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Item 19

Report of Investigation

TEMPO PROSPECT (GOLD)
LANDER COUNTY, NEVADA

by

Joseph V. Tingley

Reno, Nevada

April 7, 1970

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Summary

The Tempo prospect, owned by Lyle F. Campbell of Reno, Nevada, is located in the southern Ravenswood Mining District, Lander County, Nevada.

Campbell staked the ground in April of 1968 following exploration ideas outlined by U. S. Geological Survey geologists in Geological Survey Circular 563, "Favorable Areas for Prospecting Adjacent to the Roberts Mountains Thrust in Southern Lander County, Nevada".

The claims cover the southeastern portion of a small window in the thrust sheet. Geochemical sampling done by Humble Oil geologists outlined a gold-arsenic-mercury anomaly in an area of upper plate rocks immediately south of the thrust contact. Three deep drill holes tested this anomaly. The first hole, roughly centered in the anomalous area, encountered trace amounts of gold. The other two holes were unmineralized. Faced with these drill results, Humble dropped their option on the claims.

After examining results of Humble's work on this property, it is felt the most favorable area has been thoroughly tested.

Therefore, it is recommended that Continental Oil Company show no interest in the Tempo claims.

Introduction

The Tempo property is one of a group of eight gold prospects owned by Lyle Campbell of Reno, Nevada. In February of 1970, one of these properties was formally submitted to Continental Oil Company. When contacted, Mr. Campbell indicated that the submitted property was to be considered as an exmmple of the type of prospect he owns. Continental was then invited to consider any or all of the eight properties.

Reviewing Campbell's information on these prospects, Tempe was selected as one which warrented further investigation.

I had examined Tempo late in 1968 and at that time made the recommendation that my company option the property. No action was taken, and the property was subsequently leased to Humble Oil and Refining Company in late 1969. Humble drilled three holes and surrendered the property in January, 1970.

The purpose of the present examination was to review Humble's work and to ascertain if the exploration potential of the property had been exhausted.

Location

The Tempo claims are located in the southern part of the Ravenswood Mining District about 14 miles northwest of Austin, Lander County, Nevada. Location maps are found in the report by Lyle Campbell which is appended to this report.

The Ravenswood District covers the southern end of the central Shoshone Mountains, a northeast-trending mountain range bounding the western side of the Reese River valley.

Land Status

Sixty unpatented mining claims covering the area of interest are held by Lyle F. Campbell of Reno, Nevada. His ground is bounded on the west by a claim group held by R. B. Kunkel of Salt Lake City, Utah.

General Geology

The Tempo claims cover the eastern portion of a small window

in the Roberts Mountains thrust sheet. The trace of the thrust fault passes through the northwestern part of the claim group and disappears under volcanic flows to the east. Below the thrust sheet, the Roberts Mountains formation and the underlying Antelope Vally formation crop out. Both formations are moderately folded, but the general strike is northeast with a 45° to 50° dip to the southeast. The lower-plate rocks are bleached and the shaley units have been altered to hornfels.

The Valley formation forms the upper plate of the thrust sheet. It consists of highly contorted, thin-bedded quartzites and chert. The siliceous rocks are fractured and iron stained at the thrust contact and are cut by steep faults which cut the upper plate.

Tertiary volcanic flows, mainly andesite, form the eastern and southern boundaries of the claim area.

Structure and Mineralization

Two important regional structures pass through the Ravenswood District. The district lies within the well-defined

Lovelock-Austin mineral belt. Doming along this northwest structural trend is thought to be responsible for the uplift and subsequant formation of the Ravenswood window.

A series of parallel northeast faults cut both upper- and lower-plate rocks in ths area. These structures appear to be related to mineralization, as numerous barite veins with associated gold and silver mineralization occur along them.

The only obvious mineralization on the claim group occurs associated with a barite vein in the northeast corner of Tempo #41. The vein cuts lower-plate rock, is six inches to two feet in width, and shows copper staining in certain areas. The Malloy shaft, referred to in Campbell's report, was sunk on this vein.

Smaller barite veins can be found southwest of the shaft in the upper-plate Valmy outcrop. In the center of Tempo #9, a dozer trench cut in thrust breccia has exposed a barite vein with limonite-filled sulfide casts within it. The color of the limonite and the shape of the cavities suggest that the leached sulfide was galena. South of this, barite veinlets form a fairly wide stock works in the fractured upper-plate rocks. This zone passes north of Humble drill hole number three.

Previous Work

In the fall of 1969, the Humble Oil and Refining Company optioned the Tempo property and commenced an exploration program. Their staff prepared a detailed geologic map of the claims and conducted a geochemical sampling program. Examination of their data revealed that a gold-arsenic-mercury geochemical anomaly was found in the area of upper-plate rocks immediately south of the thrust exposure. Three drill holes were located to test this anomalous area. Hole locations are shown on the geologic sketch map accompanying this report.

