

MINING. -

800902

The Victor Mine of Violamac is currently being mined from three adit levels 5, 7, and 9. There are two sublevels, one between 5 and 7 and one between 7 and 9. 10 level is being driven 160 feet below 9. *sublevel
@ 57.9
(+10)*

There are presently 74 men employed on two shifts; 57 underground and 17 on staff and surface. Roughly a third stay in camp and the rest commute from New Denver and Silverton. The camp is located above 5 level and consists of bunkhouse, cookhouse and mine office and one of the mine dries. Another dry is located at 9 level with the compressor house and shop.

Three diesel powered compressors supply the mine air through a 4 inch line along 9 level and up to 7 level where it branches into 2 inch lines to the upper levels. A cat 13000 powers a 375 c.f. Sullivan and two Waukeshas power two 360 C.F. Ingersoll Rands type 40. A cat D.318 diesel electric set provides power for surface lights and for underground battery charging stations. A D-6 Cat is kept busy building and maintaining roads, pushing waste dumps and plowing snow. There are some 9 miles of road crisscrossing the property. Water for the camp and mine is piped from a spring in summer and an old mine tunnel in winter.

Avg. 1800 tons/mo. millfeed + 70-80T direct shipping ore.

The daily production of 80 tons of millfeed is trammed on 7 and 9 levels by Mancha Little Trammers pulling 2-ton rocker dump cars. Ore is dumped on 4 inch grizzlies over the truck loading bins and some waste rock and high grade picked out. Waste is also trammed out on these levels and dumped down the sidehill from trestles. On 5 level and the sublevels muck is trammed by hand. All muck is loaded from 36 inch hand chutes, two of which have arc gates.

Standard track gauge in the mine is 18 inches. 20 pound rail is used on 7 and 9 levels and 12 pound rail on the other levels. A track grade of 1/2 of 1 per cent is aimed at but in soft wet ground this seems to creep up somewhat.

To date the bulk of the mine drainage water flows out 9 level ditch. This water together with that piped down the hill from 7 portal is flumed along the hillside away from surface installations before it is allowed to flow down the hill into Carpenter Creek. Drainage is caught on the sublevels and piped down to main levels to keep chutes and manways dry.

Natural ventilation is very good in most seasons. Dead end headings are force ventilated with 12 inch Mecco fans and steel vent pipe in various sizes from 9 inch to 15 inch depending on the distance.

All headings are closely timbered so that a relatively large volume of timber must be handled, some 2000 f.b.m. per day. This is all square timber purchased locally and hauled from Silverton and New Denver by returning ore trucks. It is all cut in timber sheds at the portals and taken into the various working places. Drift and raise timber is cut ahead to standard but stope timber is cut by the stope miners to fit. No timber is framed, all posts being spread with a 2 inch scab nailed on the bottom of the cap. Girts or collar braces are just toenailed in place.

4" x 6"

above 2/19.
of rail

Main level or mucking machine drifts are driven 6 by 7 inside the timber. 10 by 10 sets with 3 inch back lagging are placed at five foot centres. All drift posts are battered 5 to 10 degrees and cut ~~7 foot 6 inches~~ and dug well down to counteract side squeeze at the bottom. 2 inch side lagging is put in loose and on cleats so that side pressure can be relieved before the posts break. Eimco 12 B muckers are used.

Sublevel or hand-mucked drifts are driven 5 x 6½ inside the timber and 8 by 8 sets with 2 inch back laggings are placed at 5 foot centres.

Timber is carried tight to the face and in bad ground a bridge for drive lagging is carried on top of the set. Drive lagging is 3" by 6-8 feet long. In running ground bridges must be carried on the sides too and side lagging driven.

5 foot drift rounds are drilled with a jackleg and 5 foot Copco steel series 4. The number of holes drilled varies with the ground, usually around 18 holes, using a draw cut. Holes are collared easily with a 5 foot steel, a stater steel being used only in close quarters. Integral steel with a chisel bit is easier to pull from broken ground than steel with detachable bits. The rock drills fast but steel is hard to pull and the ragged holes are difficult to load.

