

Silver Dyke Mines

The Silver Dyke mines are along Silver Dyke Canyon in the eastern end of the Excelsior Mountains in Sec. 10(?), T. 5 N., R. 34 E., 5 miles southwest of Sodaville. The mine is accessible by a 6-mile dirt road extending west from U. S. Highway 3 miles south of Sodaville.

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The tungsten deposits were discovered in 1915. By 1937 mining had virtually ceased, over \$1,000,000 worth of scheelite concentrates having been produced making the area one of the more important tungsten producers in Nevada. From east to west along the productive area of the Silver Dyke vein system, the workings are: the Beane mine, Wagner mine, Atkins shaft, Silver tunnel, and Goodale mine. The Noble mine is along a branch vein (see fig. ____). In 1929, after the mines were acquired by the Nevada-Massachusetts Co., a crosscut-adit was driven 500 feet N. 26° E. to the Silver Dyke vein, and a drift extended some 4,000 feet along the vein connecting the Goodale, Wagner, and Beane mines.

Kerr (1936 and 1946) described the geology and mines in some detail, including geologic maps and sections of the workings and surface. Triassic(?) andesite flows, tuffs, and breccias, and interbedded hornfels and slate, have been intruded by diorite. Granodiorite and "albitized" dikes intruded the older rocks, and apparently are end phase intrusions from the same parent magma as the diorite. Tertiary andesite and rhyolite flows and tuff cap the older rocks east and west of the tungsten deposits. The granophyre dikes in the area apparently are related to the Tertiary volcanic activity.

Fig. ____ . Geologic Map of the Silver Dyke Tungsten Mines.

The diorite body crops out over an irregular elliptical area 1 1/2 miles long (east-west) by 1 mile wide (north-south). Much of the body has been invaded by albite and quartz. It also has been extensively kaolinitized, the kaolin occurring in funnel-shaped bodies with gradational contacts. The granodiorite dikes, a few inches to several feet wide, intrude joints in the diorite.

The diorite is jointed in a regular pattern. Near the Silver Dyke vein system the joints are nearly vertical and parallel the vein. Southward the

joints dip increasingly less steeply to the south. The joint pattern and the intrusion of the late phase granodiorite dikes along the joints suggest that the joints were formed in the margins of the domed top of the diorite body during or shortly after its emplacement. N-S

The Silver Dyke vein system is in an east-west-trending fault (sheared and brecciated) zone 6 miles long and up to 600 feet wide. A number of small faults most of which strike east to northeast, offset the vein system short distances. The Triassic(?) meta-volcanic series in contact with the Silver Dyke vein system and diorite body is altered to quartz, albite, actinolite, chlorite, tourmaline, epidote, pyrite and magnetite, and cut by veinlets of quartz and albite.

The vein system consists of several, parallel, steeply-dipping to vertical fracture fillings forming a continuous zone extending over 6 miles east-west in the diorite and Triassic and Tertiary volcanic rocks. The vein

Fig. __. Diagrammatic Section of the Silver Dyke Vein System.

system has several units that are remarkably persistent. Closely spaced, roughly parallel veinlets of quartz in the diorite form the footwall of the vein system; the veinlets making up this "ribbon" zone contain some scattered grains of scheelite.

Above the ribbon zone is the "replacement" zone which is up to 5 feet thick and consists of brecciated diorite, and less commonly volcanic rock, fragments recemented and partially replaced by quartz containing albite. Much of the scheelite in the vein system is in this zone. Where the breccia fragments are the more siliceous volcanic rocks, the zone is barren.

The hanging wall above the replacement zone is finely brecciated, uncemented, barren quartz. Widely-spaced quartz veinlets are common in the hanging wall volcanic rocks and diorite.

The scheelite is concentrated in the portion of the vein system that is in contact with the diorite body. Although the tungsten-bearing solutions must have penetrated the volcanic series, very little scheelite was deposited in these rocks. Kerr (1946) points out that the diorite is the most calcareous rock in the vicinity of the tungsten deposits, and apparently furnished the calcium which combined with the tungstic acid to produce the scheelite. Rims of scheelite around partially replaced diorite fragments support this theory. The scheelite fluoresces pale yellow, due to the presence of molybdenum which averaged about 1/2 percent in the concentrates. No molybdenite or powellite has been reported.

The Silver Dyke tungsten consisting of 8 lode claims is on the east flank of the Excelsior Mountains 12 miles southwest of Mina.

The property was located for gold and silver in 1915. Shortly thereafter it became a tungsten producer under the title Silver Dyke Tungsten Mine and continued to produce ore under different operators up to 1956.

The core of the Excelsior Range in the vicinity of the Silver Dyke is intrusive diorite. A great thickness of old volcanics with some intercalated sediments have been invaded by the diorite in the vicinity of the tungsten-bearing veins. The vein system truncates the diorite.

The Silver Dyke vein system ranges from 30 to 140 feet in width and can be traced on the surface for about 4 miles. Within the vein, the scheelite occurs in irregular lenses associated with quartz. The ore varies from 3 feet to 15 feet in width. During the recent operation of the mine, a stoping width of 6 feet was maintained. Since shrinkage stoping was advantageously used the rock stands well and only an occasional stull was required for support.

Development openings consist of a crosscut adit 871 feet long, and a 200 foot winze. The 400- and 500-foot levels were extended from the winze. Drifts were driven 5 by 7 feet in section and usually were untimbered. Production was at the rate of 30 tons per day with an average

grade of about 0.83 percent WO_3 . The ore possibilities have not been exhausted, and with additional developement the property should be a steady producer for an extended time.

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The Defender tungsten mine in the district, produced a minor amount of tungsten. The Cidis and Wassuck tungsten property (Lucky Four) included in the district had a small production.