Bureau of Mines
Report of Investigations 4617

INVESTIGATION OF THE TABLE MOUNTAIN COPPER DEPOSIT, CHURCHILL COUNTY, NEV.

BY E. J. MATSON

United States Department of the Interior — December 1949

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A Century of Conservation

1849 1949

UNITED STATES DEPARTMENT OF THE INTERIOR
Oscar L. Chapman, Secretary
BUREAU OF MINES
James Boyd, Director

December 1949

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E. J. Matson[1/]

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ILLUSTRATIONS

1/ Mining engineer, Reno Branch, Mining Division, Bureau of Mines, U. S. Department of the Interior.

INTRODUCTION AND SUMMARY

The Table Mountain copper deposit is in an isolated portion of northeastern Churchill County, Nev. Although copper-bearing outcrops have been known to exist in the area since 1909, no copper ore has been mined.

Development of the property has been hampered by poor roads and rugged topography. Until 1941, the last 4 or 5 miles to the property had to be traveled either by foot or pack animal.

As a part of the Bureau of Mines program of investigation and development of domestic mineral deposits, a project was started at the Table Mountain deposit.

The Bureau began its field work on July 29, 1947, and completed it on October 18, 1948. Thirteen holes aggregating 2,711 linear feet, were drilled; samples were analyzed - 509 from cores and 143 from sludges.

This report contains a brief history of the district and a description of the geology, deposits, and drilling done by the Bureau.

ACKNOWLEDGMENTS

The investigations at Table Mountain were under the direction of the Reno Branch of the Mining Division, A. C. Johnson, chief. W. T. Benson and G. H. Holmes, mining engineers, Reno Branch, assisted the author in supervising the work.

Chemical analyses were made at the Rare and Precious Metals Experimental Station, Reno, Nev.

Diamond drill-bit service was rendered by the Mount Weather Branch of the Mining Division at Bluemont, Va., Wing G. Agnew, chief.

The cooperation and assistance given by E. C. Bradshaw, president of the Airlanes Copper-gold Mining Co., are gratefully acknowledged.

PHYSICAL FEATURES

The Table Mountain deposit lies at the northern end of the Stillwater Mountains, which range in altitude from 5,000 to 7,100 feet. (Fig. 1.) The terrain is extremely rugged and characteristic, with steep slopes, bold rock outcrops, and resultant talus. Deep Creek Canyon is the most important topographic feature. (Fig. 2.) It has a generally southward trend, with a more or less broad expanse at its northern extremity, which narrows southward to a "vee"-shaped trough with steep slopes. The copper-bearing outcrops of the deposit are on the west slope of Deep Creek, starting near the bottom of the "vee"-shaped trough and extending northward in sporadic occurrences.