Hole #1, drilled to 500 feet, encountered the thrust contact at 100 feet. Two weakly mineralized zones were intersected by this hole. A zone between 25 feet and 40 feet averaged 0.16 parts per million gold; another zone between 450 feet and 475 feet averaged 0.15 parts per million gold.

Hole #2 cut the thrust fault at 120 feet and continued to a total depth of 700 feet. Hole #3 was drilled to 480 feet, and intersected the thrust at 305 feet. Neither of these holes showed mineralization.

Conclusions

The three Humble Oil drill holes were strategically located to test the most favorable area within the Tempo claim group.. Hole #1, placed near the center of an area anomalous in heavy metals, encountered only trace amounts of gold.. Hole #2, placed to the east of the anomalous area and on strike with the thrust fault contact, failed to encounter mineralization. Hole #3, placed to the south of the anomalous area and down-dip from Hole #1, also failed to encounter mineralization.

Beyond Hole #2 to the east, a normal fault cuts the volcanics, and presumably down-drops the block of ground to east of the fault. To the south, the dip of the thrust zone quickly carries the favorable contact and underlying rocks beyond economic limits.

Therefore, based on the Humble drill results and projected unfavorable structural conditions beyond the drilled area, it is felt that there is no reason to consider additional work within the Tempo claim boundaries.

Recommendations

It is recommended that Continental Oil show no interest in the Tempo claims at this time.

Respectfully submitted,

J

Joseph V. Tingley
Mining Geologist

Appendix

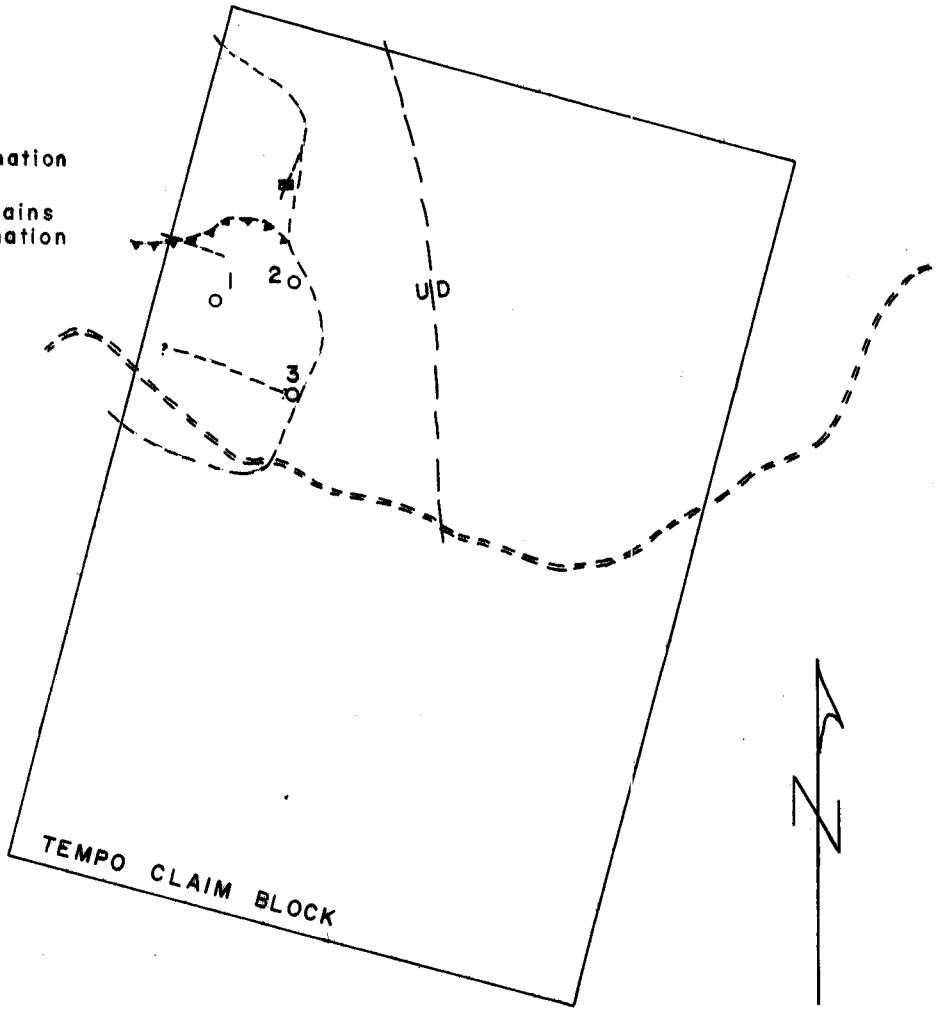
Geologic Map

TEMPO CLAIMS

Lander County, Nevada

Explanation

- Tertiary volcanics
- Ordovician Valmy formation
- Silurian Roberts Mountains formation
- Thrust contact
- Fault
- Drill hole (Humble Oil)



Geology after:

Stewart & McKee, 1968

Humble Oil staff, 1970

Scale: 1"= 2000'

