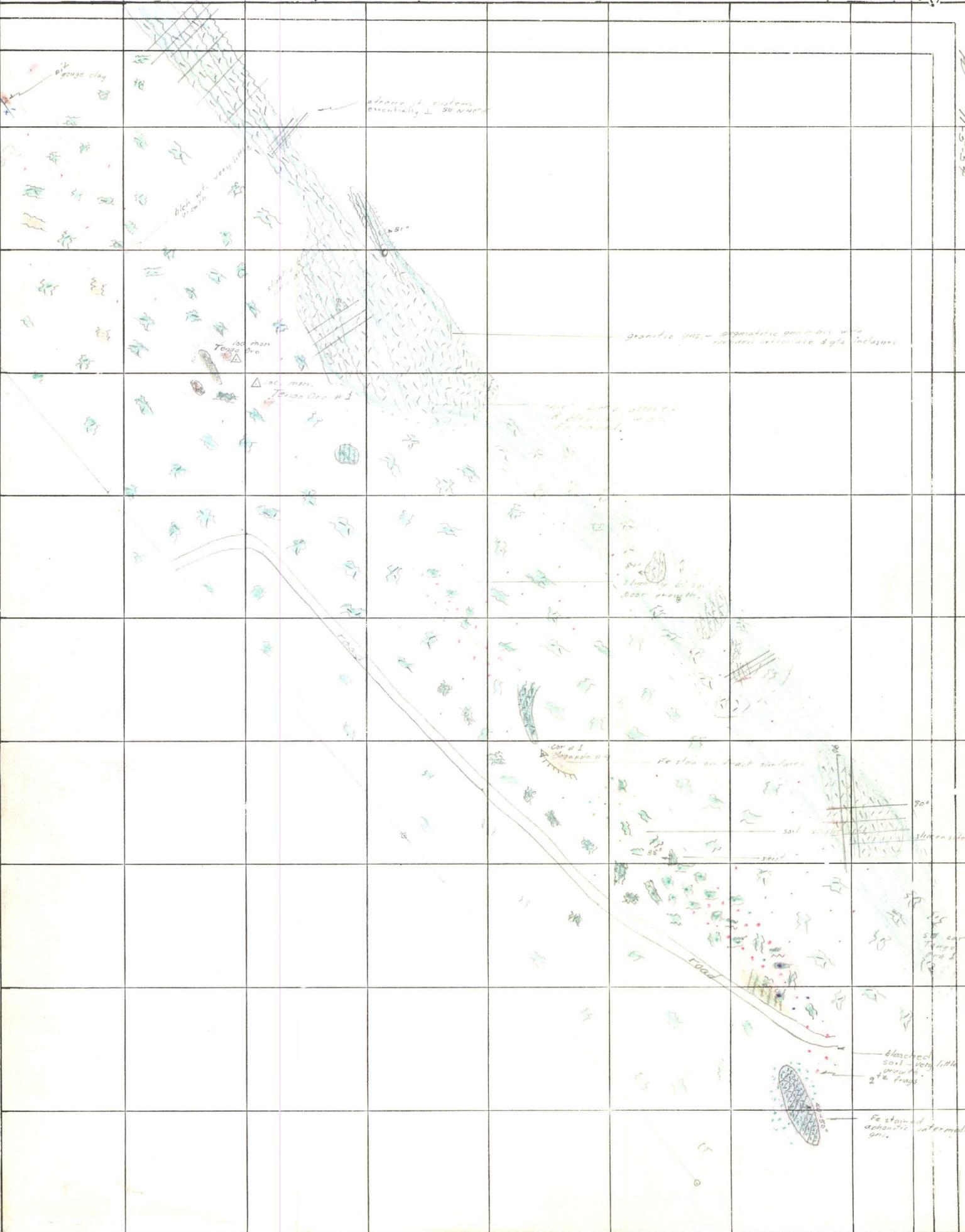
January, 1955

COORDINATE VALUES of initial point in any area determined from lat. and long. conversion tables ("Grid System for Progressive Maps in the United States," Special Pub. No. 59, U.S. Coast and Geodetic Survey. Tables adaptable to entire long. circumference of earth and lat. interval 24°-49° N. and S. hemisphere). Yard values converted to feet and 10 million added to N. value (to eliminate negative numbers at 24° lat.). Value initial point predetermines sheet boundary coordinates, which are evenly divisible by E-W and N-S linear interval of sheet. (Copyright 1952 by K.S. Herness)

1" = 10' 1" = 40' 1" = 50' ENGLISH SCALE BOUNDARY 1" = 200' 1" = 1000' 1" = 2000'

SECTIONAL E.S.:
ENGLISH UNITS
METRIC UNITS
1:1 MILLION FRAC.

SECTIONS _____
PLANE OF SEC. _____
LONG SEC. VEIN _____
TOWNSHIP _____
RANGE _____
SECTION _____
STATE _____
COUNTY _____
DISTRICT _____
COMPANY _____
MINE OR PROP. _____
LEVEL _____
FLOOR _____
SCALE _____
ZONE REF. MER. _____
0 000 RD _____
E _____
EL _____

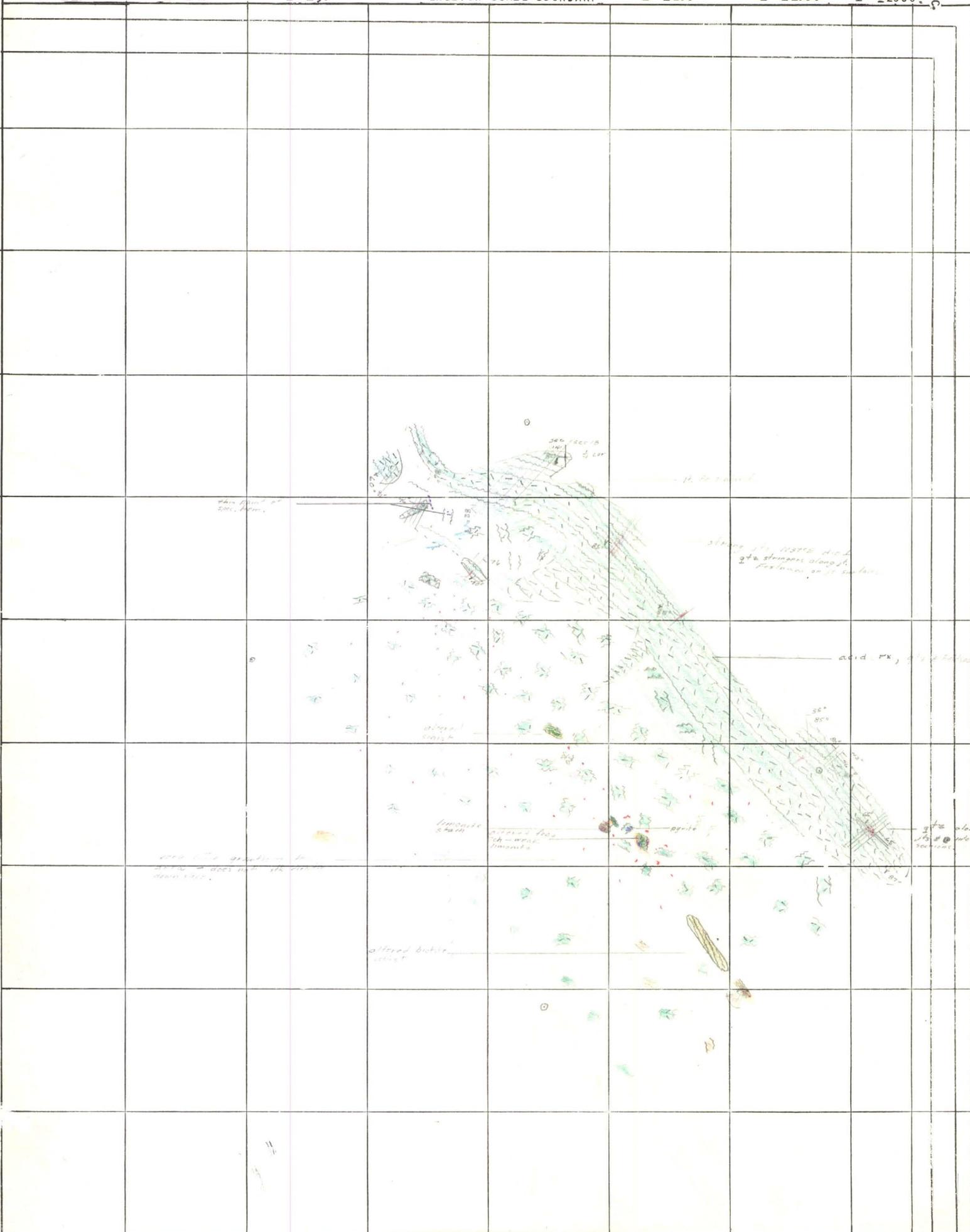


COORDINATE VALUES of initial point in any area determined from lat. and long. conversion tables ("Grid System for Progressive Maps in the United States," Special Pub. No. 59, U. S. Coast and Geodetic Survey. Tables adaptable to entire long. circumference of earth and lat. interval 24°-49° N. and S. hemisphere). Yard values converted to feet and 10 million added to N. value (to eliminate negative numbers at 24° lat.). Value initial point predetermines sheet boundary coordinates, which are evenly divisable by E-W and N-S linear interval of sheet. (Copyright 1952 by K. S. Herness)

BOUNDARIES:
ENGLISH UNITS
METRIC UNITS
1:1 MILLION FRAC.

1" = 10' 1" = 40' 1" = 50' ENGLISH SCALE BOUNDARY 1" = 200' 1" = 1000' 1" = 2000'

SECTIONS _____
PLANE OF SEC. _____
LONG SEC. VEIN _____
TOWNSHIP _____
RANGE _____
SECTION _____
1/4 SEC. _____
STATE Colorado
COUNTY Saguache
DISTRICT _____
COMPANY _____
MINE OR PROP. Terra Ore
LEVEL _____
FLOOR _____
SCALE 1" = 200'
ZONE REF. MER. _____
0 000 RD _____
N
E
EL



The Grants District is located in the high mesa country of northwestern New Mexico, the altitude varying from 6500 feet to 7500 feet above sea level. The mesas are formed by erosion resistant limestones, sandstones and basalts. Most of the vegetation in this area consists of juniper and pinon trees with occasional pine trees at the altitude increases. The mesa tops are generally flat affording little difficulty in the construction of access roads. In many instances these areas can be navigated in a truck without the benefit of roads. Because of the altitude and geographical position, the climate is mild and dry, making for ideal working conditions the year round.

The center of the Poison Canyon area of the Grants district is about 12 to 15 miles north of the town of Grants, New Mexico and about 75 miles west of Albuquerque, New Mexico, from which mining supplies are easily obtained. State Highway #2 (county maintained), leads from Grants through the middle of the Poison Canyon area. Numerous dirt roads lead from Highway #2 to the various mining properties in the district.

All the ore from the Grants district is hauled to the mill operated by Anaconda Copper Corporation, at Bluewater, New Mexico 12 miles west of Grants.

General Geology of Grants District

The Grants Uranium District is situated on the northeast flank of the Zuni uplift ~~sitting~~ the beds a

a general 3 to 5 degree dip to the north-east. Map "C" shows idealized cross section of the stratigraphic section, indicating the mesa and bench capping formations; it also indicates the horizons most favorable in the Grants district for uranium mineralization.

This district is divided into three distinct areas: The Laguna area in which is located Anaconda Copper's famous Jackpile mine, reportedly the largest in the world; the Poison Canyon area which includes Santa Fe's "Poison Canyon" and "Haystack" mines with a reported combined reserve of well over a million tons of ore; and the "Hogback" area, near Gallup, New Mexico. The Brushy Basin and Westwater Canyon members of the Morrison formation are the producing horizons at the Jackpile and Poison Canyon mines. At Haystack the ore is localized in the Todilto limestone.

Ore Controls

In the Brushy Basin and Westwater Canyon members, uranium mineralization is concentrated at the intersections of north-south trending shear zones with north-east southwest trending sedimentary zones. These sedimentary zones are marked thickening of the favorable sandstone horizons. The ore thus formed is of the sandstone-shale variety, being sometimes almost asphaltic in nature due to the high carbon content in some areas. The Poison Canyon, Lee Exploration and Blue Peak Mines (Map "A") all exhibit this type of occurrence. These ore-bodies are generally long and narrow although Santa Fe's Poison Canyon mine does show one area of considerable width (500 feet).

The Todilto limestone ore-bodies generally localize in the crests of northeast-southwest trending drag folds. These folds probably occur as a result of flowage within the limestone, and represent zones of weakness through which the mineral solutions could pass. Within the folds the mineralization is controlled laterally by conjugate shear fractures and vertically by preference of certain horizons within the limestone, due probably to electro-chemical favorability. This type ore-body is generally long (400 feet to 800 feet) and narrow, (10 feet to 30 feet) and is quite often very thick (10 feet to 20 feet).

COLAMER PROPERTY

Christmas Day, Deep Rock and Section 28 Groups (See Map "A").

Christmas Day Group

Five claims covering the E² of the NE⁴ of Section 4, T. 12 N., R. 9 W.

Deep Rock Group

Four claims covering the W² of the SW⁴ of Section 34, T. 13 N., R. 9W.

Section 28 Group

Eleven claims covering the E³ of E² of Section 28 T. 13 N., R. 9 W.

These three groups are situated on a mesa the top of which is easily navigable by jeep, truck or car and is accessible by a maintained county roads.

This mesa is capped by Todilto limestone on the south in the vicinity of Section 4 and on the north at

Section 28 by Bluff Sandstone. The objective horizon in these groups in the Todilto since the Brushy Basin and Westwater Canyon members have been eroded away in this area.

Colamer Corporation is now actively engaged in producing uranium ore from the Christmas Day #1 ore-body (Map "B"). In the exploration for and the development of this ore-body, certain geologic facts were discovered which have proved quite valuable for determining probable areas of ore localization. Following are conclusions based on these facts.