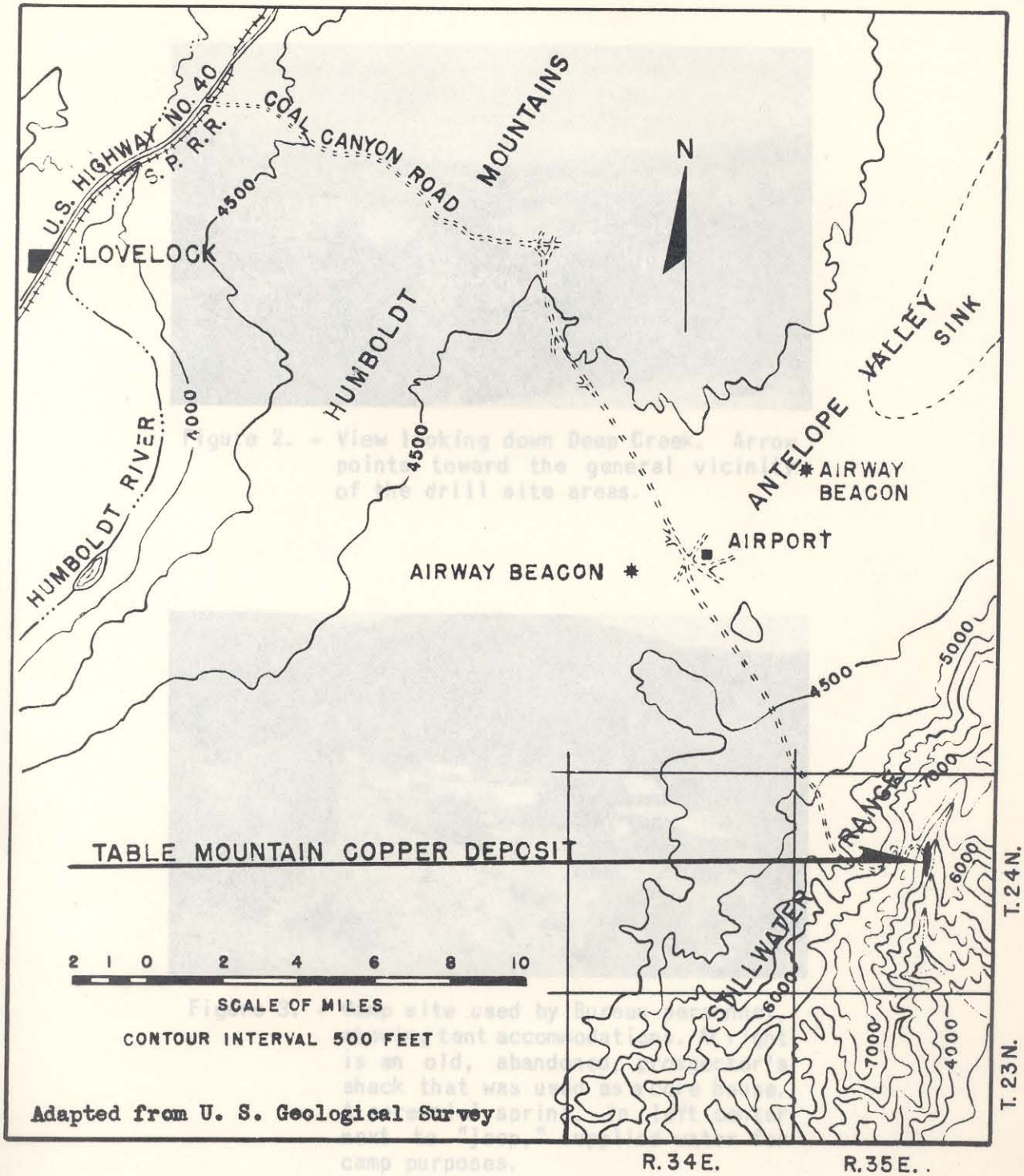

Figure 1. - Location map, Table Mountain copper deposit, Churchill County, Nev.

Figure 2. - View looking down Deep Creek. Arrow points toward the general vicinity of the drill site areas.

Figure 3. - Camp site used by Bureau personnel, showing tent accommodations. At right is an old, abandoned, prospector's shack that was used as a core house. A perennial spring, in left center next to "jeep," supplied water for camp purposes.

Numerous east-west gulches traverse the area and drain into Deep Creek, the most notable being Copper Gulch, which contains some copper-bearing outcrops.

The valleys, slopes, and ridges where alluvium is thick are usually wooded with pinon pines, junipers, mountain mahogany, and sage brush. No timber in the vicinity is suitable for mine workings.

LOCATION AND ACCESSIBILITY

The Table Mountain deposit is in the central northeast unsurveyed portion of T. 24 N., R. 35 E., Churchill County, Nev., near the southern boundary of Pershing County and about 39 miles southeast of Lovelock. The Southern Pacific Railroad and U. S. Highway 40 pass through Lovelock, which is the nearest supply center and source of electrical power. The first 25 miles of the road to the deposit is in good condition, 6 miles being paved and 19 miles being graded gravel road; the remaining 14 miles is poorly constructed desert road, 10 miles of which is ungraded and rutty, so that a heavy cloud of dust is raised by each passing vehicle and the last 4 miles are narrow, with steep grades and switch-backs at the turns. Owing to the steep grades and clay composition of the last 4 miles of road, motor travel is restricted to dry weather.

CLIMATE AND LIVING CONDITIONS

Temperature range is from +100° F. to -20° F. Summers, as a rule, are dry and pleasant, but fall, winter, and early spring are characterized by rain and snow. Most of the precipitation comes as snow during the winter months in the higher altitudes and remains on the ground until spring.

