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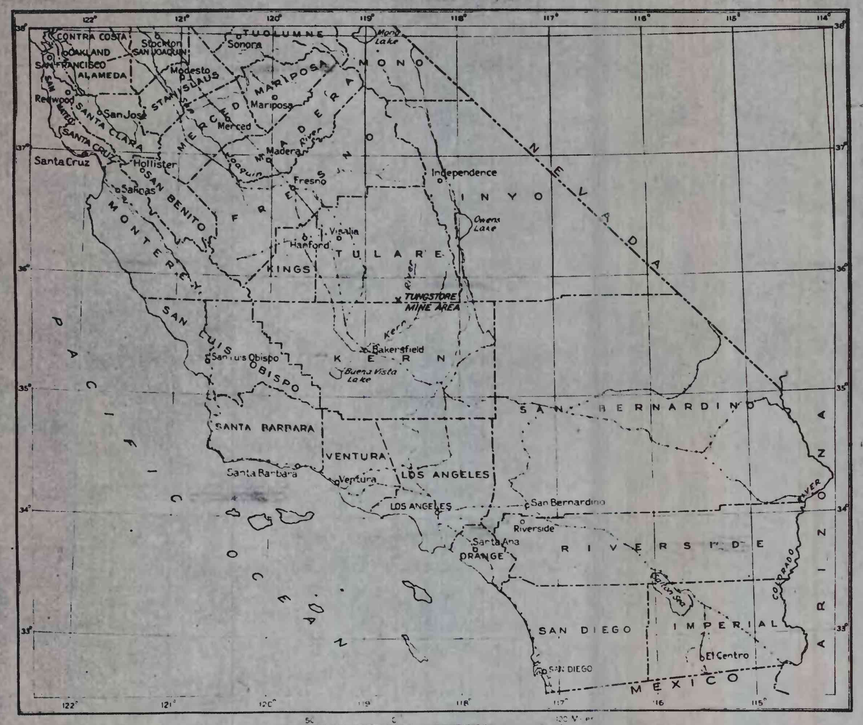