The ore-bodies of this area are very characteristic structurally. They are long and narrow, the long axes showing a definite northeast-southwest trend. A definite "rhythm" of occurrence of these parallel folds can be shown. In the vicinity of Section 4, this frequency is about 500 to 600 feet apart. (Map "A"). Within the trends a rhythm of occurrence of the commercial ore zones has been discovered. These are undoubtedly controlled by the conjugate and extension fracture patterns resulting from the orogeny of the Zuni Uplift.

The most important tool yet found by this writer is the evidence of hydrothermal alteration of the limestone in the immediate area of the ore-body. In tracing these alteration patterns it became evident that although the commercial ore may be intermittent, the alteration is still present. A pattern of drilling was developed to trace these zones and follow them to commercial mineralization.

This method was used to a great degree of success on Christmas Day #1 ore-body. This zone can be traced for commercial ore was encountered in the last four holes drilled at the north end of Phil Claim, (Map "B"). Because of the terrain, drilling was stopped pending construction of access roads.

Section 8, 10 and 18 Groups

Section 8 group- all of Section 8 T. 13 N., R. 9 W., except the east 800 feet.

All of Section 10, T. 13 N., R. 9 W.

Section 18 Group-3 claims in southwest corner of Section 18, T. 13 N., R. 9 W.

All of the claims in these groups are easily accessible by passenger car the year round. Again, the typical flat, mesa-top terrain exists here, with a coverage of juniper and pinon trees. Drilling road and access road problems in this area are nil. The State Highway #3 passes within one mile of Section 8 and a half mile from Section 10. Dirt roads lead from the highway directly on to the properties.

The claims of these groups are all situated on top of a mesa capped with Dakota sandstone, making the Brushy Basin and Westwater Canyon members the objective horizons. These beds are prolific in the Jack-pile, Poison Canyon and Lea Exploration mines. (Map "A"). These mines show an obvious ore control of shear faults intersecting thickening sands in the favorable horizons. The long axes of the zones of sand thickening, which may be ancient stream channels, have a definite northeast-southwest trend swinging to directly east-west in some areas. The shear zones trend almost due north-south

Detailed geologic mapping of this area indicates probable intersections on Sections 8 and 10. In the center of State Claim #1 in the southwest corner of Section 8 in the approximate area of an above mentioned intersection, a Mayhew Rotary Rig hole was drilled to a depth of 204 feet. At 197 feet, four feet of uranium mineralization was encountered. The hole was drilled for assessment work and geologic information in March 1954. No further work has been done in this area since that time. In July 1954 one hole was drilled by Colamer Corporation in the center of each of the three claims in Section 18 for assessment work and geologic information. The holes on the two western-most claims showed considerable thickness of sandstone, but no actual uranium mineralization. On the eastern-most claim, 2 feet of 0.08% U_3O_8 was encountered in a very carbonaceous sandstone at a depth of 178 feet.

HISTORY

Geologists of Colamer Corporation arrived in Grants, New Mexico, in March 1954, to conduct a geological investigation of the district to determine the extent and size of possible mineralized areas and the availability of property. Within two and one half months the investigation was completed and the foregoing described property was obtained. More geologic mapping and exploration drilling was conducted which resulted in the discovery and development of the Christmas Day #1 ore-body. Details of ore reserve calculations are attached at the end of

this report. Stripping (average; 22 feet of overburden) and production drilling operations were begun in November. At this writing the project of opening up the mine is almost completed; the production goal, set at from 1000 to 1200 tons per month, can easily be reached by utilizing the versatility in operations offered by the development of three different working faces. A plan of ore blending has been set up by the engineering department to take advantage of the low grade ores. Approximately \$80,000 has been invested in heavy stripping equipment and lighter production tools; this includes a caterpillar D-8 and dozer, Model 70 caterpillar scraper, caterpillar D-4 and hydraulic loader, wagon drill, jack hammers, complete welding equipment, 365 Jaeger Compressor and numerous smaller equipment and maintenance tools.

THE FOLLOWING CALCULATIONS OF ORE RESERVES OF CHRISTMAS DAY #1 IN SECTION 4, T. 12 N., R. 9 W., VALENCIA COUNTY, NEW MEXICO, ORE BASED ON CHEMICAL ASSAYS OF HOLE CUTTING AND CALIBRATED RADIOMETRIC PROBE READINGS:

BLOCK "A"

<u>Section</u>	<u>Area Ft.</u>	<u>Thickness</u>	<u>Grade</u>	<u>Tonnage</u>
1	5,938	8.4'	0.263%	3,306
2	33,037	4.2'	0.251%	12,976
3	2,938	2.6'	0.185%	664
<u>Total</u>				16,946

Weighted Average Grade for Block "A"

<u>Section</u>	<u>Grade X Tonnage</u>
1	869.48
2	3,256.98
3	<u>111.84</u>
<u>Total</u>	4,238.30
<u>Tt</u>	<u>16,946</u>

Gave = 0.249% U₃O₈
 Gave = (G X T)

Richard

<u>Section</u>	<u>Area</u>	<u>Thickness</u>	<u>Grade</u>	<u>Tonnage</u>
1	6192 ft ²	3.4'	0.24%	1754
2	9491	6.6	0.31	5221
3	4458	4.3	0.27	1598
4	3949	10.0	0.46	3290
5	3159	2.1	0.19	553
<u>Total</u>				<u>12,426</u>

WEIGHTED AVERAGE GRADE FOR
BLOCK "B"

<u>Section</u>	<u>Grade X Tonnage</u>
1	40,000
2	161,200
3	43,200
4	151,800
5	11,000
<u>Total</u>	<u>408,000</u>

$$G \text{ Average} = \frac{(G \times T)_t}{(T)_t} = \frac{408,000}{12,426}$$

$$G \text{ Average} = 0.329\% \text{ U}_3\text{O}_8$$

TOTAL TONNAGE FOR CHRISTMAS DAY NO. 1

BLOCK "A" : 16,046 Tons @ 0.249% U₃O₈

BLOCK "B" : 12,426 Tons @ 0.329% U₃O₈

CALCULATION OF ORE RESERVES ON
 CHRISTMAS DAY AND PHIL CLAIMS
 Section 4, T. 12N, R. 9W., McKinley Co., N. M.
 BLOCK "A"

Hole Number	Thickness of Ore	Grade U ₃ O ₈
21	3'	0.18%
22	7'	0.29%*
23	11'	0.27%
24	10'	0.33%
25	17'	0.31%
26	12'	0.18%
27	5'	0.22%
28	2'	0.14%
29	6½'	0.27%
30	14'	0.23%*
31	10'	0.26%
32	8'	0.23%
33	2½'	0.11%*
34	2'	0.21%
35	2½'	0.25%
36	3'	0.19%
37	4'	0.21%
38	3'	0.20%
39	2½'	0.16%
40	3'	0.19%*
41	3'	0.24%
42	5½'	0.24%*
43	4'	0.27%
44	5'	0.34%
45	6'	0.38%*
46	2'	0.33%
47	4½'	0.30%
48	4'	0.31%
49	5'	0.17%
50	11'	0.26%*
51	5'	0.29%
52	8'	0.11%*
53	3'	0.44%
54	5'	0.76%*
55	2'	0.55%
56	2'	0.20%
57	2½'	0.19%
58	3'	0.10%
59	2'	0.16%*
60	3'	0.47%
61	5'	0.32%
62	5½'	0.38%*
63	4'	0.24%
64	4½'	0.34%
65	3'	0.15%*
66	3'	0.27%*
67	2'	0.11%
71	6'	0.39%

* Chemical assays of hole cuttings

CALCULATION OF ORE RESERVES ON CHRISTMAS DAY AND
 PHIL CLAIMS SEC 4, T 12 N, R 9 W McKinley Co., N. Mex.
 BLOCK "B"

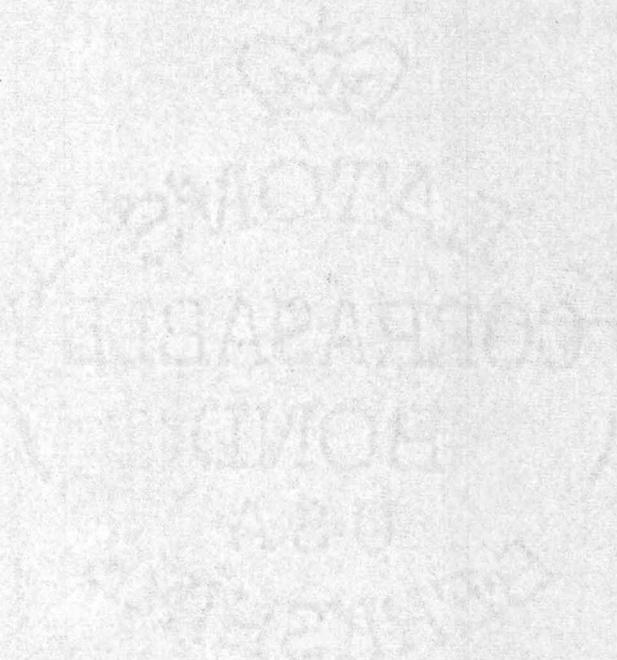
HOLE NO.	THICKNESS	GRADE U_3O_8
1.	2'	0.20%*
2.	3'	0.18%
3.	2½'	0.21%*
4.	1'	0.16%
5.	10'	0.50%*
6.	10'	0.41%*
7.	4½'	0.32%
8.	4'	0.18%
9.	5'	0.41%
10.	3'	0.15%*
11.	5'	0.16%
12.	4'	0.23%*
13.	8'	0.38%*
14.	6'	0.18%
15.	5'	0.22%*
16.	10½'	0.39%*
17.	4½'	0.22%
18.	3'	0.25%*
19.	3½'	0.28%
20.	2½'	0.21%

Chemical assays of hole cuttings *

PRELIMINARY GEOLOGICAL REPORT
FOR PARKER MINING COMPANY

BESS GROUP AND
CANE CREEK ANTICLINE GROUPS

MAY 28, 1955



INTRODUCTION

The author accompanied by Mr. Parker examined the claims or the proximity of the claims on Tuesday, May 18, 1955. The Bess Group was examined first. This area was familiar to the author from past examination in the area and one year's experience on the Radium Group nearby. The Hatch Point claims were examined last. A trip was made down Cane Creek. Outcrops within the canyon were examined in order to give an idea of what might be expected on the claims back from the rim exposures. Little would have been gained by examining the claim locations up on the Kayenta and Wingate formations. The Big Flat claims are located over a mile from rim exposures and since the Chief property nearby is very familiar to the author, no examination was made on the north side of the Colorado River.

BESS GROUP

LOCATION

The Bess Group includes 29 unpatented mining claims located in Sections 17, 18, 19, 20 of T31S, R26E, San Juan County, Utah.

GENERAL AND ECONOMIC GEOLOGY

The Bess Group is staked, for the most part, in the Brushy Basin formation with a small area showing upper rim Salt Wash exposures. The closest large production from the area is from the Waterfall Group located from 3 to 4 miles to the west of this group. The Waterfall Group production has all been from the upper or third rim. The remains of an old vanadium mill can be seen on the western end of the Waterfall Group.

Several of the largest ore bodies on the Plateau are located in the Chinle and Shinarump formations on the west side of the Lisbon fault. These formations are approximately 1500 feet under the surface on the Bess Group but the economics of the future could prove them to be valuable.

The Salt Wash is approximately 200 feet thick in this area. Little ore has been mined from the lower horizons in the area; however it would be advisable to drill through all three lenses or rims with every fifth hole. If favorable sandstones are encountered at depth more deep holes may be required.

Drilling depths vary from 100 to 400 feet; the average will be approximately 300 feet. The average depth for exploration drilling is increasing from year to year. Three hundred feet in favorable areas is not considered to be deep drilling at this time.

STRUCTURAL GEOLOGY

The Bess Group is located to the south of the Lisbon fault. Several small fault blocks or grabens occur between the property and the main fault.

McIntyre Canyon begins in the area and runs easterly to the Dolores River. This drainage was also formed by faulting.

CONCLUSION

The Bess Group is located in an area which is producing ore from two horizons. At this time the only formation economically feasible to explore is the Salt Wash sandstone. The ore bodies in this member have been in the 1000 to 10,000 ton class. The ore being produced in the area is of average grade in uranium and assays 2.00% or more in vanadium oxide.

On a small part of the claims, the upper Salt Wash is exposed. The rest of the property is covered by Brushy Basin. Drilling depths vary from 100 to 400 feet.

The property has definite possibilities.

CANE CREEK ANTICLINE GROUPS

LOCATION

The Fehr Group includes 50 unpatented mining claims. They are located in T26S, R19E, Sections 1, 2, 11, 12, 13, 14. The Matt Group is contiguous with the Fehr Group on the north. The Group includes Matt 1-80 inclusive and 94-106 inclusive. They are located in T26S, R19E, Sections 13, 14, 23, 24, 25, 26. The Fehr and Matt Groups are in Grand County, Utah.

The Groups on the south side of the Colorado River include the H.J. 1-10; Ian 1-102; Debbie 1-18, 20, 22, 24; Deborah 1-2 and one group with no name on available maps with nos. 1-28. All claims are located in T27S, R21E, Sections 15, 16, 21, 22, 23, 26, 27, 28, 33, and 34, in San Juan County, Utah.

GENERAL GEOLOGY

A series of northwesterly-striking salt anticlines (probably the result of orogeny and tectonism related to Tertiary intrusives) extend over a wide area in Western Colorado and Eastern Utah. Tertiary intrusive orogenic centers are the LaSal, Henry and Abajo Mountains.

Uranium and vanadium deposits occur in certain hydrothermally altered haloes around these intrusive and base-metal areas; for example, numerous uranium and vanadium mines occur around the Cashin copper deposit on the western flank of the Paradox anticline.

The U.S.G.S., after years of research, have delineated four belts of mineralization. One such belt is called the Uravan Mineral Belt. No names have been given the other three belts. The Lisbon fault area and the Cane Creek anticline area are both located on a mineralized belt. The Lisbon area has been developed; the Cane Creek area because of inaccessibility has not.

STRUCTURAL GEOLOGY

Both groups of claims are located on the Cane Creek anticline. Positive structures are favorable for both petroleum and ore. Structural positives which produce magnetic negatives are especially favorable for ore localization. The destruction of magnetite in the basement rocks is caused by hydrothermal solutions, which are associated with mineralization. Several small faults strike parallel to the apex of the anticline. One major fault is normal to the anticline.