Geologic Map

TEMPO CLAIMS

Lander County, Nevada

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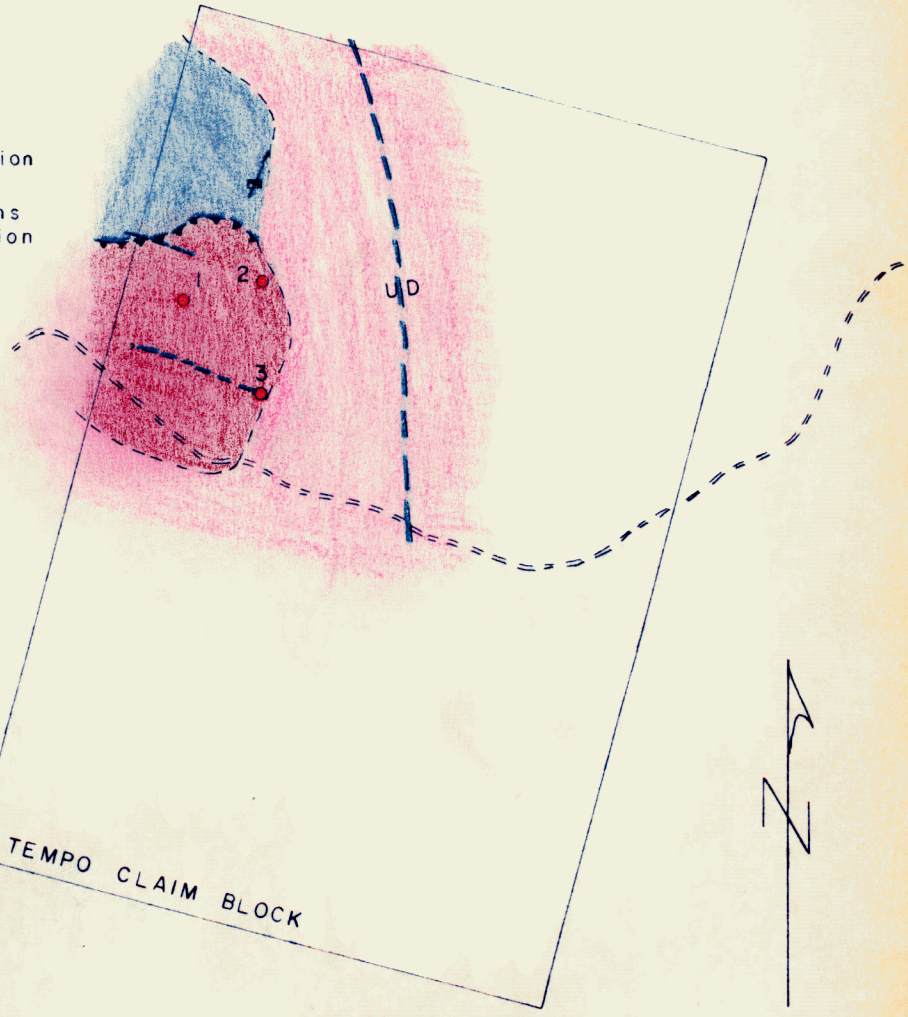


Geology after:

Stewart & McKee, 1968

Humble Oil staff, 1970

Scale: 1" = 2000'

