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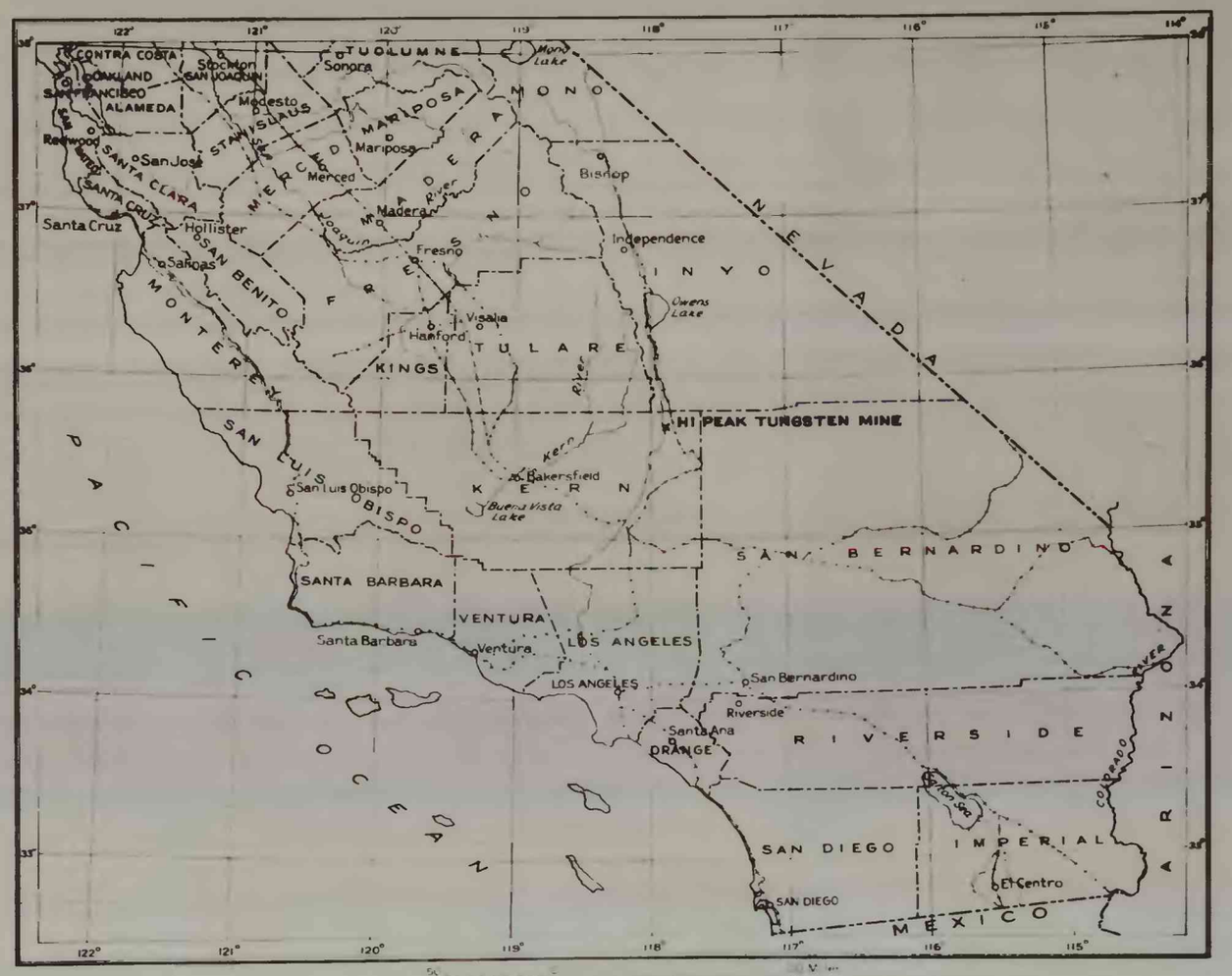

FIGURE 1 - INDEX MAP SHOWING LOCATION OF HI PEAK TUNGSTEN MINE

HI PEAK TUNGSTEN MINE, KERN COUNTY, CALIFORNIA

The Hi Peak tungsten mine is in sec. 10, T. 26 S., R. 38 E., Mt. Diablo Base and Meridian, at the eastern base of the Sierra Nevada in northeastern Kern County, Calif. (fig. 1). It is 8 miles west of Inyokern, a station on the Owenyo branch of the Southern Pacific Railroad, and 0.7 mile by dirt road west of surfaced U. S. Highway 6.