A perennial spring that produces about 5 gallons of water per minute is situated 4 miles from the drill site on the way to the deposit and served as the camp site for Bureau personnel. When the project was initiated living accomodations consisted of a 1-room frame building 4 miles from the camp site and with no supply of clean drinking water. Later, the company enlarged the frame building into two rooms, built another 1-room building, and erected two tents. A supply of drinking water also was developed at the company campsite.

HISTORY

The knowledge that copper-bearing outcrops existed in the Table Mountain area has been known for some time. The first locator of claims in this area was Jack Barry, a local resident in 1909. From 1909 to 1925, other claims were located, and the usual necessary location and assessment work was performed, but no mining or anything of significance was done. The "slump" of 1929, remoteness of the area, and poor roads made the property unattractive, and all claims reverted back to the public domain. No further consideration was given to the area until 1937, when E. C. Bradshaw, field man for the American Smelting & Refining Co. located 19 claims known as Table Mountain, Table Mountain Nos. 1 to 9, and Hil Top Nos. 1 to 9. The American Smelting & Refining Co. performed the necessary location and assessment work to hold the claims until 1939, when the company relinquished the property. Bradshaw, who later resigned from the employ of the American Smelting & Refining Co., then acquired the claims and satisfied the necessary assessment requirements.

In 1943 the Airlanes Copper-gold Mining Co. was formed as a holding company, with E. C. Bradshaw, 5546 Balboa Drive, Oakland, Calif., as president; Percy C. Heckendorf, Santa Barbara, Calif., as vice-president; and Mrs. E. C. Bradshaw as secretary and treasurer.

On September 21, 1948, the American Smelting & Refining Co., again acquired a lease and option to buy the property under a 12-year contract.

DESCRIPTION OF THE DEPOSIT

Exposed rocks in the area comprise andesite with a typical propylitization form of alteration common to many Nevada rocks.2/

Numerous small, copper-bearing outcrops occur along a general trend of N. 10° to 20° W. on the west side of Deep Creek. The most conspicuous showing starts near the tunnel area; however, no sharp or well-defined continuous structural boundary zoning of the mineralization is discernible. The zone is marked by isolated spots of hydrothermally altered rock with malachite and azurite coatings. Chalcopyrite also is found in these areas in disseminated grains and tiny veinlets. Pyrite is locally abundant with the chalcopyrite. Hematite, with some magnetite, also occurs in small masses and veinlets with inclusions of propylitized andesite.

Very little development work has been done to expose any of the mineralized areas. The main tunnel has been driven in about 50 feet southwesterly along a fracture zone and has no mineralization. A small open cut on surface vertically above the face of the tunnel and about 30 feet to the north has some malachite stain and some disseminated chalcopyrite. Another open cut or bench about 100 feet north and 50 feet west of the face of the tunnel also shows the same mineralization. A short tunnel 50 feet north of the main tunnel was driven in about 12 feet westward and contains some disseminated chalcopyrite as well as some tiny chalcopyrite veinlets. This development, all within a radius of 100 feet, constitutes the chief workings on the property.

Beside the mineralization as exposed on the surface in the tunnel area, another small outcrop about 630 feet north of the tunnel shows some malachite stain. In Copper Gulch, striking east to west about 1,400 feet north of the tunnel hydrothermally altered rock with sporadic occurrences of malachite stain with chalcopyrite can be traced on the north side for a distance of 600 feet or more.

WORK BY THE BUREAU OF MINES

The work planned by the Bureau of Mines was to develop the zone of mineralization downward and laterally by core drilling. Owing to the isolation of the deposit and the poor roads, much preparatory work had to be done before the drilling program could be handled.

Rehabilitation Work

A small camp was established near a spring, about 4 miles from the drilling area. Four tents with wood floors were erected for the personnel. An old

2/ From specimens sent to E. T. Schenk, mineralogist, Boulder City Experiment Station, Bureau of Mines, Boulder City, Nev.