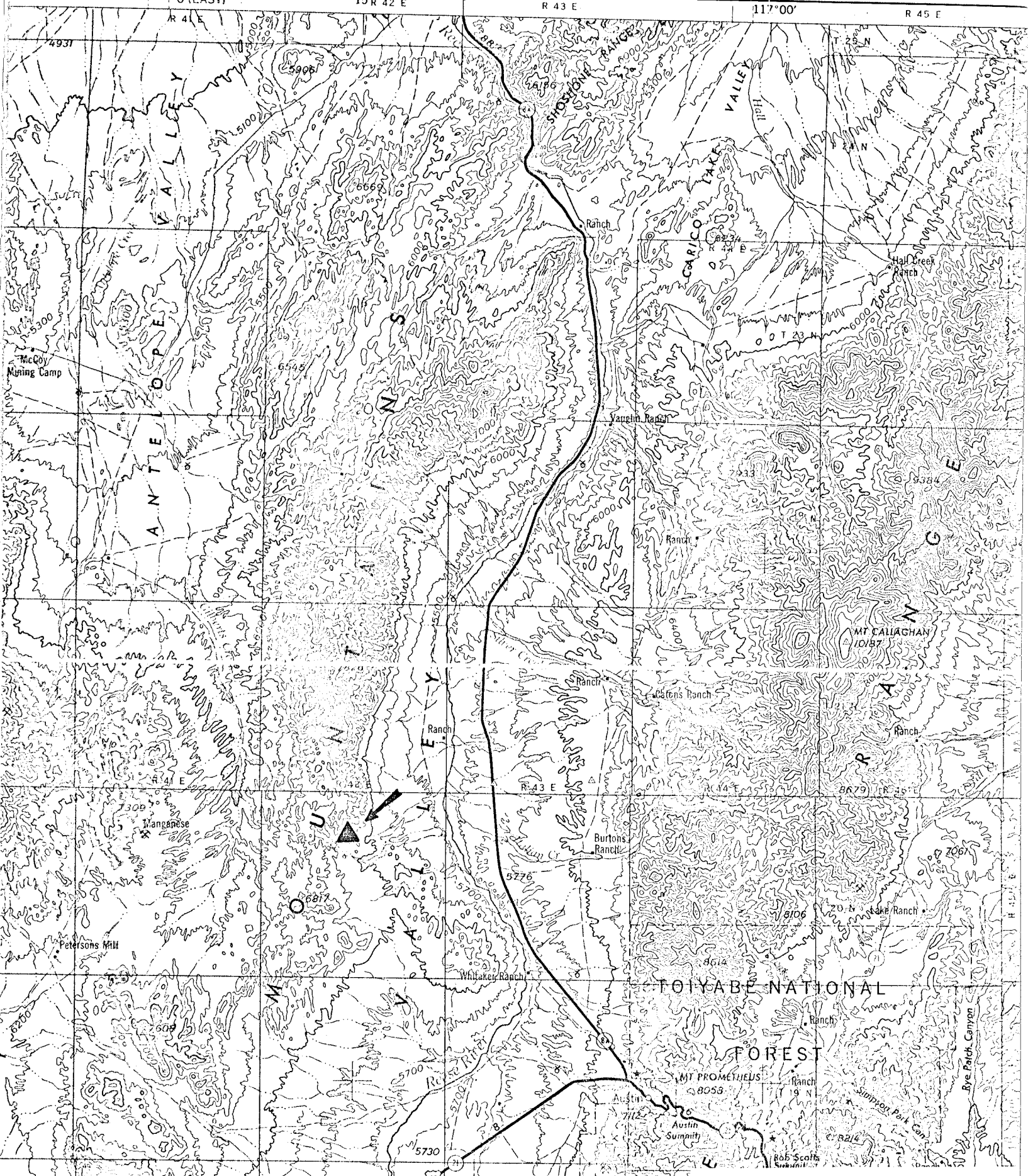
TEMPO PROSPECT, SHOSHONE RANGE
LANDER COUNTY, NEVADA

The Tempo prospect was discovered by Lyle F. Campbell on April 9, 1968. During cross-country reconnaissance sampling of favorable formations in the general area, an old mine shaft was found. It is located on a gold and silver bearing quartz vein in the Roberts Mountains formation near an exposure of the Roberts Mountains thrust fault. Rock samples taken at and near the shaft and in nearby fractures and shear zones proved to be anomalous in gold, and the first two claims were located on April 29, 1968.

Although the shaft is located within 2,500 feet of a good gravel road, it is hidden from the road by the terrain. The inconspicuous, low rolling foothill country does not excite the imagination of a person driving through the area. The shaft was not shown on any map. Also, the road leading in to the shaft was not obvious from the main road in the spring of 1968. Nevertheless, considering its proximity to Austin and the tenor of the gold values in the shaft dump, it is most remarkable that no location notices were hung at the shaft. It is known to the old-timers who live in Austin who refer to it as the Malloy shaft.