STRATIGRAPHY (See stratigraphic columns)

The term Mossback is given to the lower bleached section of the Chinle formation. Much controversy arises over the section immediately above the Moenkopi. It is doubtful if the Shin-arump is present at all. If so it is unlike the conglomerate at White Canyon and Monument Valley, and is from one to four feet thick. Channeling occurs in the area but is not too common. The channels are broad and relatively thin and resemble Salt Wash lenses rather than the deep depressions in the Moenkopi seen farther west.

ORE DEPOSITS

Ore occurs in at least two formations in the area. The most prolific producing horizon is the Mossback or lower Chinle. Small tonnages have been produced from fault zones in the Cutler formation. The mineralization is accompanied by

bleaching and some silicification.

The Mossback is probably the only formation of interest to the Parker Mining Company. Several channels were noted in the Can Springs canyon. Several rim exposures showed numerous fossil logs and tan to brown iron staining. In an examination of the Chief Uranium property, ore was found only where fossil trees were enclosed in a tan sandstone or conglomerate. The channels mapped on the Chief property disclosed up to 12 feet of ore, the average being three to four feet. One zone of mineralization was continuous for over two hundred feet. Orebodies of this size present a large target for exploration drilling.

The ore was not the usual rooseelite-carnotite type. Very few yellow mineral were found. The ore is associated with the carbonaceous material and can be determined only with radiation detection instruments, since some of the carbon is barren. Sulfides are associated with the ore. See claim map for location of Chief property and Parker Mining Company property.

PRODUCTION

This area was known to be mineralized for several years; however, claim staking, exploration, and development have progressed only since the Steen discovery. Several outcrops are being developed but no large Shinarump or Chinle orebodies have been found. Drilling depths are prohibitive at this time, but as new geological and geophysical techniques are developed, large orebodies will be found in the area. The Snyder property located on a fault or fissure in the Gutler formation is producing ore.

The Cane Creek anticline is known to contain petroleum products. The mineralization may be localized in those fractures which contained hydrocarbons. Bleaching of the red beds occurs near the mineralized zones. No evidence of bleaching or mineralization was noted in the overlying Wingate and Chinle.

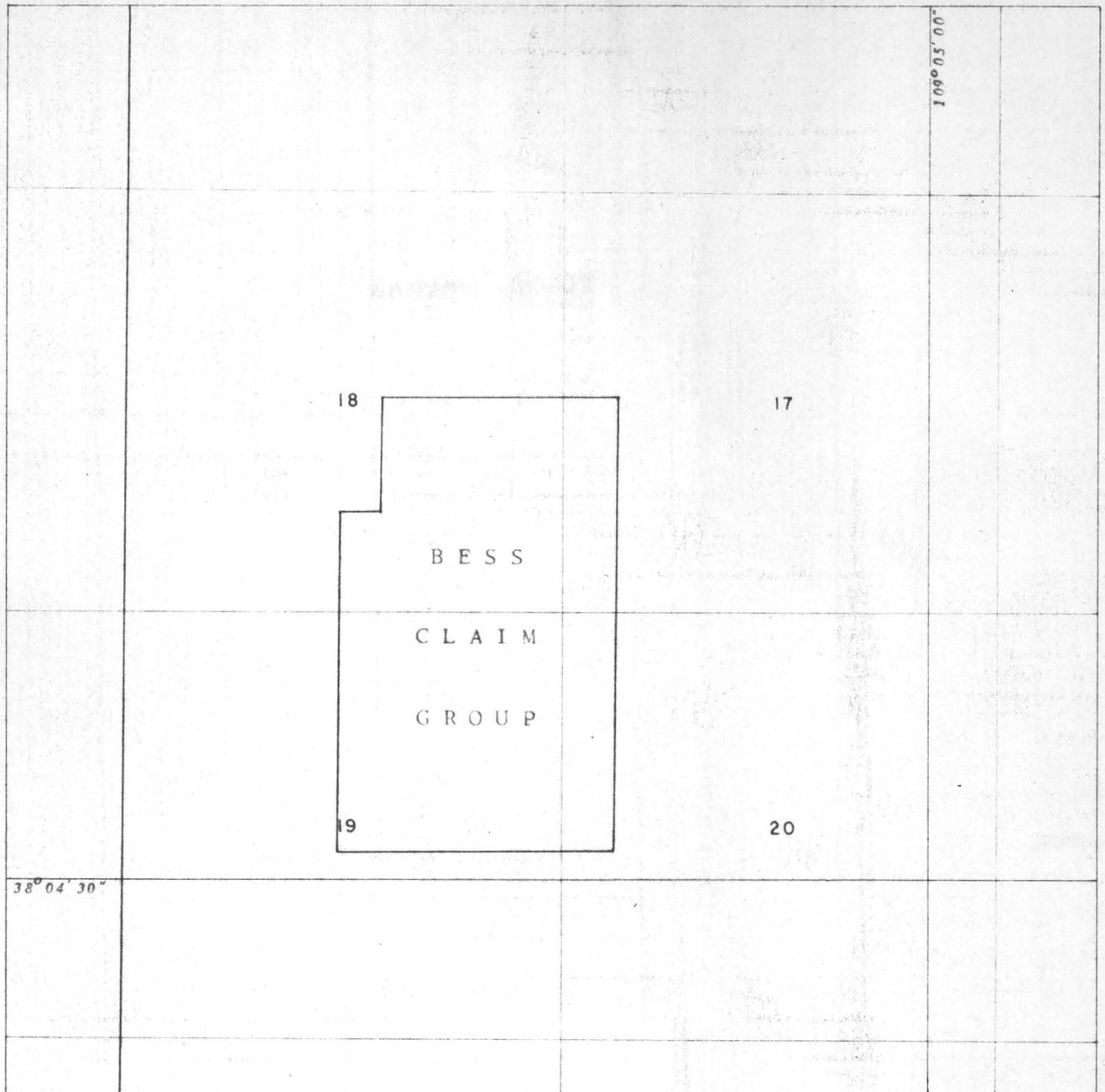
CONCLUSION

Both group of claims lie on the Cane Creek anticline. This is a comparatively new uranium province. Very little production has come from the area in the two or three years that it has become of interest. Several mines are operating; however, drilling depths are uneconomical with present methods of ore finding and development is proceeding with little or no planning.

Channel outcrops up to 12 feet thick have been seen in the area by this author and it is felt that work this summer will disclose several large orebodies. One company has shipped seven loads of ore which assayed over 5% U_3O_8 . A mineralized tree was found during a road building program.

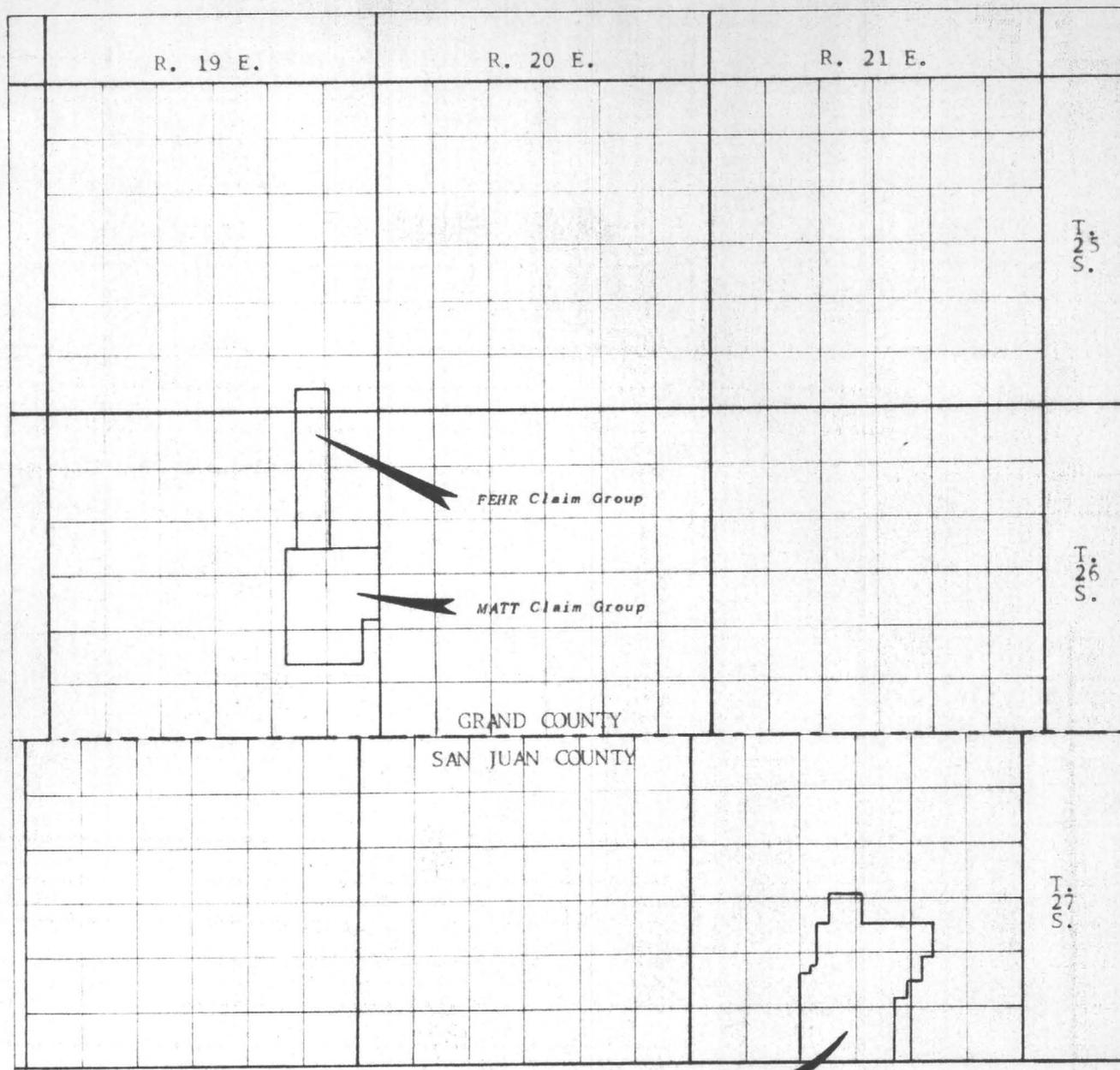
The claims are located in a well mineralized area. The true value of property in the district however, cannot be determined until further development of rim exposures has been done.

Fred C. Mohne,
Consulting Geologist



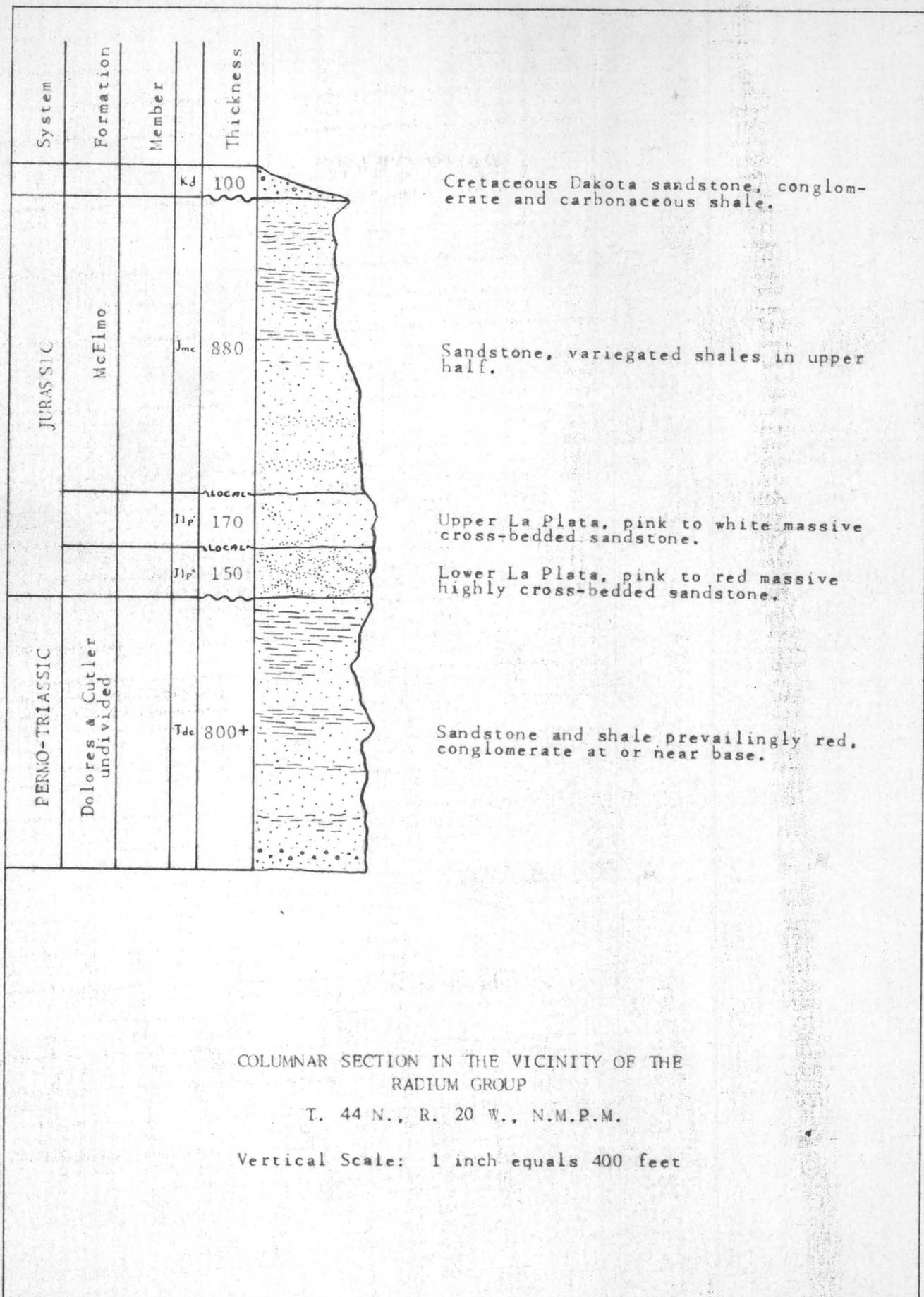
OUTLINE OF THE BESS CLAIM GROUP
T. 31 S., R. 26 E., S.L.M.B.
San Juan County, Utah