FIG. 1—INDEX MAP OF SOUTHERN CALIFORNIA SHOWING THE LOCATION OF TUNGSTORE MINE AREA

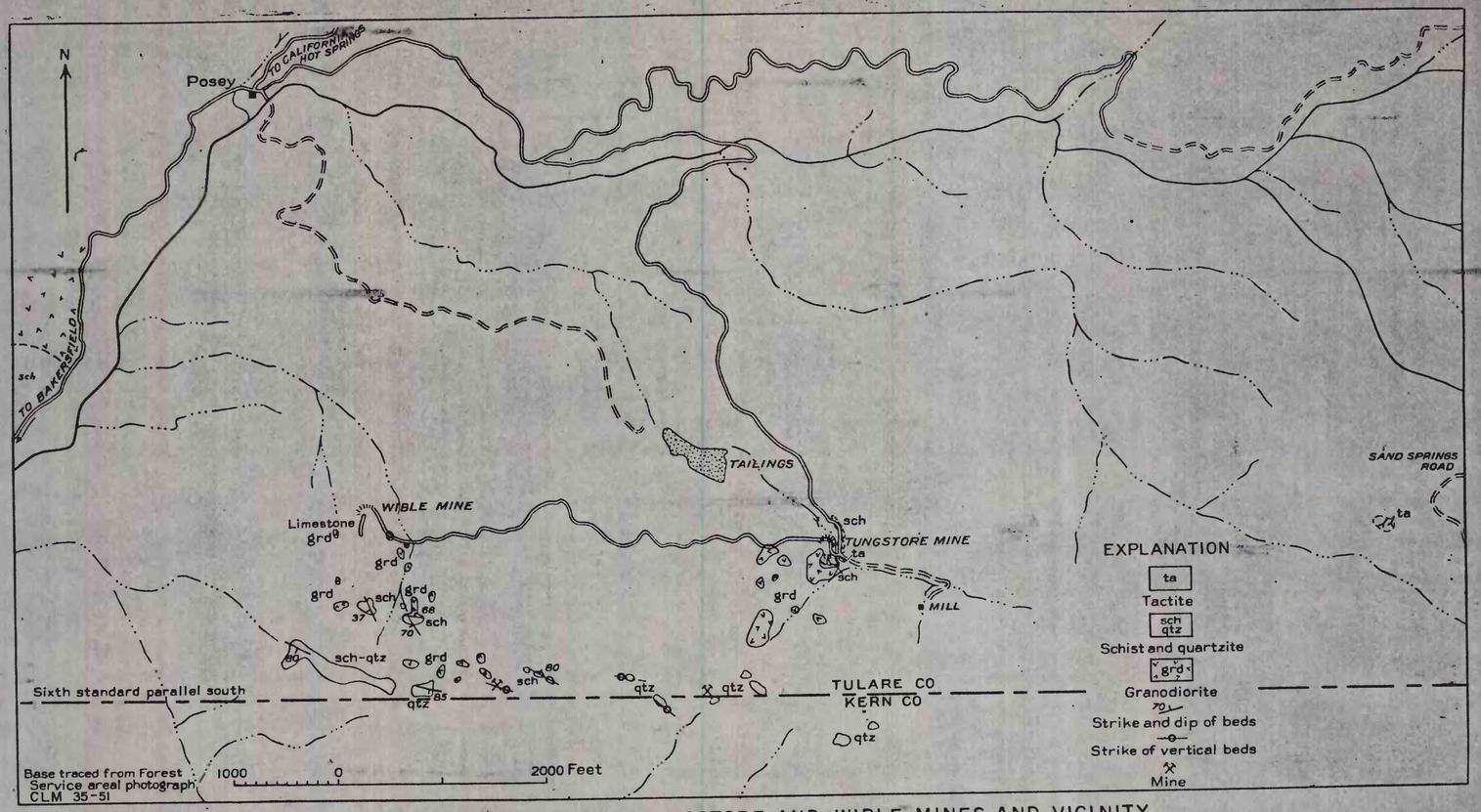

FIG. 2—GEOLOGIC MAP OF TUNGSTORE AND WIBLE MINES AND VICINITY

THE TUNGSTORE MINE AND VICINITY, TULARE COUNTY, CALIFORNIA

The Tungstore mine and the adjacent Wible mine are on the west flank of the Greenhorn Mountains in a part of the Sierra Nevada near Posey, Tulare County, Calif. (fig. 1). Posey is on the Jack Ranch, close to the boundary between Kern and Tulare Counties, and is 53 miles by a winding surfaced road from Bakersfield, Kern County. The deposits are in secs. 31 and 32, T. 24 S. R. 31 E., on wooded, soil-covered hills 3,500 to 4,500 feet in altitude (fig. 2).

The deposits were examined for the Geological Survey, United States Department of the Interior, in August and September 1941 by Dwight M. Lemmon and Donald G. Wyant, who prepared geologic maps of the mines and of the general area. In March 1942 Mr. Wyant, assisted by F. M. Byers, revisited the deposits to map new underground workings.

The Tungstore mine, formerly known as the Kennedy mine, was operated from 1931 to 1942 and the Wible mine in 1938 and 1939. Past operations were described to the Geological Survey representatives by Mr. C. A. Rasmussen, manager, Mr. Iver Helfer, superintendent, and Mr. Hoffman, foreman.

In the vicinity of the tungsten deposits, an east- and west-trending belt of small, isolated bodies of metamorphosed sedimentary rocks has been irregularly invaded by granodiorite. These bodies consist principally of interbedded schist, quartzite and marble, which in general strike northwest and dip northeast. They may be the remnants of a formerly continuous pendant of sedimentary rocks, and probably none of them extends for any great distance beneath the outcrop.

Limestone in four of the small pendants has been replaced by tactite, a dark silicate rock composed essentially of garnet, quartz, epidote, and amphibole. Two of the masses of tactite contain ore bodies of scheelite (calcium tungstate), but most of the other beds of tactite exposed in the district are barren. In the areas between and surrounding the ore bodies, exposures are poor and most of the hill slopes are covered with a mantle of soil and loose rock, in places as much as 10 feet thick.