LOCATION

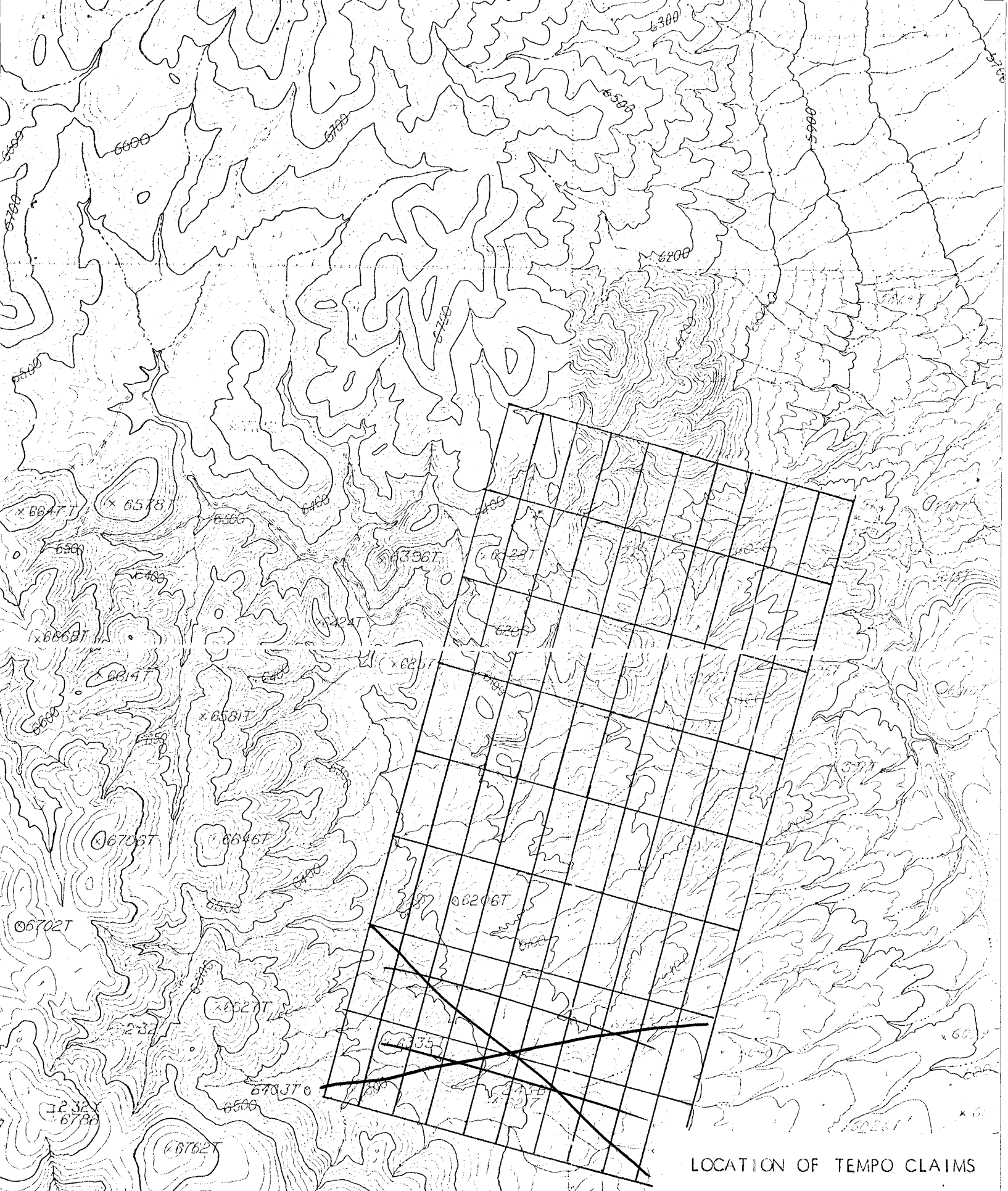
The Tempo prospect is located in the north center of Township 20 North, Range 42 East. Go west from Austin on U.S. 50 for 0.8 miles to the intersection with Nevada 8A. Proceed north on this highway for nine miles. Turn left onto a good gravel road and proceed west for 5.2 miles. Take a poor dirt road to the north over a rise for 0.3 miles to a typical sheepherder's campsite marked by garbage and litter. At this point take a fork to the northwest for 0.8 miles to the old mine shaft which is situated in the northwest part of the claim group.



LOCATION OF TEMPO PROSPECT

Scale: 1 inch = 4 miles

(Adapted from USGS two degree Millett Map)



LOCATION OF TEMPO CLAIMS

Scale: 1 inch=2000 feet

(Adapted from USGS advance prints)

MINING HISTORY

Located 10 miles to the north is the Ravenswood District which was discovered in 1863. Copper, lead, silver and gold were found in small quartz veins in Cambrian quartzites, shales and limestones. Exploration has been carried on intermittently through the years. Production has been insignificant.

An open pit barite mine which is worked intermittently is located 3 miles north of Tempo.

The Skookum District is located 5 miles to the south. Quartz veins carrying silver and gold occur in the Ordovician Valmy formation of the upper plate of the Roberts Mountains thrust. The district was discovered in 1907. Production has been estimated at about $200,000.00.

The shaft on Tempo was sunk on a gold vein in the early 1900's by a nearby rancher named Malley. Gold was produced intermittently. Production figures are not available. The surrounding area is pock-marked with old prospect pits. Many very old claim corners were found.

LAND STATUS

A search of B.L.M. records showed the land was public domain open to mineral entry. No patents have been issued. There was no evidence of currently valid unpatented mining claims. The most recent location notice found was dated 1951. The Tempo group consists of 60 contiguous unpatented claims. The following chronological sequence of events serves as a rough abstract of the property:

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1. April 29, 1968 - Tempo 40 and 41 located. 2
2. May 7, 1968 - Tempo 38 and 39 located. 2