Scale 1:24,000



MAP SHOWING THE LOCATION OF CERTAIN CLAIM GROUPS
GRAND AND SAN JUAN COUNTIES, UTAH

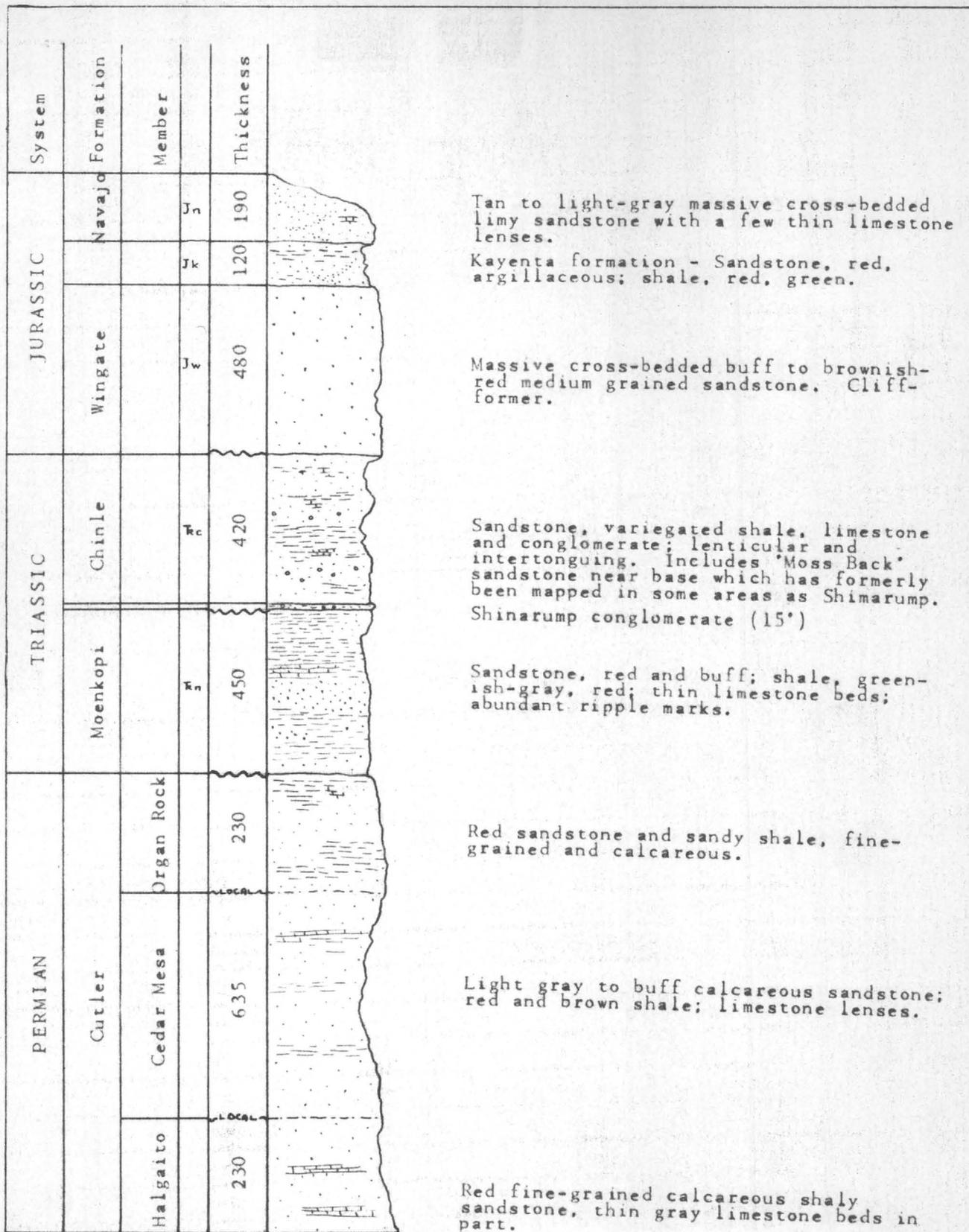
Scale: 1 inch equals 3 miles



COLUMNAR SECTION IN THE VICINITY OF THE RADIUM GROUP

T. 44 N., R. 20 W., N.M.P.M.

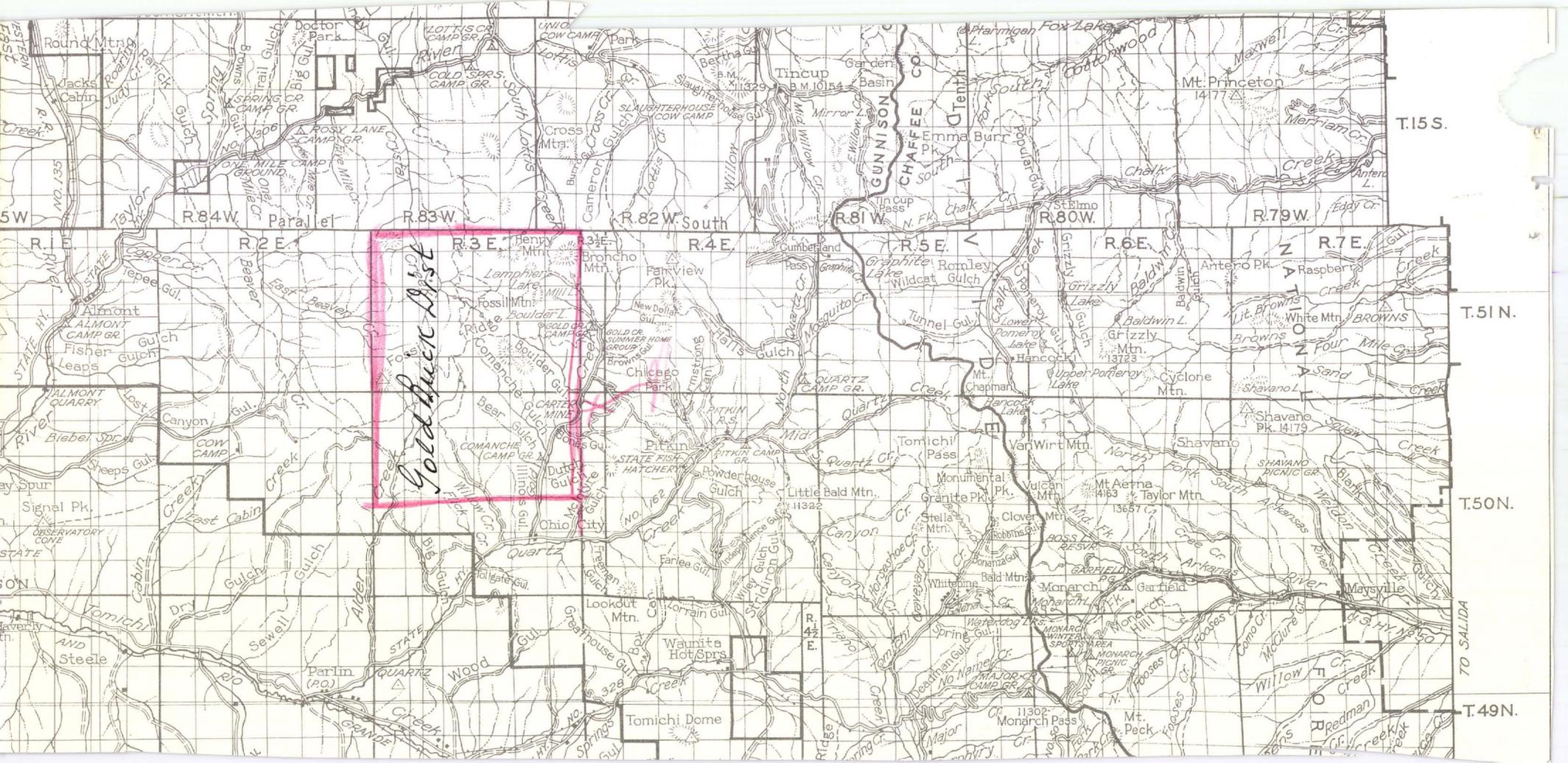
Vertical Scale: 1 inch equals 400 feet



COLUMNAR SECTION IN THE VICINITY OF THE
WATERFALL GROUP

T. 31 S., R. 25 E., S.L.M.B.

Vertical Scale: 1 inch equals 400 feet



Goldfield Dist

T.15.S.

T.51.N.

T.50.N.

T.49.N.

TO SALIDA

5W

R.84W

R.83W

R.82W South

R.81W

R.80W

R.79W

R.1E

R.2E

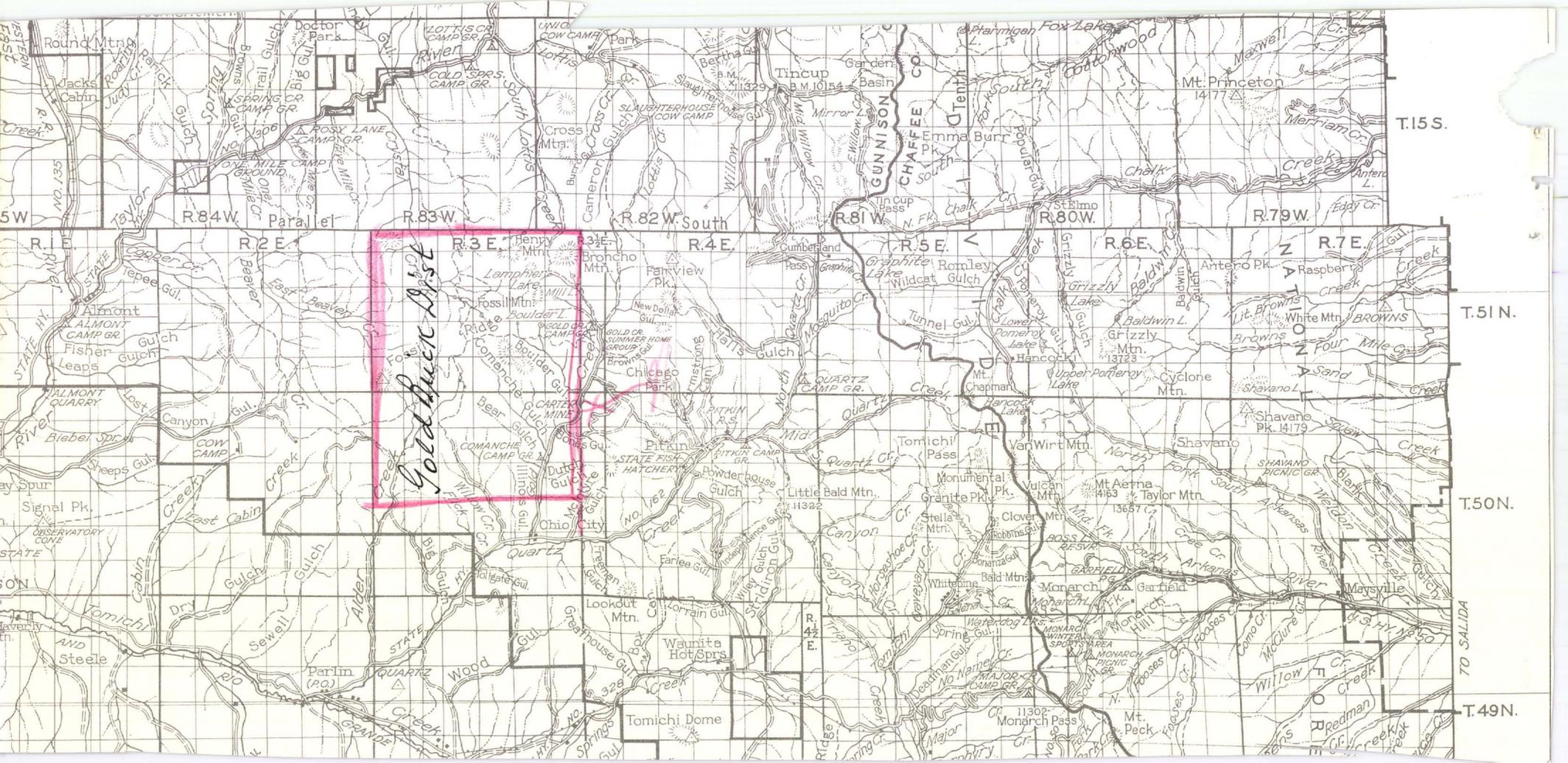
R.3E

R.4E

R.5E

R.6E

R.7E



Goldfield Dist

T.15.S.

T.51.N.

T.50.N.

T.49.N.

TO SALIDA

5W

R.84W

R.83W

R.82W South

R.81W

R.80W

R.79W

R.1E

R.2E

R.3E

R.4E

R.5E

R.6E

R.7E

Office of
GUNNISON COUNTY CLERK AND RECORDER
Ethel A. Sisson, County Clerk
Gunnison, Colorado

May 22, 1956.

Mr. Fred C. Hohne,
208-209 Uranium Bldg.,
Grand Junction, Colo.

Dear Fred:-

There were a total of 146 claims on the December Tax Sale, December, 1955, delinquent taxes for the year 1954. 9 of these claims have been bought up by a man named Wesley Bailey, a local chap, leaving 137. All of these 146 claims assessed to the Kanarado Mining and Development Co., a company promoted by one Charlie Vaschus whom you probably know. These claims are in the Gold Brick District, Sections 1 and 2, Twp. 50 N. R. 3 E. and in Sections 34 and 35 and maybe 36, Twp. 51 N. R. 3 E. Don't know about that Section 36, School Section. It may be open for lease. As far as the Kanarado outfit is concerned, they don't seem to be doing anything about it. I think they just ran out of money, if they had any in the first place. Vashus is working for the Lithium Co., up around the Brown Derby. The claims referred to are up Gold Creek, North of Ohio City. Should be something on that many claims, and might be worth your time to investigate them a little. The taxes run about \$14.50 per claim, plus interest. Might be able to make a deal with that Kanarado outfit on your own terms. Wish you would look them over anyway. Had a hard rain yesterday and looks as if it is going to do it again today. Was glad to have you and your family come to the old cabins. You know the place now, come any time, you are very welcome.

