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November 28th, 1941.

Mr. George Harrington,
405 Montgomery Street,
San Francisco, Calif.

To Edward Wisser, Dr.

To professional services, examination of La Joya quicksilver property, November 25th,1941.....$50.00

November 28th, 1941.

Mr. Geo.Harrington,
405 Montgomery Street,
San Francisco, Calif.

MEMORANDUM ON LA JOYA QUICKSILVER PROPERTY,
NAPA COUNTY, CALIF.

Pursuant to your request, I visited the property on November 25,1941, in company with Mr. L.P.Sargent of Palo Alto. The following information was obtained from inspection of the property, from Mr. Sargent, Mr. Max Pokorney,superintendent,and from "Quicksilver Resources of California", W.W.Bradley, Calif.State Mining Bureau, Bul. 78,1918.

The property lies in Sec.24, T 7 N, R 6 W, Mt.Diablo Base & Meridian. It is reached by driving from San Francisco along Highway 29 through Napa, turning west at Oakville on the County road to Glenn Ellen,and from this road by private road to the mine. The mine lies some 6 miles in a straight line west of Oakville.

The holdings are said to comprise over 600 acres,in mining claims and patented agricultural land. A 3 x 40' Gould rotary furnace,with crusher, condensers etc., has recently been rehabilitated and appears ready to turn over. There are also compressors, receivers, oil tanks etc. suitable for a small mining operation.

Operations began at the mine many years ago,possibly in the '80s. Production prior to 1916 is unknown;that from 1916 through 1917 was 405 flasks,which would be worth some $77,000 at present prices. The property was closed down after the 1st world war,but was reopened about 1928;operations continued until about 1931 or 1932;production during that period has not been ascertained. The total production might be guessed at at 2000 flasks,worth $380,000 at present prices.

The property,as seen on the surface and in shallow workings, is typical of many productive quicksilver mines of the California Coast Range. Franciscan sandstone,striking northwest and probably rather sharply folded,is intruded by serpentine,as one or more large masses and as several tongues or sills, striking with,and probably dipping with, the sandstone beds. Along the northeast of footwall side of one of these serpentine tongues is a band of "vein-rock" or silica-carbonate rock,with ochre etc., about 100' wide. This vein-rock is an alteration product of the serpentine. Immediately northeast of it lies sandstone. The vein-rock is the characteristic outcrop rock of quicksilver mines. Near the southeast end of the developed part of the property, a cross-cut adit was run many years ago,extending over 800' to cut the zone or band of vein-rock. A drift along this band,driven southeast,encountered an ore body perhaps 200' long;there may have been two ore bodies,one on the hanging wall or southwest side of the

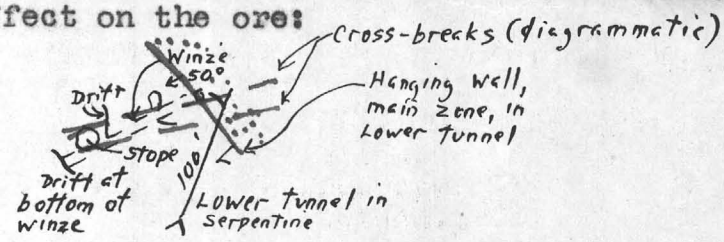
vein-rock zone, the other on the footwall or northeast side. According to a section shown in a report by Bert Austin, this ore body, or both of them, produced about $200,000 worth of quicksilver. Practically no drifting has been done northwest of the point where the cross-cut adit cuts the vein zone.

Several hundred feet northwest of the last-mentioned point, an opencut stope, said to have been mined in the '80s, is supposed to have produced about $80,000 worth of quicksilver. This cut is about 250 feet long, and perhaps 30' wide. A tunnel driven beneath it is not accessible. The dump shows sandstone, serpentine (from the tongue in the hangingwall of the vein-rock zone) and vein-rock.

Five or six hundred feet northwest of the old open-cut, two tunnels were put into the hill about 1939. The upper tunnel shows vein rock and some cinnabar, and Mr, Pokorney states that this stuff will run about 3 lbs. quicksilver per ton. About 35' vertically below the upper tunnel a 100' tunnel has been driven to the vein-rock zone, cutting it nearly beneath the upper tunnel. Only about 15' of drifting has been done from the lower tunnel, northwest along the hanging or southwest wall of the vein-rock zone. From a point near the end of this drift a winze has been sunk, inclined down to the southwest, 135' deep on the slope. A number of small drifts, stopes etc. have been driven from this winze, but the longest drift is less than 50' long.

