The HI Peak tungsten mine is located in sec. 10, T. 26 S., R. 38 W., Mt. Diablo Range and Desert, at the eastern base of the Sierra Nevada in northeastern Kern County, Calif. (fig. 1). It is 8 miles west of Ojai, a station on the Southern Pacific Railroad, and 0.7 mile by dirt road west of surfaced U.S. Highway 60.

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

Scheelite (CaWO₄) was first discovered in this area in 1945 by Kenney Bales and Charles Siring. The U.S. Bureau of Mines leased the HI Peak group of claims from Kenney Bales and Henry Gifford in February 1946. Exploration on the property has been directed by Norman Whitmore, who is in charge of mining operations for the U.S. Bureau of Mines.

So ore has been stowed, but probably from 5,000 to 10,000 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 WO₃ (tungsten trioxide).

The mapped area is largely underlain by granodiorite. Selected drill cores and small portions of xenoliths of metamorphic rock are distributed through the granodiorite, oriented in a northerly direction parallel to bedding. Stratification within the inclusions is steep or vertical. The metamorphic rocks, which comprise schist, gneiss, hornfels, and impure marble, are penetrated completely by granite dikes and sills.

Tungsten ore bodies are limited to a single mass of metamorphic rocks, about 200 feet long by 250 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 mine. Although small amounts of scheelite occur in the 200-foot South adit (fig. 5) and in some of the exploratory cuts on the HI Peak property, no ore bodies of commercial grade or size are exposed.

The metamorphic rocks that contain the ore bodies are tectonically tilted along a vertical axis. A fault, striking N. 30° W. and dipping 75° S., offsets the metamorphic rocks on the west side 300 feet south. The fault is occupied by tectonite 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-sillimanite schist that occurs along bedding planes and along a cross fracture that strikes east and dips 45° S. The banded 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 WO₃, and averages about 0.75 percent. Much of the ore is in beds too thin to be stowed without dilution from the walls. Consequently, the average mill heads cannot be expected to contain as much as 0.6 percent of WO₃ unless the ore is wasted. On the other hand, ore held above the lowest milling 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.