3. May 15, 1968 - Tempo 42 thru 47 located. 6

4. July 24, 1969 - Tempo 78 thru 87 located. 10

5. July 29, 1969 - Tempo 48 thru 57 and 88 thru 97 located. 20

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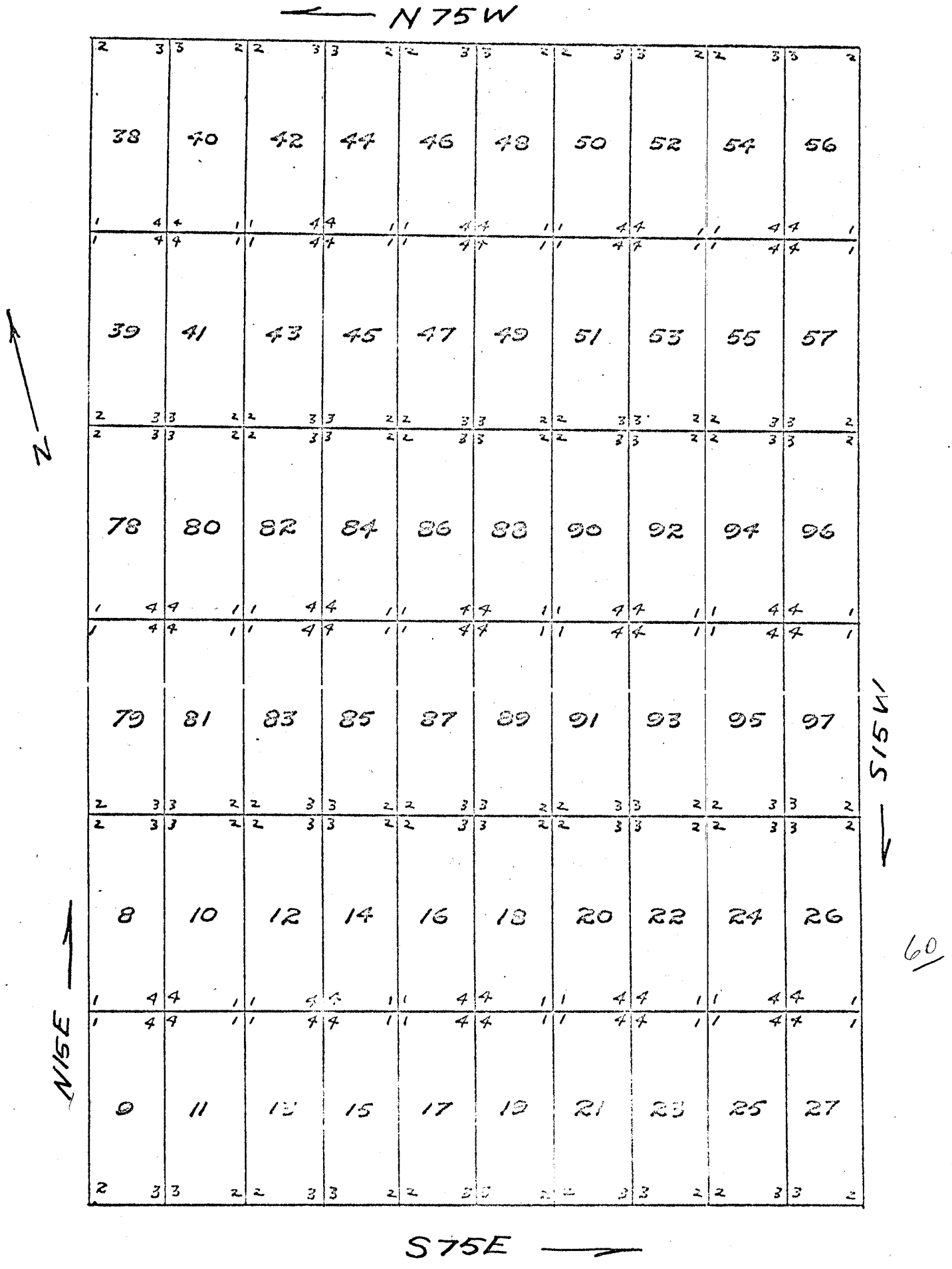
6. August 10, 1969 - Tempo 8 thru 27 located. 20

7. September 2, 1969 - The Tempo group was leased with option to Humble Oil and Refining Company.

8. January 24, 1970 - Humble made known their intention to surrender the Tempo lease. — dated ?

Humble Date?


N 75 W
S 75 E
N 15 E
S 15 W
38 40 42 44 46 48 50 52 54 56
39 41 43 45 47 49 51 53 55 57
78 80 82 84 86 88 90 92 94 96
79 81 83 85 87 89 91 93 95 97
8 10 12 14 16 18 20 22 24 26
9 11 13 15 17 19 21 23 25 27

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GEOLOGY

The northwest part of the claim group covers the eastern portion of a small window in the upper plate of the Roberts Mountains thrust. The leading edge of the thrust fault borders the south edge of the window and disappears under tertiary volcanic flow rock to the east. The lower plate Silurian Roberts Mountains formation is exposed in the window. Thin bedded, platy, arenaceous limestone is moderately folded. Locally it is strongly bleached and recrystallized. The strike of the beds is northeast with a dip of 35 to 75 degrees to the southeast.

Upper plate rocks of the siliceous assemblage Ordovician Valmy formation outcrop south of the window. Highly contorted, thin bedded quartzites and cherts are fractured and bleached and pervasively iron stained at the thrust fault and in the northeast and northwest trending fault systems and shear zones. Volcanic flow rock covers this formation to the south. The edge of the cover roughly coincides with the main road going through the area.