Sincerely,

Edgar

It would be three years from December, 1955, or 1958 before one could get a Tax Deed if he bought these claims up for taxes, and the Kanarado didn't redeem them. That is why I mentioned about making a deal with the Kanarado people.

PRELIMINARY GEOLOGIC REPORT

NOWLAND GUANO CAVE Cochise County, Arizona

INTRODUCTION

The purpose of this investigation was to determine the guano reserve, chemical content, and method of extraction. Ten man days were spent surveying, sampling, and exploring the cave. A Brunton and tape survey of the surface and cave was made by Norman Vote and Jim Standard. Trenching and sampling was done by Mike Hill, Gene Taylor and Fred Hohne.

Location

The property lies 21 miles south of San Simon, Arizona in the San Carlos Mountains.

General Description

The guano cave lies on patented land owned by a Mr. Nowland. The cave has been formed in a hogback of limestone.

EXAMINATION

The examination on the Nowland guano property included surveying, exploring, and sampling.

The underground survey was made by Brunton and chain. Control for contouring the surface was made with transit and stadia. The survey was made to determine the possibility of a more feasible access to the main deposit of guano. Limited amounts of guano could be taken out present openings in the limestone; however, a large daily production will necessitate a drift or inclined shaft.

Exploration disclosed a zone of galleries and caves which is approximately 80 feet in width. The long direction of the cave is parallel to the strike of the limestone beds, and approximately 300 feet of cave along this strike have been examined. Numerous small openings off the main room indicate the possibility of more large rooms. One or more small solution cavities, not previously examined, were found during each trip to the main room.

Samples were taken from pits and trenches dug into the guano. The deepest pit was approximately 7 feet. Pipes were driven into the floor to test the depth of guano. Depth of holes varied greatly because of limestone debris, and sheets of travertine in the guano.

RESERVE CALCULATION

Chemical assays have shown that guano which is saturated with water is much lower in the fertilizer minerals than the dry material. For this reason two reserve figures will be given: One for dry high-grade material, and one for the wet leached material.

The reserve calculations are as follows: (Areas A, B, and C are shown on Fig. 3.)

Area A

150 ft long x 30 ft wide x 10 ft deep =
Tonnage factor 26 ft³/ton =
1730 tons (wet material).

Area B

90 ft long x 13 ft wide (average) x 4 ft deep =
Tonnage factor 26 ft³/ton =
180 tons (wet material).

Area C

100 ft long x 8 ft wide x 4 ft deep =
Tonnage factor 32 ft³/ton =
100 tons (dry material).

Total guano, dry and wet, 2,010 tons.

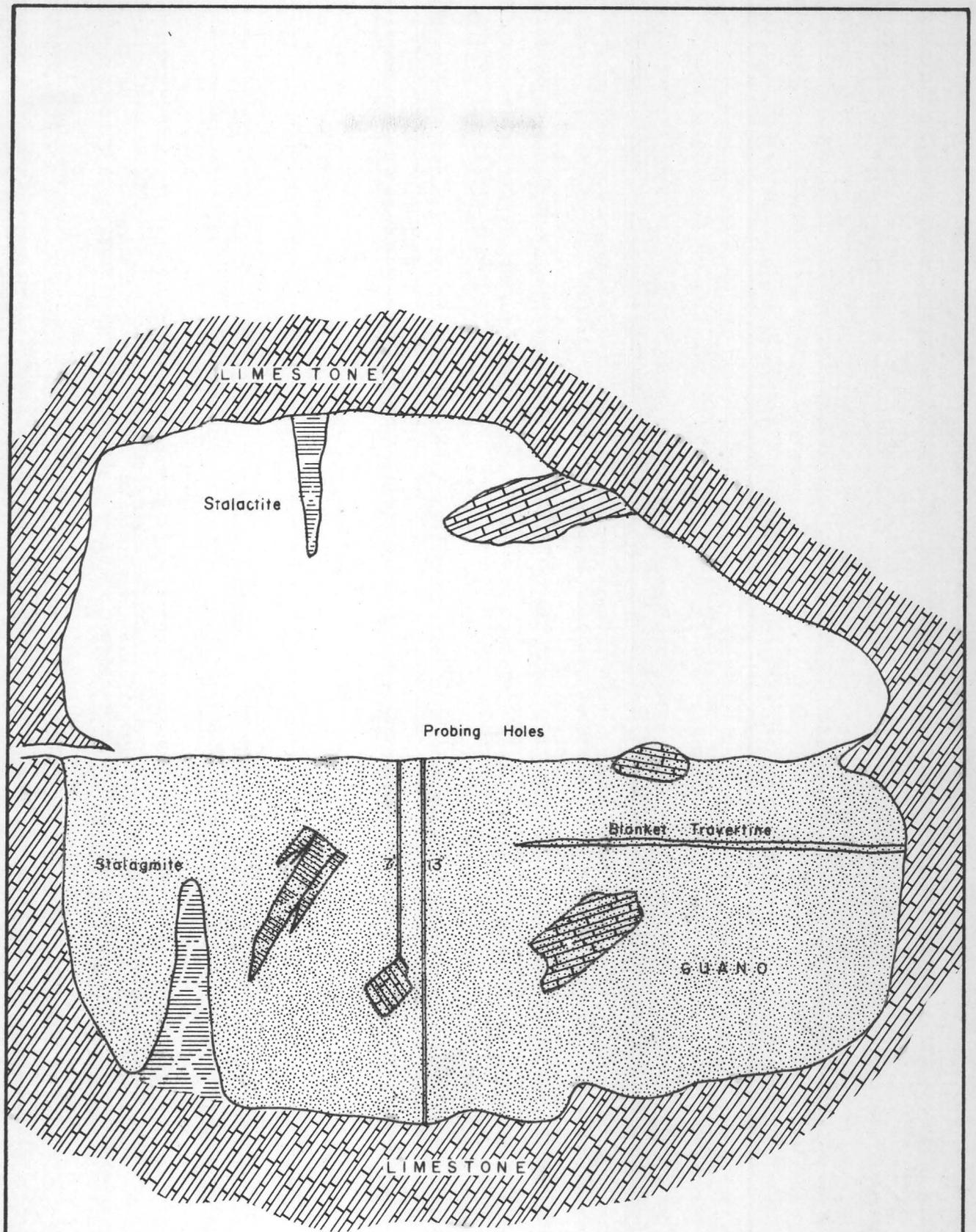
Several other small galleries were found for which no reserves are claimed. The total aggregate tonnage may increase the above figures by 10%.

PRODUCTION METHODS

Access to the major guano reserve will be determined by the demand for the product. The initial market survey indicates a market for approximately 100 tons per month. Access through present solution channels in the limestone will suffice for a production of 100 tons per month.

If, however, there is a demand for more tonnage, an inclined shaft will be needed. The length of the shaft will be approximately 100 feet at an angle of 45 degrees from the horizontal. The cost of the shaft will be approximately \$15.00 per foot.

No development work is necessary if a production of 200 tons per month is anticipated. Guano in the upper chambers can be mined with a wheelbarrow and shovel. Material from the largest deposit will



SECTION A—A'

of

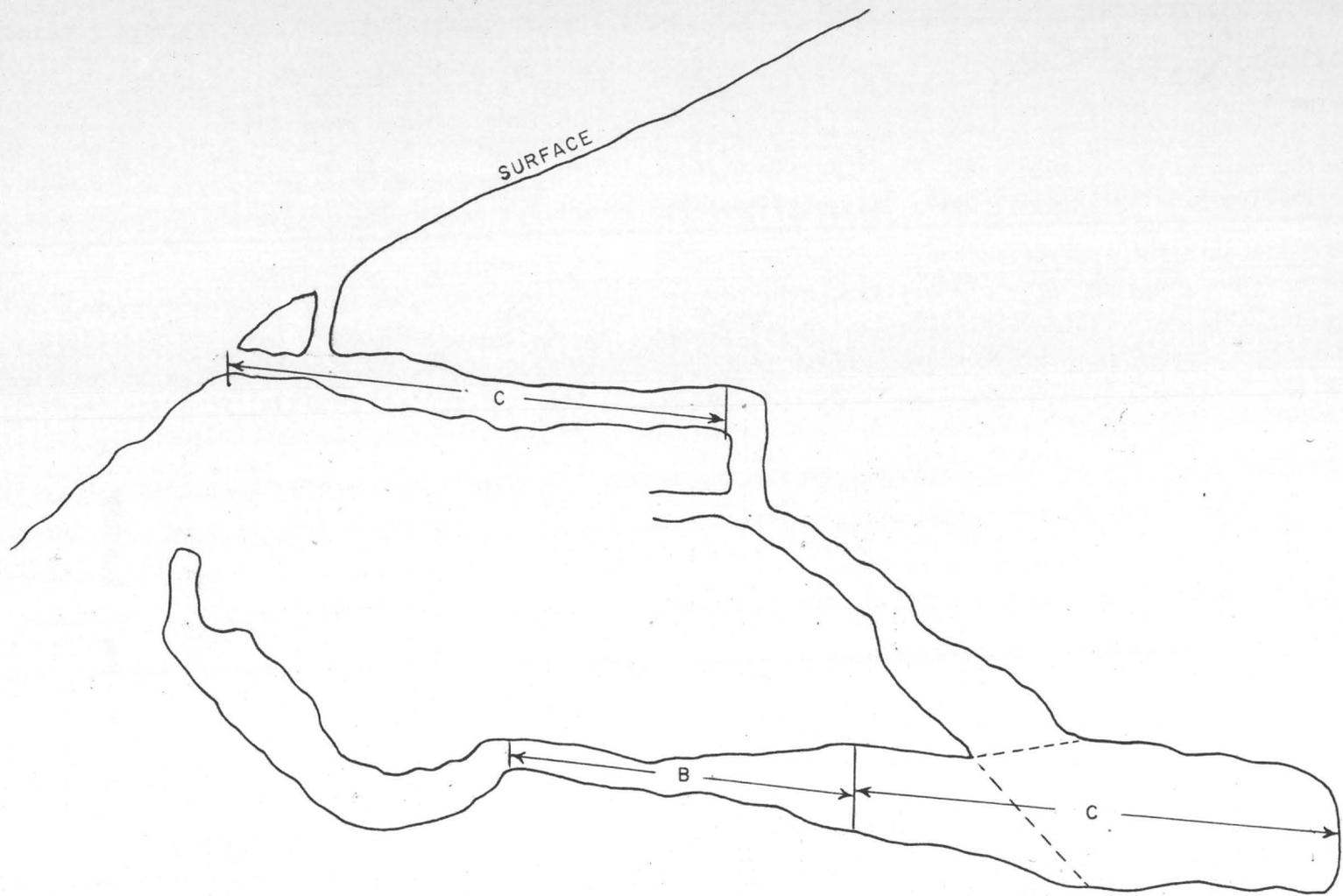
NOWLAND GUANO CAVE

Alta Uranium, Inc.; Cochise County, Arizona

Scale: 1" = 5'