In the Tungstore mine, on the Jack Ranch, granodiorite has been complexly intruded into a pendant of tactite and schist, which strike northwest and dip steeply northeast. Scheelite occurs in irregular bodies of tactite composed mainly of quartz, amphibole, garnet, and sulfide minerals. The ore bodies developed in the mine were of relatively high grade, their average content in WO_3 being probably between 1.0 and 2.0 percent.

The principal opening of the mine is an open cut approximately 80 feet deep, 200 feet long and 100 feet wide at the top, and 150 feet long and 15 feet wide at the bottom (figs. 3, 5). A crosscut adit 420 feet long extends beneath the cut, with which it is connected by several raises. The underground workings (fig. 4) also include 540 feet of drifts and crosscuts and approximately 160 feet of raises. Before the open cut was dug the property was partly developed by two short adits and a shaft.

Three ore zones are exposed in the cut: (1) the main ore zone, occupying the axis of the cut; (2) a second zone, extending from the southeast end of the main ore zone; and (3) a third zone, that extends from the northwest end of the main zone.

The main ore zone was approximately 170 feet long, 15 feet wide, and at least 80 feet deep, with a northwest strike and a dip ranging from 53° NE. to vertical. The zone ended downward in two prongs, one at each end of the pit. Only a small root of this zone extends to the level of the crosscut 50 feet beneath the bottom of the open cut. Ore extends upward from the tunnel to the southeast end of the open cut and continues upward behind the south wall of the cut for an unknown distance. The underground workings do not extend beneath the west prong of the main ore body and the depth of this prong beneath the surface workings is therefore unknown.

The second zone, exposed by the ramp that slopes southward from inside the entrance to the cut, extends 65 feet northward from the southeast end of the main zone, but does not extend downward to the adit level. Its average width where exposed is 19 feet. It contains small, rich lenses of scheelite. No ore was seen in the narrow third zone but some might possibly be developed below the floor of the cut.

Little ore was definitely blocked out in the mine, but the prongs of the ore bodies mined in the open pit had not been mined out or thoroughly prospected. It was estimated that 250 feet of new workings would be sufficient to explore and extract these remnants by means of drifts and raises from the adit level. Reserves of indicated and inferred ore were estimated in 1942 at 5,050 tons containing 2,750 units of WO_3.

The Wible mine is developed by an open cut 300 feet long and from 25 to 90 feet wide, with walls from 10 to 40 feet high (fig. 6). The three benches forming the cut are spaced at vertical intervals of 25 feet.

Although the exact size and distribution of the ore bodies in the pit are unknown, the amount of ore taken out was small in proportion to the total amount of rock removed. The remnants of ore now exposed in the pit suggest that there were two or three distinct layers of ore separated by quartzite or granodiorite, and they may be partly localized in the lower parts of pendants. The two main ore-bearing tactite bodies shown by the exposure in the west wall of the top bench and by the southeast bulge on the middle bench were formed by partial replacement of limestone beds 10 to 25 feet thick.

The only ore in sight was in the bed visible in the west wall of the top bench. This ore body, 2 to 8 feet wide, is exposed for a length of 50 feet and a depth of 20 feet. Although the ore bed narrows to 1 foot between the top and intermediate bench, it widens again northward to 5 feet on the intermediate bench, indicating that the bottom of the ore zone pitches to the north. South of the open cut the bed is covered by 1 to 3 feet of overburden and had not been prospected in 1942.

Very little ore was blocked out in the mine. Reserves of indicated and inferred ore were estimated as 1,000 tons, containing 750 units of WO_3. It is estimated that 150 feet of shallow trenches, possibly followed by 100 feet of drifts, would develop all the ore that could reasonably be expected from the mine.

The quantity and grade of ore mined in the Posey area are such as to warrant further exploration in the district. In the covered areas between the Wible and Tungstore mines, trenching and geophysical prospecting might lead to the discovery of new ore bodies.