The Tertiary flow rock to the south apparently forms a thin mantle over the underlying rocks. A number of windows occur in this cover in the south part of the claim group exposing upper plate Valmy formation.

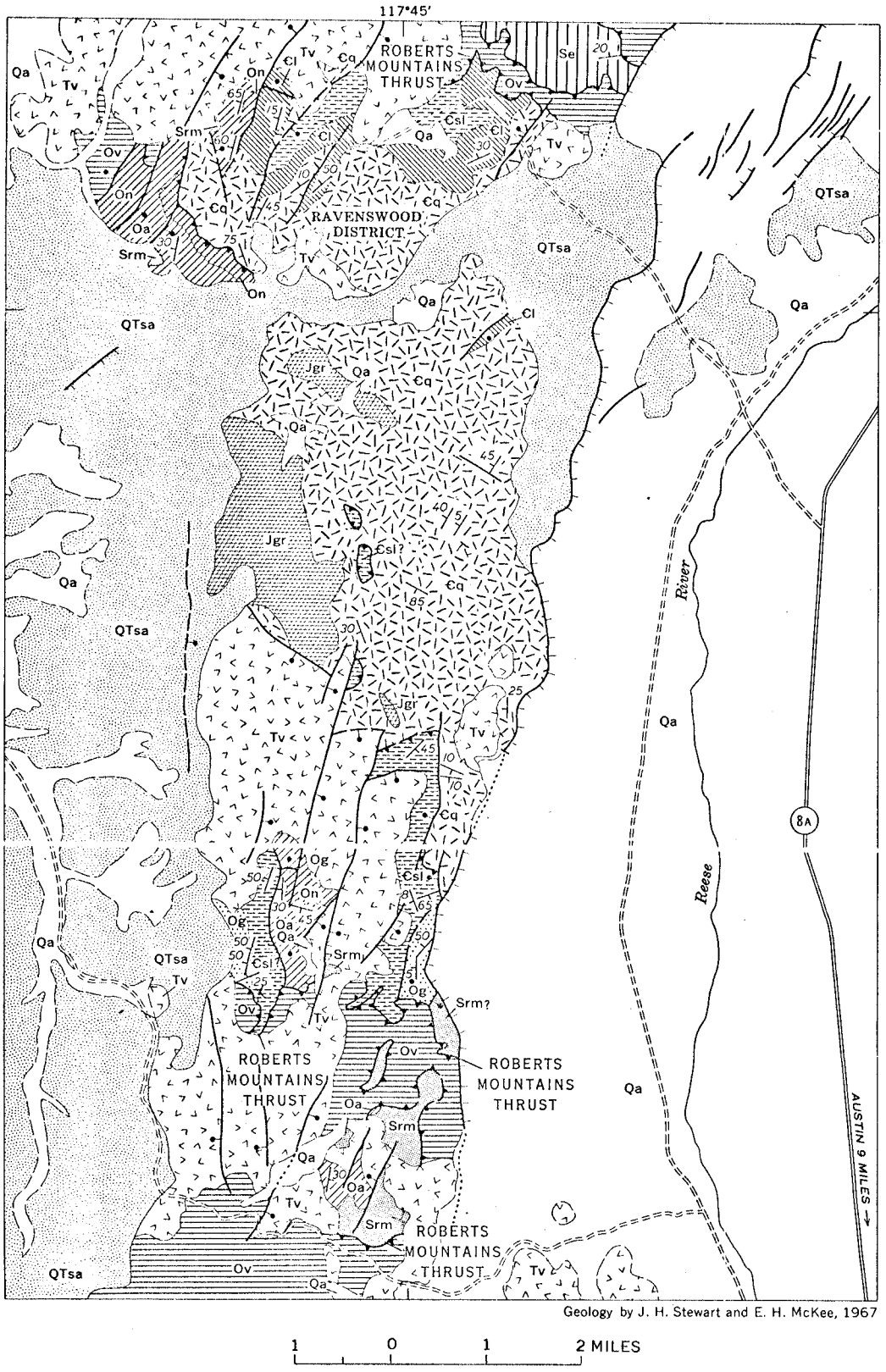
West of the group a textbook example of the basal unit of the Roberts Mountains formation outcrops alongside a road. This can be observed by proceeding west along the main road 1.2 miles from the turnoff into the Tempo group. At a fork in the road, take the badly washed right fork for 0.4 miles. The basal unit outcrops on the right. This unit is often mistaken for a similar appearing unit in the siliceous upper plate rocks when observed from a short distance.

The Tempo group is located in the south end of the Ravenswood window (Stewart and McKee, 1968 C, p. 2). This window lies along the inferred Lovelock-

Austin mineral belt (Roberts, 1966, Fig. 7 and p. 63). Doming along this regional northwest structural trend probably uplifted the Temp-Ravenswood area with subsequent erosional exposure of the favorable lower plate rocks.