Nov., 1956

Figure

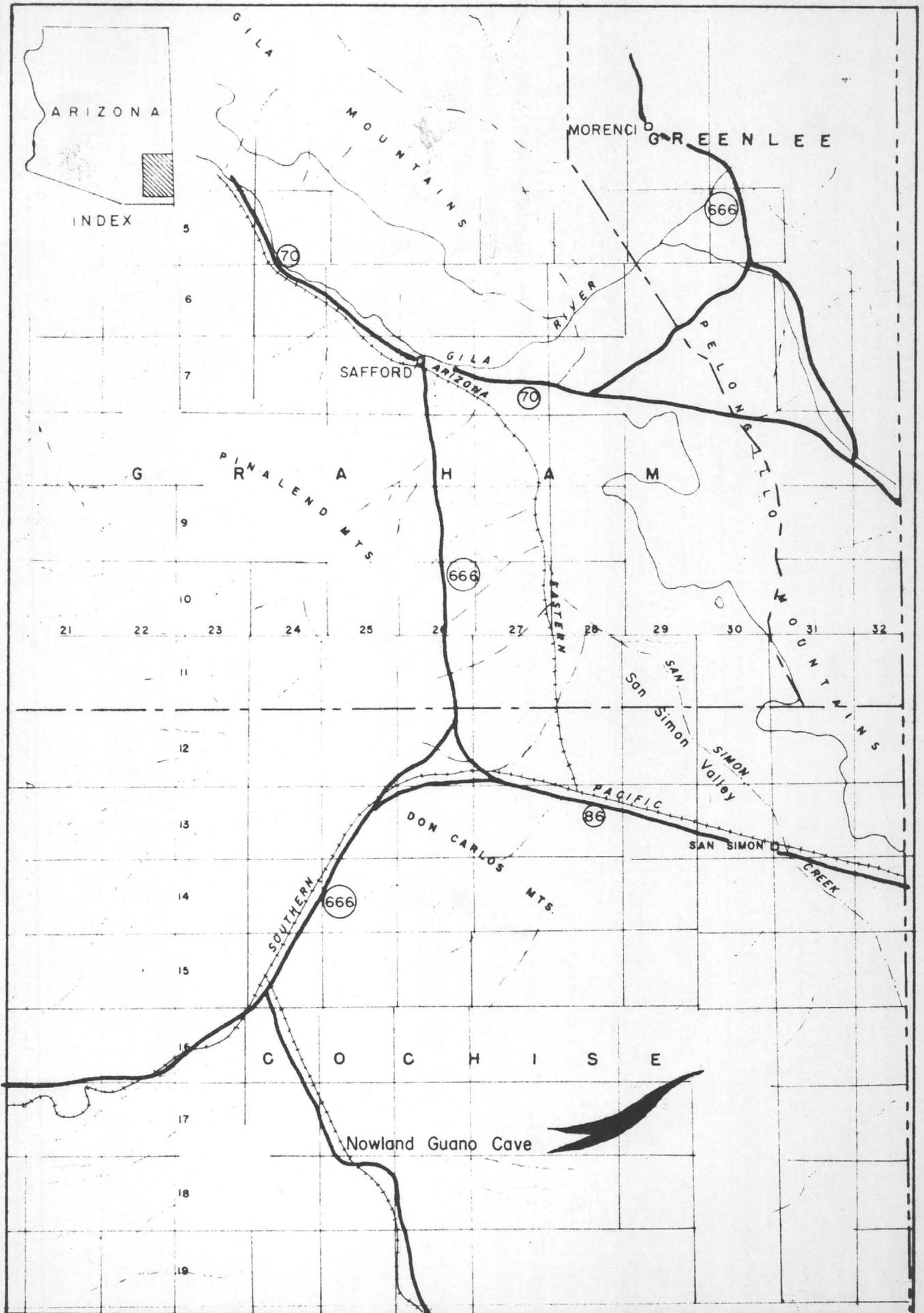


LONGITUDINAL SECTION
of
NOWLAND GUANO CAVE

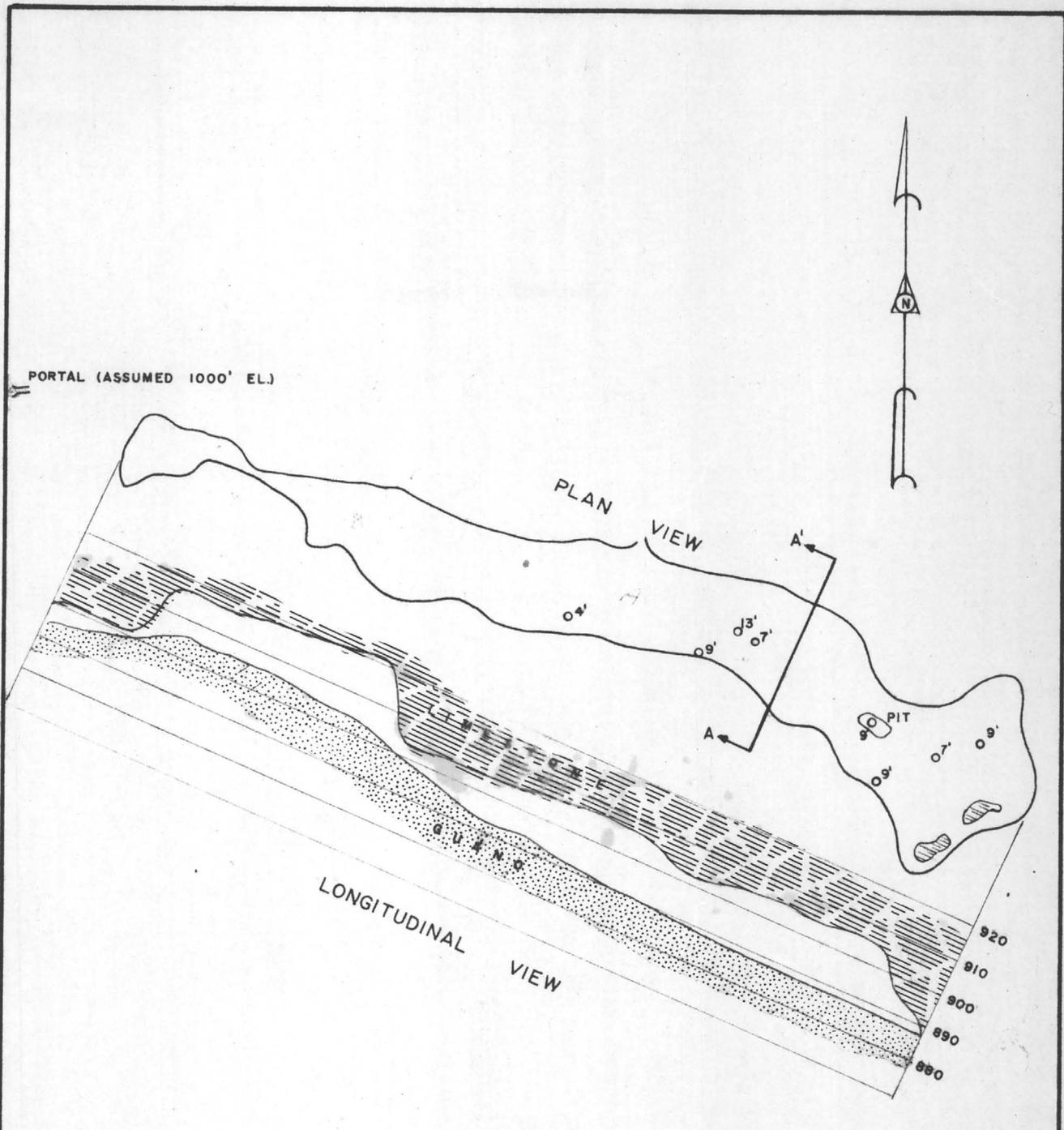
Scale 1" = 40'

Figure No. 3

Dec, 1956



SCALE: 1/760,000



LONGITUDINAL & PLAN VIEWS
of

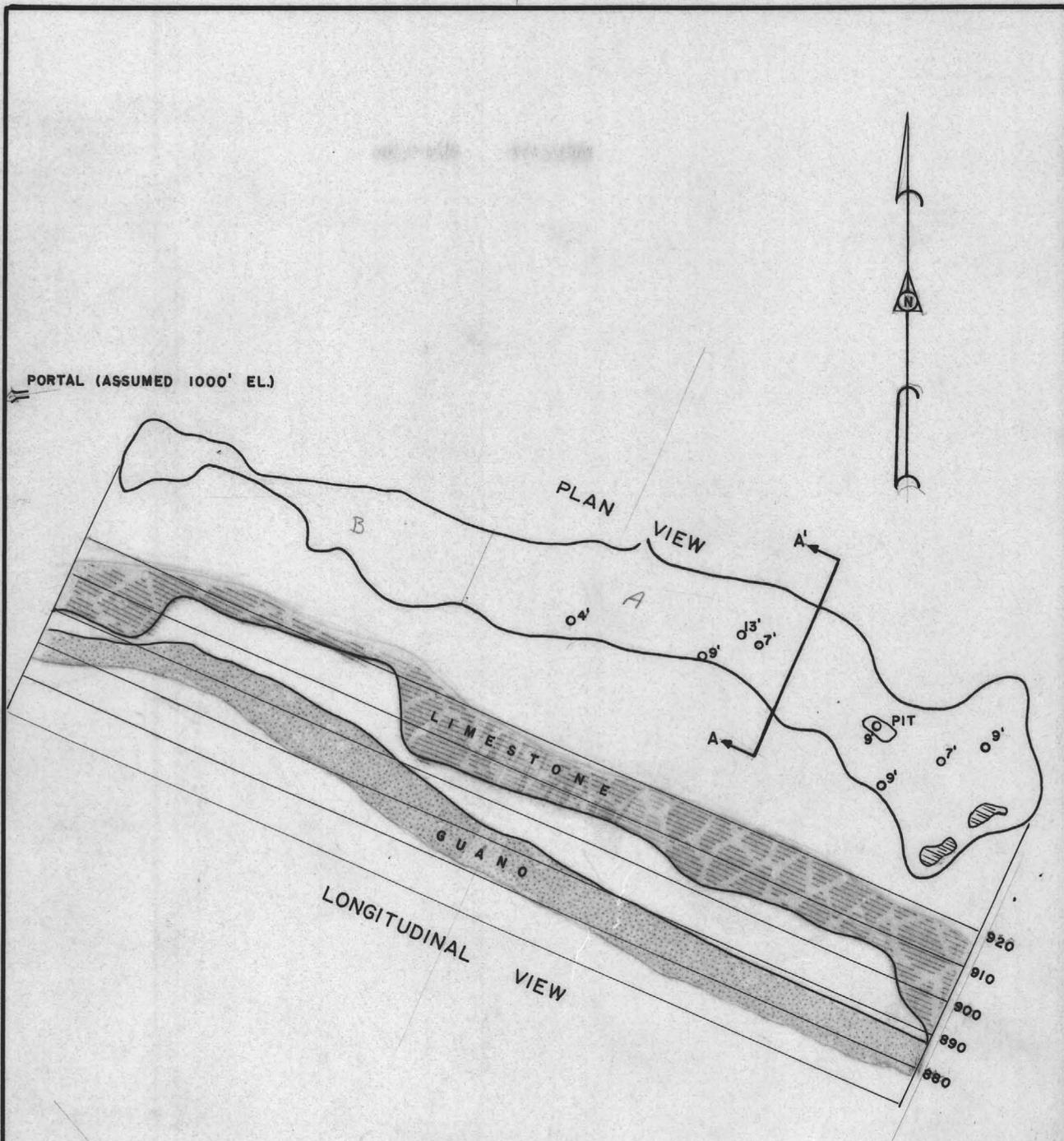
NOWLAND GUANO CAVE

Alta Uranium, Inc.; Cochise County, Arizona

Scale: 1" = 40'

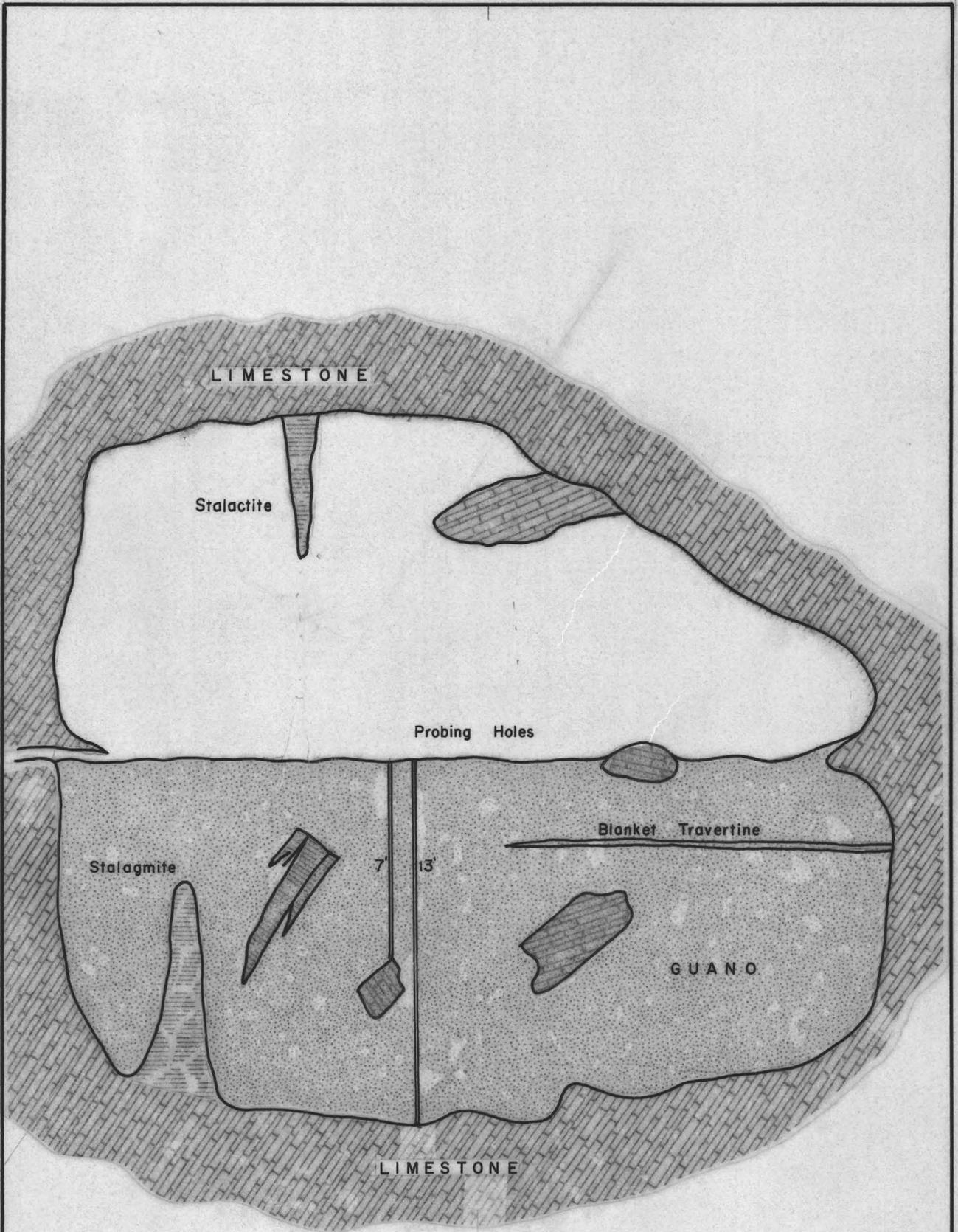
Nov., 1956

Figure



LONGITUDINAL & PLAN VIEWS
of
NOWLAND GUANO CAVE
Alta Uranium, Inc.; Cochise County, Arizona
Scale: 1" = 40' Nov. , 1956