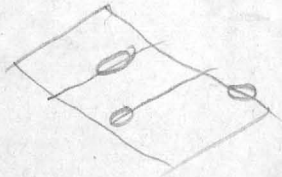
Not only has practically no drifting been done from the lower tunnel or the winze, but no cross-cutting northeast across the vein-rock zone either. All the workings stick close to the hanging wall of the zone.

Limited as the workings are, they seem to show how quicksilver ore is localized, in this locality at least. A series of cross-breaks, striking N75°E and crossing from the serpentine hanging wall of the vein-rock zone into the zone itself for an unknown distance, seem to have had a marked effect on the ore:



Another ore-guide seems to be a series of "mud walls" or soft gougy slips, striking parallel to the main vein-rock zone (about N50°W) and dipping parallel also (about 50° SW). Ore seems to make just above, and possibly also just below, such slips.

A cylindrical ore body, perhaps 50' high and 25' across, was stoped near the bottom of the winze, and directly above it. Little can be said concerning the amount of ore exposed in these workings. Some cinnabar may be seen nearly everywhere, and there are some good bunches.



The short level at the foot of the winze has wandered completely out into the hanging wall serpentine, so the fact it is barren has no significance.

The ore consists of thin but numerous seams of cinnabar, mainly traversing hard boulders of silica-carbonate rock. There is a little dark opalite, calcite, quartz etc., and very sparse disseminated white pyrite or marcasite (iron sulphide).

During the operations of this year, the mistake was made of spending the money at hand ($7000) entirely on the rehabilitation of the plant, road etc., instead of putting it into the mine. The old tunnel at the southeast end of the property is apparently badly caved. Reopening it would be expensive and take considerable time, with results doubtful. The only place immediately available for development is the area of the winze, at the northwest end of the xxx showings. For work from the winze, ties and track must be laid, sheave wheel and hoist installed, skip made, etc., together with chutes and ore pockets, as well as a storage bin at the portal of the lower tunnel. This, however, is not enough to start production, even if there is at present an ore body developed by the winze. One cannot stope right next to the extraction shaft; a pillar must be left to protect it. It is my opinion that no commercial ore is exposed in the winze workings anyway. There are seams and bunches, but these must be followed by drifts and raises to see if they might open up into one or more sizable ore bodies.

But such exploration is still not enough to insure reasonably xxx steady operation of the plant and consequent profits. Quicksilver mines require numerous working places, for any one is likely to peter out at any moment. These working places must be sufficiently far apart so that failure of one will not mean failure of its neighbour. One way to secure such a number of wprking places would be to run an extensive drift, several hundred feet long, along the main vein-rock zone, in an attempt to cut as many as possible of the N75°E cross-breaks that seem to carry the ore. Another way would be to cross-cut the main zone completely, 100'. This work runs into money. At $12 per foot, 200' of drift would cost $2400, 100' of cross cut $1200. Minor poking around would bring the cost of a very moderate amount of exploration to $5000.

In a mine such as this, 3 tons per man-shift is good production. For the 40 ton plant then, 13 men would be needed (mine, plant etc.) The cost of operation figures about $12 per man-shift, or say $160 per day. All quicksilver mines go through periods of forced shut-down of the plant through lack of ore. A week's shut-down here would cost $1000.

It has been supposed or hoped that an additional investment of $5000 would put the mine in production. Even if the ore shown in the winze should open out into a sizable ore body at once, it is extremely doubtful whether such ore could be made ready for stoping for $5000. If not, the enterprise would fail.

The writer thinks the La Joya mine a better than average ~~good~~ bet. It has had considerable production, and the features commonly associated with successful mines (serpentine contact, strong deformation, very strong outcrop, cross-breaks etc.) are present. There are, however, very limited accessible workings. So far as chances for new ore are concerned, the mine is practically a prospect. It is no shoestring venture, and should only be tackled with cash resources of not less than $50,000. Quite possibly this entire sum would never have to be spent; but such a sum is needed to tide over possible ill luck in exploration at the start.

Edward Wisser

November 28th, 1941

Edward Wisser
Mining Geologist.