Another important regional structure occurs in the Ravenswood window. Parallel northeast faults cut both upper and lower plate rocks of the area. This series of structures appears to be related to mineralization, because numerous barite-quartz veins occur along them with associated gold and silver mineralization.

These two regional trends appear to be reflected locally. Monzonitic dikes intrude the Roberts Mountains formation along northeast and northwest zones of weakness. Shear zones in the upper plate Valmy have a similar orientation.



Geologic map of the Ravenswood window, Shoshone Range, showing the area of the Tempo prospect. (from Stewart and McKee, 1968)

MINERALIZATION

In the rock sampling which has been done to date, anomalous gold was found in the shaft dump and outcropping vein nearby (A), in the rich red-brown bulldozer cut at the leading edge of the thrust fault (B), and the vein system along a ridge (C). Trace element analyses by Rocky Mountain Geochemical Corporation and Skyline Labs, Inc., were as follows: (all elements are reported in ppm)

A. Shaft dump and nearby vein.

Sample No.	Au	Ag
874	29	92
1439	18	300
1440	.15	6.8
1441	.17	36
B-2265	25	
9D-2	1.36	227.8
9D-3	17	1880

B. Bulldozer pit in Valmy formation.

Sample No.	Au	Ag	As
1657	.12		
1658	.25		
1659	.80		
1660	.15		
9D-6	0.34	3.4	
9D-7	0.17	none	
B-2273	0.5		+ 1000

Chip sample - east half of bulldozer pit.

Sample No.	Au	Cu	As	Hg	Sb
2095	.14	55	1000	.04	8

Chip sample - west half of bulldozer pit.

Sample No.	Au	Cu	As	Hg	Sb
2096	.40	30	8000	.03	Nil

C. Vein along ridge south from B.

Sample No.	Au	Ag	As	Hg	Sb
1533	.12	1.0			
1534	.10	26.0			
1535	.15	1.4			
9D-8	.34	Nil			
9D-9	.17	Nil			
2674	.08		400	.21	8
2675	.08		100	.24	12
2676	.06	.2	300	.04	Nil

EXPLORATION

To satisfy location work requirements and then later assessment work requirements on the first ten claims, the writer had access roads built, bulldozer trenches dug in altered shear zones, and accomplished geochemical rock sampling. Assays of a few of these samples are reported herein.

In January, 1970, Humble Oil and Refining Company drilled three exploration holes on the property. The first of these encountered a 25 foot section of oxidized Roberts Mountains formation which averaged 0.15 parts per million gold. Qualified observers consider this a significant anomaly in this formation. It definitely indicates that the Tempo property merits further drilling. The drilling also showed that the contact between upper and lower plates dips about 15 degrees to the south in this area. To the writer's knowledge this is the flattest attitude of the thrust that has been found in a window environment to date. It gives hope for finding a disseminated gold deposit within reach of open pit mining.

DISCUSSION

The Tempo prospect is a classic example of the type of ore bodies we are now seeking which are concealed under volcanic rocks, alluvium and thrust plates (Roberts, 1964, p. 1).

The U.S. Geological Survey has described the Ravenswood window as a structural and stratigraphic setting similar to the disseminated gold deposits at Carlin and Cortez. Also, the Survey listed the general area of Tempo as an area considered favorable for prospecting (Stewart and McKee, 1968C, p. 4).

Anomalous amounts of gold, silver, arsenic and mercury have been found in outcropping rocks on the property. Geochemical traces of elements indicative of a possible disseminated gold deposit have moved up or laterally or both and have been deposited at the surface.

The Roberts Mountains formation exposed in the window is intensely altered. It dips steeply to the southeast. Since the ore at Carlin and Cortez occurs in the upper part of this formation, it can be inferred that the most favorable part lies under cover to the southeast of the window.

Humble's drilling results are encouraging. The flat attitude of the thrust makes possible shallow exploration drilling with the anticipation of finding a disseminated ore body at open pit depths. The 25 feet of oxidized Roberts Mountains formation showing anomalous gold makes further exploration almost mandatory. This drilling anomaly is considerably stronger in gold than the one which among other things led to discovery of the Cortez ore body. No gold was detected in their drill cuttings until they analyzed the heavy mineral concentrates of a hole well outside the ore body (Erickson, et al., 1966, p. 1, and Erickson, 1970).

Further exploration can be undertaken with minimum drilling expenditures to evaluate the Humble drilling anomaly. One or two holes along the strike are obviously indicated. Also, since the Carlin and Cortez ore bodies are now known to be structurally controlled, at least two holes should be drilled at the intersections of zones of weakness in the window.

This prospect is especially attractive. A quick, valid evaluation can be had for the expenditure of $5,000.00 to $10,000.00 for drilling.

The property is easily accessible and workable for 12 months of the year.

Lyle F. Campbell

Reno, Nevada
February, 1970