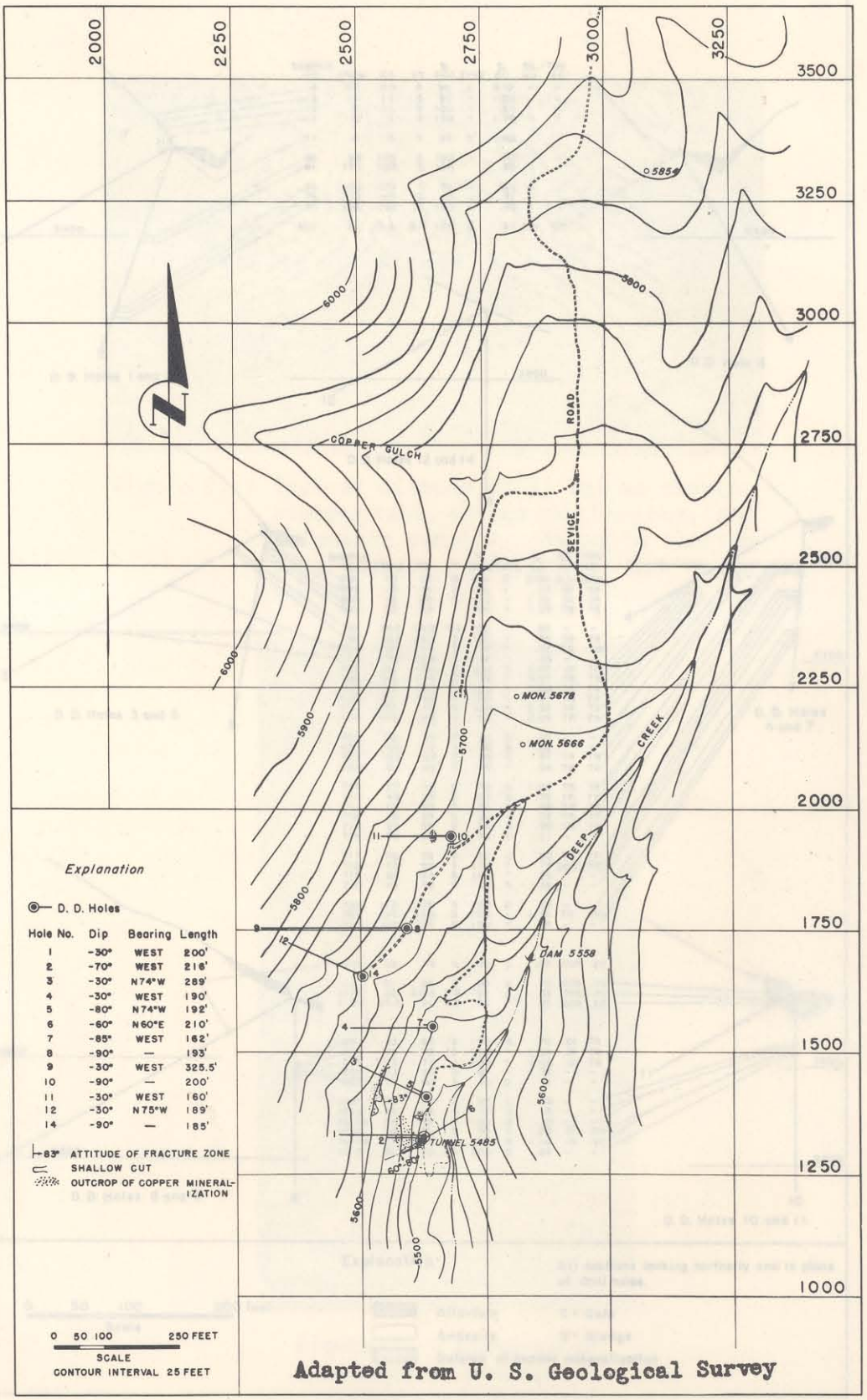

Figure 4. - Plan map of Table Mountain copper deposit.