Figure



SECTION A-A'

of

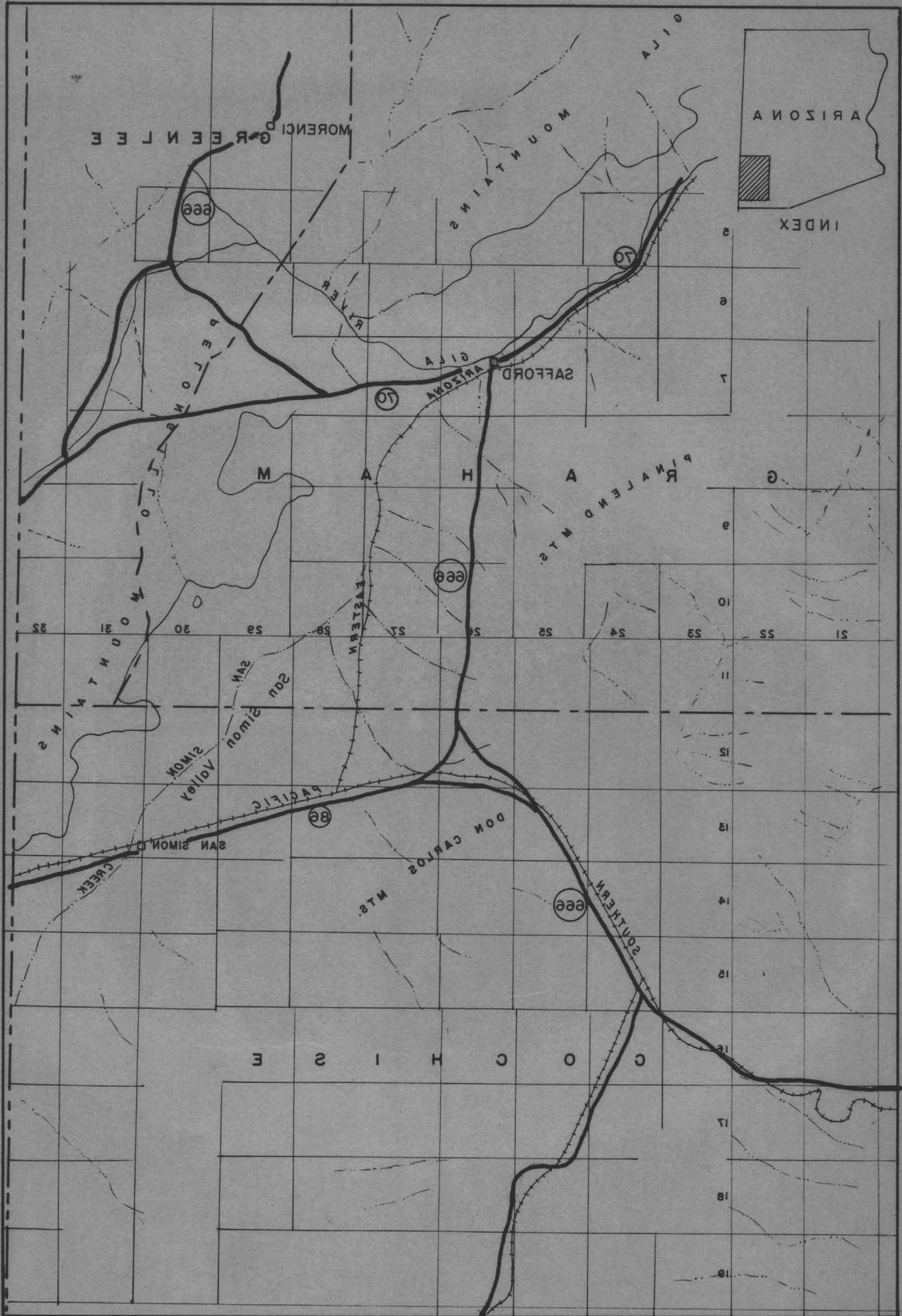
NOWLAND GUANO CAVE

Alta Uranium, Inc.; Cochise County, Arizona

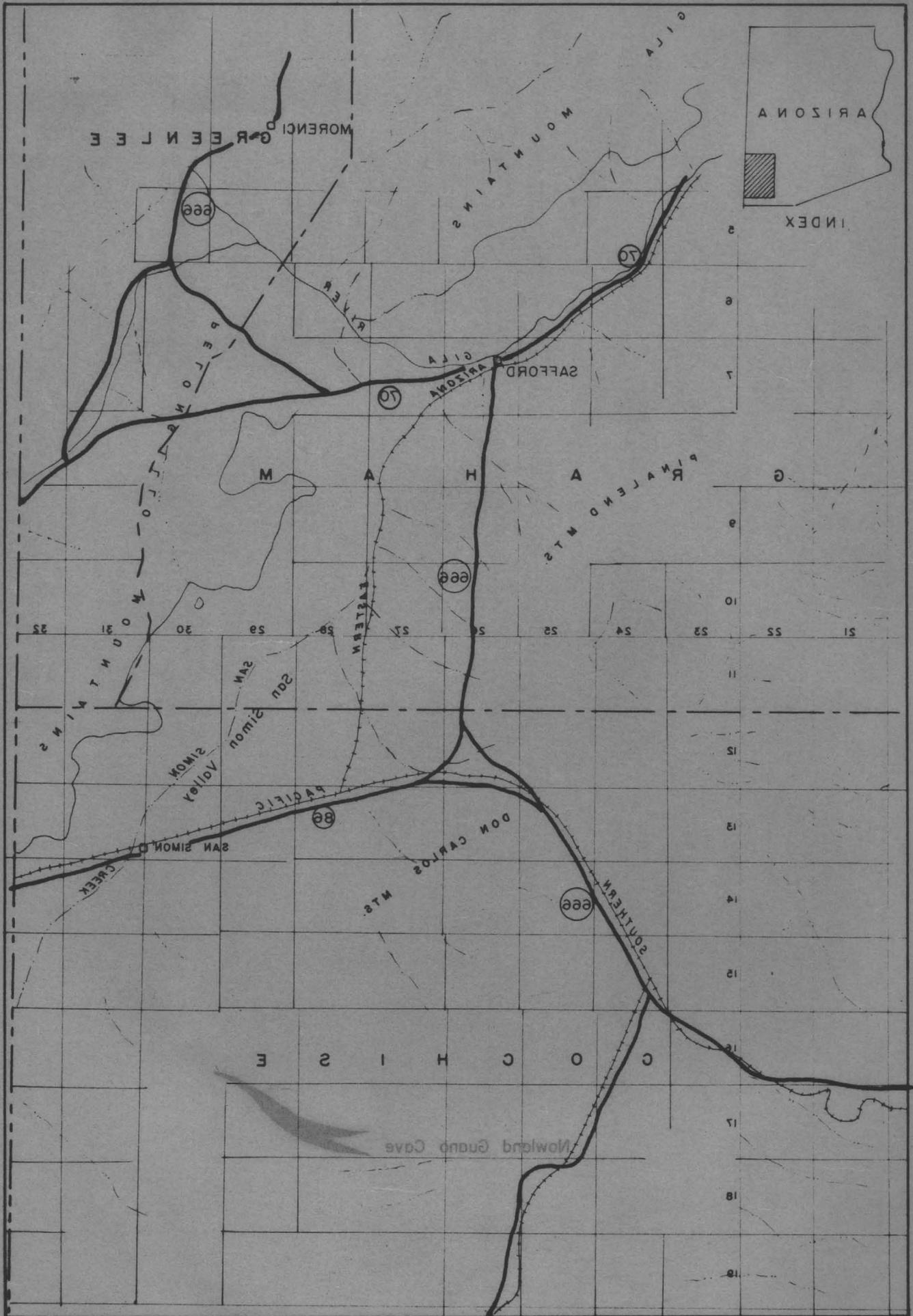
Scale: 1" = 5'

Nov., 1956

Figure

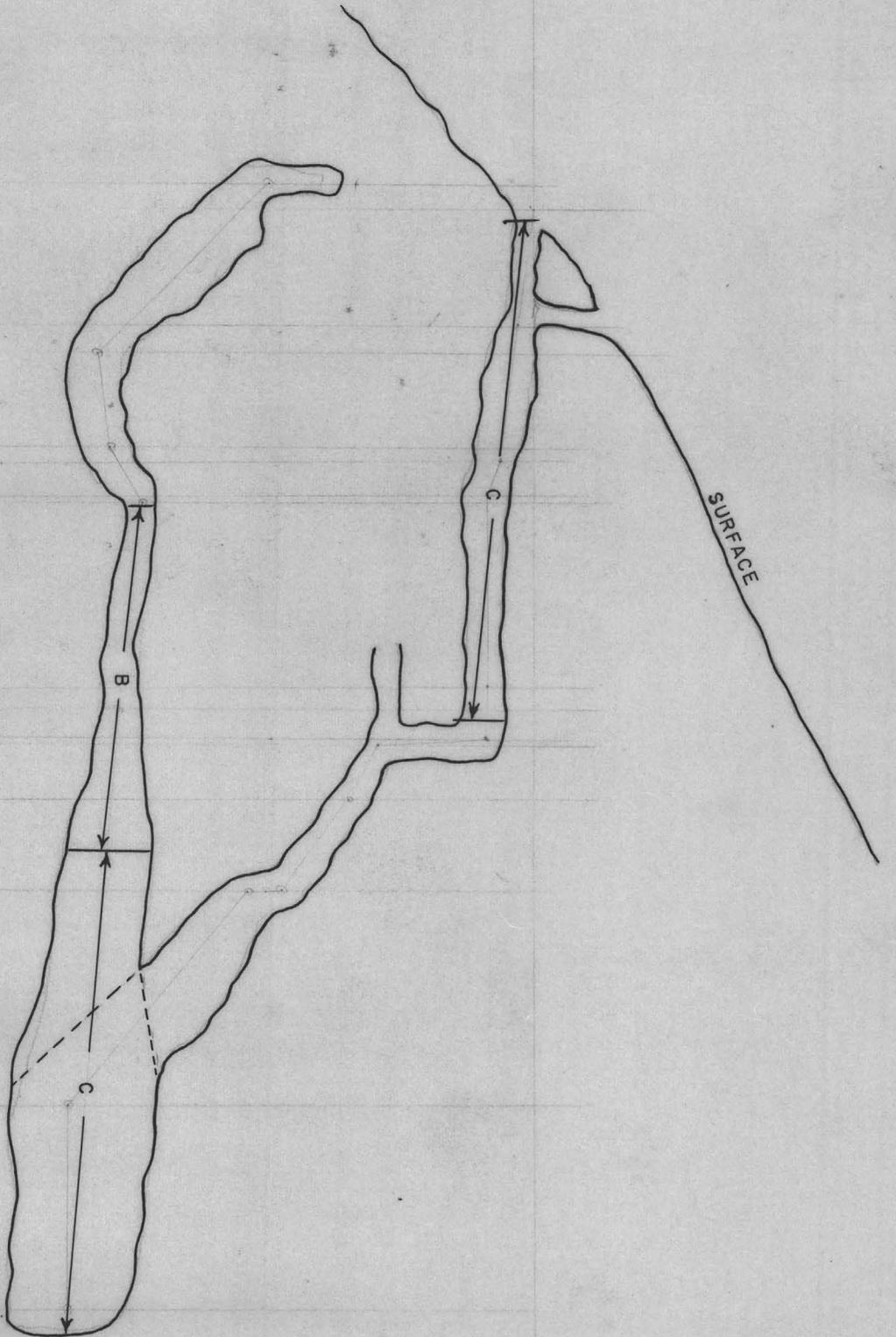


SCALE: 1:1780,000



SCALE: 1:750,000

SURFACE



LONGITUDINAL SECTION
of
NOWLAND GUANO CAVE

Scale 1" = 40'

Figure No. 3

Dec. 1956

have to be hoisted approximately 90 feet vertically. A skip on guides or an adaptation of an aerial tram could be used to hoist the guano.

A mining lease or contract arrangement is recommended for producing the estimated monthly sales.

The highest production costs will be bagging the guano. The bags can be bought for 4 cents each for 50-pound size and 1.75 cents each for one- and three-pound sizes. The cost of producing and bagging will be approximately \$125.00/ton. The gross value per ton in one pound bags is \$500; the net profit will be approximately \$375.00.

GUANO

Guano is defined as a substance composed chiefly of the excrement of seafowl or any similar manure. It is composed of phosphates, nitrates, potash, and plant nutrients. Sampling of the deposit indicates the highest grade material is the dry portion of the upper galleries. The damp material is much lower grade and is denser than the dry guano. The tonnage factor for the dry material is 32 ft³/ton and for the wet material it is 26 ft³/ton.

Chemical assays on the guano have varied considerably. Maximum and minimum values are as follows:

Nitrogen	4.73	-	9.50%
P ₂ O ₅	3.72	-	11.30%
Potash	3.0	-	6.8%

According to company officials, the market for the guano is good and they intend to mine, prepare, and distribute the product to retailers and wholesalers. At the present time a supply of guano has been placed on the market in various stores in Grand Junction. Nothing can be said in regard to the demand because of the short time the product has been available.

Fred C. Hohne
Consulting Geologist

December, 1956

**GEOLOGICAL EVALUATION
ALTA URANIUM INCORPORATED
PROPERTIES**

May 18, 1956

Mr. James S. Henderson
609 Equitable Building
Denver 2, Colorado

Dear Jim:

In the report on the Trout Creek tungsten property of Alta Uranium the following paragraph should be added after the first paragraph under "Development."

"Initial test runs assayed approximately 10% WO_3 . In the most recent tests, however, the concentrates assayed 26.15% and 33.24% WO_3 for the concentrates and .50% WO_3 for the tails. The efficiency of the mill and operators is increasing; however, the need for a more complete mill is apparent."

Also, under item No. 3 in "Conclusions" change "for a period of one year" to read "for a period of three years."

Very truly yours,

Fred C. Hohne

FCH:VM
Enc

GEOLOGICAL EVALUATION
OF
ALTA URANIUM INCORPORATED
TROUT CREEK TUNGSTEN PROPERTY

INTRODUCTION

At the request of Alta Uranium Inc., an examination was made of its tungsten property at Trout Creek in Juab County, Utah. The present workings were examined during the day for geology and at night with a black light to check mineralization. A brief inspection of the company mill was made and also the nearby properties.

PROPERTY AND LOCATION

The property consists of 8 unpatented claims located in T. 13 S., R. 18 W. in the Trout Creek Mining District, Juab County, Utah. Two groups of claims have been leased by the company. The McMillan property is composed of 2 claims (see Fig.). Approximately 1000 tons of ore have been stockpiled near the mill from an open pit on this property. Present production is coming from the Anderson property which consists of 6 unpatented mining claims (see Fig.).

FACILITIES

Roads

Roads have been built to all parts of the property. The roads are rough, but are adequate for cars or trucks.

Ore Shipment

Buyers of tungsten concentrates are located at Salt Lake and at Bishop, California. Buyers have stopped the purchase of concentrates because of the end of the Government buying program in the near future. However, producers have been notified that purchase of concentrates will be resumed, but probably at a lower price. The new price will probably be \$55 per unit.

Timber

No timber has been needed to date because all production has come from open pits. However, the vein on the Anderson property is dipping steeply to the west and underground mining will be necessary in the near future. The upper slopes of Haystack Mountain are covered with good mine timber.