In February 1943, Max P. Erickson and Robert Stopper of the Geological Survey spent 5 days mapping the geology of the mine. Paul C. Bateman of the Survey mapped new mine workings on July 10 and 11, 1943, and on January 1, 1945.

Scheelite ($CaWO_4$) was first discovered in the area in January 1942 by Emery Bales and Charles Stirling. The U. S. Flare Corporation leased the Hi Peak group of claims from Emery Bales and Henry Gifford in February 1942. Exploration on the property has been directed by Norman Whitmore, who is in charge of mining operations for the U. S. Flare Corporation.

No ore has been stoped, but probably from 2,000 to 3,000 tons were removed from development workings. Part of the ore was shipped to custom mills at Mojave and Weldon; part was treated in a 75-ton gravity mill recently completed on the property. The average grade of the ore milled was about 0.5 percent of WO_3 (tungsten trioxide).

The mapped area is largely underlain by granodiorite. Numerous elongate inclusions, or small pendants, of metamorphic rock are distributed through the granodiorite, oriented in a northerly direction parallel to bedding. Stratification within the inclusions is very steep or vertical. The metamorphic rocks, which comprise schist, slate, hornfels, and impure marble, are penetrated complexly by granitic dikes and sills.

Tungsten ore bodies are limited to a single mass of metamorphic rocks, about 200 feet long by 300 feet wide, shown in the northern part of the surface map (fig. 2). The ore bodies have been explored by means of the North adit (fig. 3), which is connected with a level (fig. 4) by a 50-foot winze. Although small amounts of scheelite occur in the 300-foot South adit (fig. 5) and in some of the open cuts on the Hi Peak property, no other ore bodies of commercial grade or size are exposed.

The metamorphic rocks that contain the ore bodies are tightly folded along a vertical axis. A fault, striking N. 30° W. and dipping 75° E., cuts across this axis at a small angle, offsetting the metamorphic rocks on the west side 300 feet south. The fault is occupied by tactite in the south drift of the North adit and is therefore believed to be pre-intrusive in age. It is offset by several post-intrusive faults with small displacements. Solution cavities, either open or filled with detritus, occur in the marble exposed in the workings. The detritus in the filled cavities resembles fault breccia, with which it may be confused.

The scheelite is contained in garnet-quartz-epidote tactite that occurs along bedding planes and along a cross fracture that strikes east and dips 45° S. The bedded ore bodies are thicker where they intersect the mineralized cross fracture, suggesting that the cross fracture provided the main channel for mineralizing solutions. Within individual beds, the localization of ore bodies may have been guided by shearing along bedding.

The grade of the ore ranges from 0.3 to 2.0 percent of WO_3, and averages about 0.75 percent. Much of the ore is in beds too thin to be stoped without dilution from the wall rock. Consequently, the average mill heads cannot be expected to contain as much as 0.5 percent of WO_3 unless the ore is sorted. Ore partially blocked out above the lowest mine level is estimated at 4,000 tons, but probably only 50 to 75 percent of this ore can be mined profitably.

The only portion of the deposit favorable for additional prospecting is beneath the mine in downward extensions of known ore bodies. It is unlikely that enough ore could be found in any of the other bodies of metamorphic rock to pay the cost of exploration. The ore bodies developed in the mine apparently thicken downward, and may contain substantial quantities of ore beneath the mine workings. Exploration at deeper levels should be directed toward the intersections between the cross fracture and the mineralized beds.

California (Hi Peak Mine) Tungsten V. S.
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