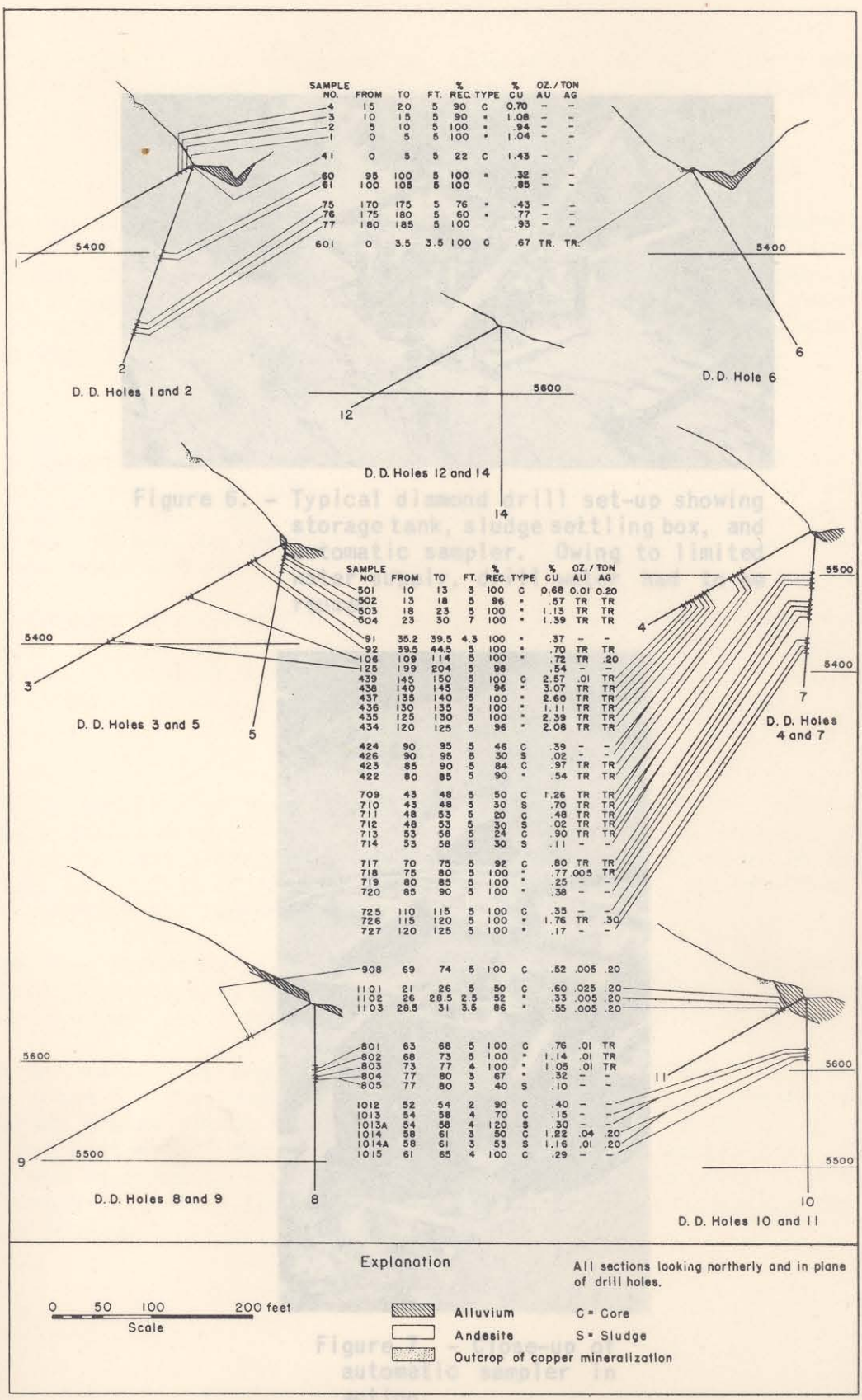

Figure 5. - Cross sections through diamond drill holes, Table Mountain copper deposit.

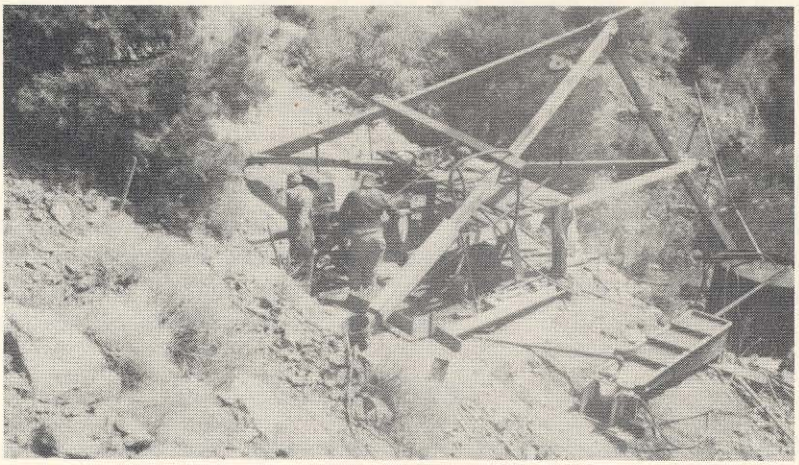

Figure 6. - Typical diamond drill set-up showing storage tank, sludge settling box, and automatic sampler. Owing to limited water supply, drill water had to be reused.