Plane Facilities

A landing strip suitable for small planes has been constructed within four miles of the property.

Supply Points

Equipment can be purchased from Delta, Utah, Ely, Nevada, or Salt Lake City, Utah. The distance to all these cities is in excess of 100 miles.

Mill Equipment

A 60-ton mill has been set up on the property. The equipment is powered by a 50 KVA generator. The equipment is in good to fair condition. Other equipment includes an RD-4 bulldozer, a 1950 Chevrolet car, a 1954 Chevrolet pickup and a 1947 Diamond T dump truck.

Housing

The company housing near the mill includes one bunkhouse, a trailer which is used for the cook shack, and a modern bath house. A small shop has been build for tools etc.

HISTORY

The area was worked during the 1920's for silver and base metals. Tungsten has been mined only during the past several years. The first tungsten mineralization was found on the base metal dumps. The subject property was previously operated by Spider Uranium Company of Arimo, Idaho.

DEVELOPMENT

Alta Uranium began mining and test runs on the mill in March, 1956. Since that date approximately 1200 tons of tungsten ore have been mined. Very few samples have been taken of the stockpile. Mr. Hill, who is foreman for Alta Uranium, estimates the mine run ore to be in excess of .3% WO_3 . No drilling or development drifting has been done on the property.

GEOLOGY

Structure

The Trout Creek property lies on the east flank of the Deep Creek Mountains in the western part of Juab County. The deep Creek Mountains are typical for the Basin and Range Province of which they are a part. They were formed as a result of high angle faults, intrusives, and folding. The features of this province are isolated,

nearly parallel mountain ranges with intervening plains made in the main of subareal deposits of waste from the mountains.

The subject property lies on the flanks of a small, granite, domelike laccolith, which is a small portion of the main granitic intrusive.

Petrology

The rocks of the district include a granite intrusive, pegmatite dikes, schists and limestone. The granite may be described as Alaskite since it contains few dark minerals. The granite is dissected by numerous simple and complex pegmatites. Minerals in the complex pegmatites include fluorite, phlogopite, arsenopyrite, tourmaline and feldspars. They are also mineralized with tungsten in some areas of schist-limestone contact.

Megascopically the schists appear to be metamorphosed, fine grained sandstone. They are slightly calcareous. The schists are mineralized immediately beneath the first limestone bed, but only if they are intruded by quartz stringers.

The limestones vary in thickness from 10 to 200 feet. No evidence of recrystallization is evident megascopically. The limestones are dense and could be dolomitic.

Geology of the Deposit

The ore mineral is scheelite. The ore occurs in a calcareous schist where it is intruded by quartz stringers. Mineralization was noted in two different layers of schist, one of which is located on the subject property. Ore was also seen in a quartz dike where it crossed the mineralized zone in the schist.

The crystals of scheelite vary considerably in size. The crystals in the quartz may be one-half inch, while in the schist they may be slimes. No screen tests have been made on the ore to determine the size percentages.

The accessory minerals are garnet, pyrophyllite, and iron oxides. The concentrates contain a large percentage of the accessory minerals. The present mill facilities do not provide a method of disposing of them.

The mineralized area on the McMillan property totals approximately one acre. The remaining host rock has been eroded. On the Anderson property the host rock outcrops for several hundred feet, then dips steeply to westerly unpatented claims. The apex law may apply because of the similarity to a vein. Approximately 250 feet of the mineralized bed occurs on the Anderson property, before the bed dips under the adjacent property.

Mining Method

All ore has been produced from small open pits. approximately 1000 tons of mineralized rock have been stockpiled near the mill. The grade, according to Mr. Hill, the foreman, is .30% WO_3 . The grade will not be increased appreciably, however, by open pit mining.

At the present time, company personnel are experimenting with the mill in an attempt to improve the recovery, and increase the tonnage. A limited amount of concentrates have been sold in Salt Lake City.

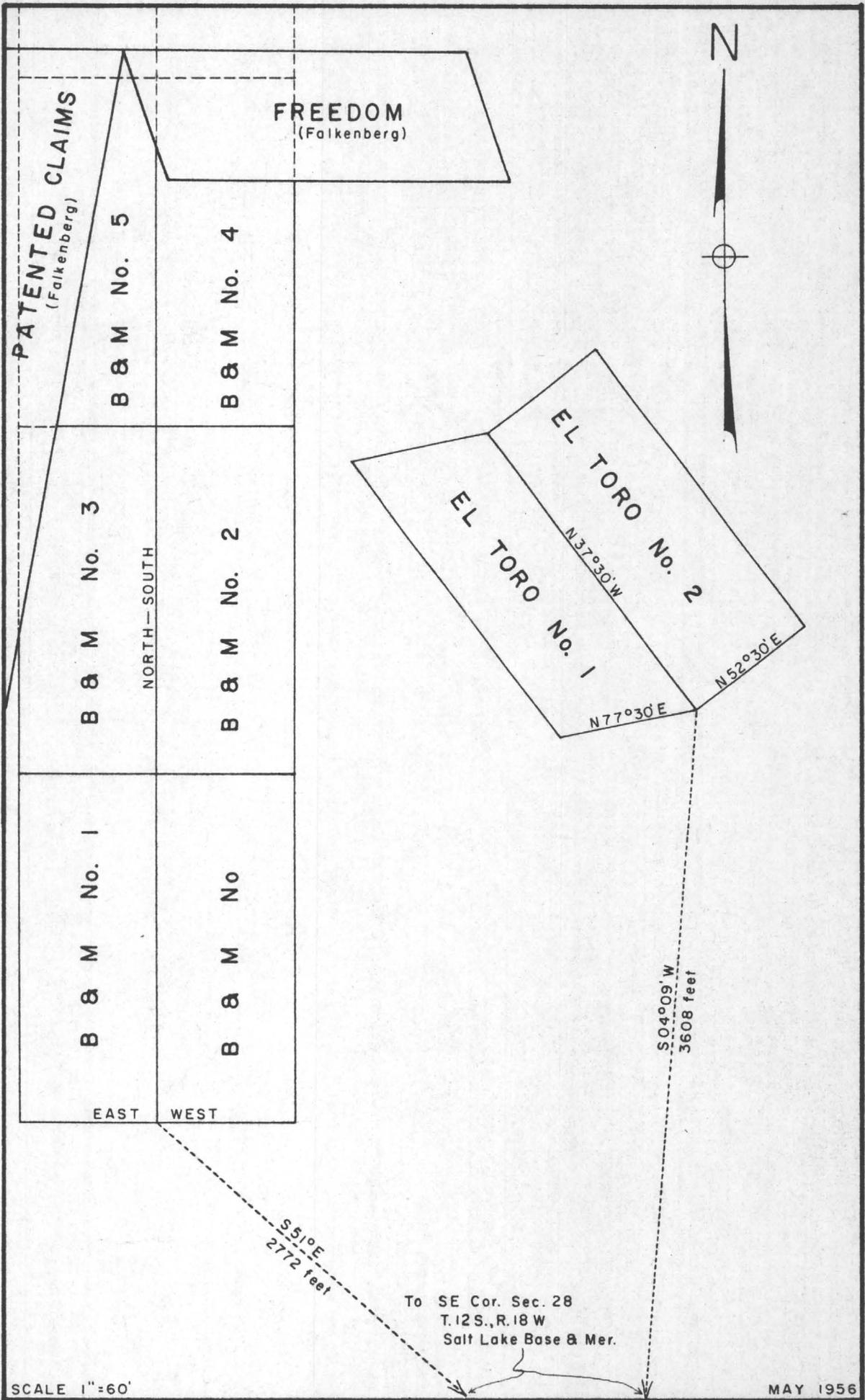
CONCLUSIONS

1. The ore deposit is a contact metamorphic deposit, but is not the usual type in that a schist is mineralized and not the enclosing limestone.
2. Mineralization has been found in three places on the property.
3. At present the economic future for tungsten is uncertain. The Government stockpile buying will stop in a few weeks. The price from that date on is conjectural. Some think the price will be fixed at \$55 per unit for a period of three years.

RECOMMENDATIONS

1. Map the property on 1 inch equals 200 feet scale.
2. Map mineralized areas on 1 inch equals 50 feet scale.
3. Plan an exploration program to include limited drilling and drifting.
4. Send a bulk sample to a testing lab and have complete metallurgical tests made on the ore.
5. Repair the mill and have an experienced tungsten milling man in charge.
6. Plan a more efficient mining method.

Fred C. Hohne



PATENTED CLAIMS
(Falkenberg)

FREEDOM
(Falkenberg)

B & M No. 5

B & M No. 4

B & M No. 3

NORTH-SOUTH

B & M No. 2

B & M No. 1

B & M No

EAST WEST

EL TORO No. 2

N37°30'W

EL TORO No. 1

N77°30'E

N52°30'E

S04°09'W
3608 feet

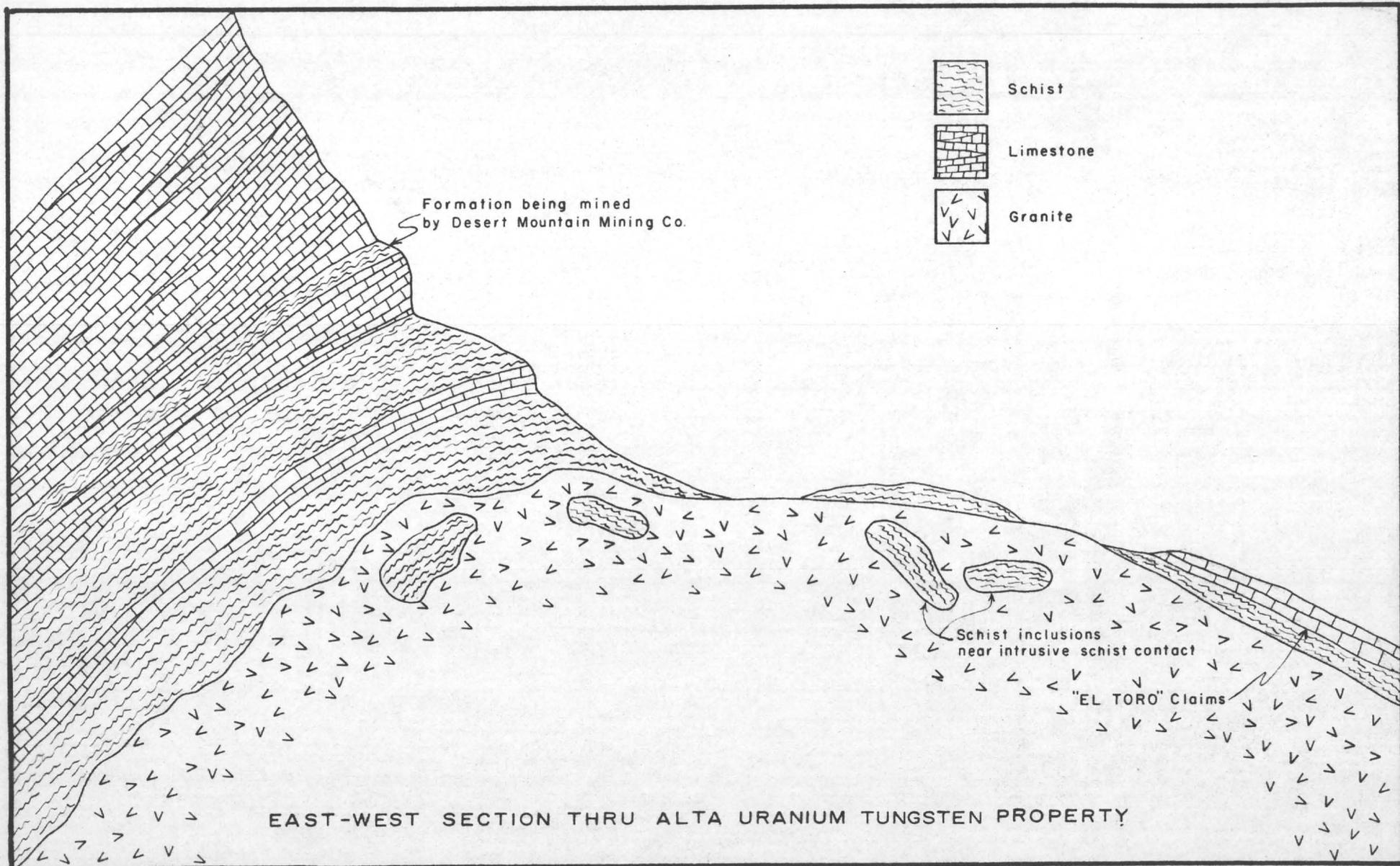
S51°09'W
2772 feet

To SE Cor. Sec. 28
T.12S., R.18 W
Salt Lake Base & Mer.

SCALE 1"=60'

MAY 1956

TROUT CREEK TUNGSTEN PROPERTY
JUAB COUNTY, UTAH



EAST-WEST SECTION THRU ALTA URANIUM TUNGSTEN PROPERTY

GEOLOGICAL EVALUATION

OF

RED WING CLAIMS

Mesa County, Colorado

INTRODUCTION

The Red Wing group of claims of Alta Uranium Incorporated consists of 32 unpatented mining claims located in the eastern Unaweep Canyon area, Mesa County, Colorado. These claims can be reached by turning east off Colorado Highway 141, 23.9 miles southwest of Grand Junction, Colorado, and following an unimproved dirt road for 2 miles.

OWNERSHIP AND LOCATION

The Red Wing claims were staked in March, 1955 by Joe Yager, Lyman Wallace and R. E. Dorwart. The claims are located in Sections 18 and 19, T14S, R99W, and Sections 13 and 24, T14S, R100W. They have been surveyed by a registered land surveyor and are tied to a section corner.

FACILITIES

Roads

An unimproved dirt road has been built to the base of the property. However, some dozer work will be necessary before four wheel drive vehicles can reach all parts of the claims.

Timber

Mine timber is available in Grand Junction, Colorado.

Water

Drill water can be obtained from East Creek, which is located approximately 2.3 miles west of the property. Domestic water will have to be obtained from Grand Junction, Colorado.

Milling Facilities

The Climax Mill in Grand Junction, Colorado is 25 miles from the property.

Development

No exploration or development has been done on the property.