Figure 7. - Close-up of automatic sampler in action.

shack that belonged to a prospector was cleaned out and made into a core house and sample-preparation room. A dam was built on Deep Creek as a water reservoir for drilling purposes, and water lines were laid down.

Road Work

The road from the camp site, a strip of 4 miles that was impassable by motor trucks at the start of operations owing to steep grades and sloughing of roadbanks, had to be repaired. This comprised relining and clearing the roadbed. A company-operated bulldozer assisted in earth removal. New roads also had to be extended to the drill sites. The road to the camp site from Lovelock also had to be repaired in places.

Core Drilling

Two Government owned and operated core drills were used in drilling. Figure 4 is a plan of the core drill holes. Thirteen holes were drilled, totaling 2,711 linear feet. A drill operator and assistant comprised the drill crew. No serious trouble was encountered in drilling. The water supply was small and had to be conserved as much as possible.

Holes were started with BX size in going through alluvium and installing standpipe. AX-size hole was used virtually throughout, with the exception of three holes in which EX size was used for 88 feet. A summary of drill-hole data is given in table 1.

SAMPLING AND ANALYSES

Sample analyses of the drill holes are shown in figure 5. Although 652 samples, including 509 from cores and 143 from sludges, were analyzed, only intervals that average 0.5 percent or more copper are shown in the sections. Every foot of the hole has been sampled, with the exception of hole 8, in which the barren areas were not considered.

Sampling intervals averaged about 5 feet. Core samples were used throughout for analyses, and where core recovery dropped below 90 percent, sludges also were saved for analyses.

An automatic sampling machine was used to catch sludges, as shown by figures 5 and 6. The sampling machine made 100 oscillations per minute through the sludge stream and delivered the cut portion of the sludge into a sack for filtering. The filter sack also served as a sample bag. The sampler was operated by a water motor, which received its power from the water pumped into the hole. This saved much labor and facilitated the sampling process.

TABLE 1. - Data pertinent to Bureau of Mines drilling at the Table Mountain copper deposit

Drill hole	Location	Elev., ft.	Bearing	Dip	Footage			Total
					BX	AX	EX	
1.....	Lat. 1325 Dep. 2625	5,489	Due west	-30°	3.0	197.0	0	200.0
2.....	Lat. 1325 Dep. 2625	5,489	do.	-70°	3.0	213.0	0	216.0
3.....	Lat. 1408 Dep. 2630	5,505	N. 74° W.	-30°	8.0	281.0	0	289.0
4.....	Lat. 1552 Dep. 2642	5,545	Due west	-30°	7.0	183.0	0	190.0
5.....	Lat. 1407 Dep. 2632	5,504	N. 74° W.	-80°	13.0	179.0	0	192.0
6.....	Lat. 1318 Dep. 2618	5,487	N. 60° E.	-60°	3.5	206.5	0	210.0
7.....	Lat. 1552 Dep. 2646	5,545	Due west	-85°	6.0	156.0	0	162.0
8.....	Lat. 1753 Dep. 2592	5,660	-	-90°	3.0	190.0	0	193.0
9.....	Lat. 1753 Dep. 2591	5,661	Due west	-30°	3.0	312.0	10.5	325.5
10.....	Lat. 1943 Dep. 2683	5,674	-	-90°	21.0	119.0	60.0	200.0
11.....	Lat. 1943 Dep. 2679	5,674	Due west	-30°	26.0	134.0	0	160.0
12.....	Lat. 1656 Dep. 2503	5,670	N. 75 W.	-30°	3.0	168.0	18.0	189.0
14.....	Lat. 1656	5,670	-	-90°	3.0	182.0	0	185.0
					102.5	2520.5	88.5	2711.5