In very soft ground the top of the round is chipped out with an air-pickhammer or hitchcutter so that the back laggings can be driven ahead. Then the bottom of the round is blasted lightly. Sometimes the whole round is chipped out and laggings driven all around.

Chute bot. 35°-38° NORMAL MUCK; 40°-45°, STICKY MUCK, OR USE STEEL BOTTOM LINER.

Full timbered raises with single or double chutes are driven up the dip of the vein. The single chute raise is used in poor ground where a smaller opening is easier to hold, or where the vein is not productive. Manways are 4 X 5½ feet inside the timber and chutes 3 X 3 feet inside. 6 X 8 posts, 8 X 8 posts, 8 X 8 caps and 4 X 6 collar braces on foot and hanging are used. Sets are raised on 5 foot centres. Chutes are lined inside with 3 inch plank nailed to the caps and collar braces. 2 inch cross lagging is placed outside the posts on chute and manway as required. The caps and collar braces are blocked on the foot and hanging. A 6 X 8 bulkhead is carried over the manway. (One) plank on the side of the chute is removeable for entry above the timber. It is fastened on the outside with a swinging cleat or button. In stope raises there is generally a chute on each side of the manway and access to the stope is gained through these "trap doors" and across the chutes.

*or require 6
attached to spikes*

Where ore and waste are to be separated it is desirable to have a chute for each. Otherwise a single chute must be pulled empty for the change over resulting in undue wear of the chute lining besides the inconvenience and some unavoidable mixing of ore and waste. Transfer chutes are kept full to cut down the wear caused by falling rock.

Initial connections between 5, 7, and 9 levels were sunk as winzes because of some sections of running ground encountered in trial raises and diamond drill holes. After connection had been made transfer chutes were raised alongside, working from the protection of the winze timber. Later, development outlined panels of firmer ground through which raises have been driven.

In development headings on narrow veins of ore and waste are blasted separately, the ore usually being stripped from one wall.

Drifts and raises are driven on contract, the miner and helper sharing the bonus on a 60 - 40 basis.

All stopes are timbered and filled, the amount of timbering and the proximity of the fill to the mining face determined by the character of the wall rock and the amount of support it needs. In the best ground half sets with a post on the hanging wall and a hitch in the footwall have been used and no filling done until the stope was mined out. In the worst ground full sets with drive lagging all around or fill as you go have been used.

Stope sets are placed at roughly 5 foot centres using 6 foot posts and caps cut to fit. 6 X 8 posts, 8 X 8 Caps, 4 X 6 collar braces and 2 inch lagging are used.

cut-and-fill

In starting a typical ^{cut-and-fill} stope from a drift, chutes and manways are laid out so that there are four sets of drift timber between chutes and at every fourth chute there is a manway. Chute sets are added to the drift timber to make a 42 inch opening for a 36 inch chute with 3 inch lining. Some drift sets are changed to make room for a manway with a chute on each side. Then the backs are taken down with a stoper in the most solid looking section making room for two stope sets. This first floor above the drift is then advanced both ways to the end manways, mucking, building chute lips and placing a 3 inch tight floor on top of the drift sets. This is the first mucking floor. The manways are lagged off with a trap door left for entrance to the mucking floor.

Most of the ore is breasted down with jacklegs, a single row of holes in the ore being sufficient. A lot of soft ore is chipped out with pickhammers.

The second lift is started again in the most solid looking ground and advanced both ways over the first floor sets and the manway bulkheads, the broken ore dropping to the mucking floor. Timber is kept close to the advancing breast, care being taken that chute and manway sets are in line with the set underneath and allow sufficient opening from foot to hanging. Manway bulkheads are raised and the procedure repeated until the fifth lift has been taken. Then the stope is mucked out through the chutes and the walls and timber swept off to recover fines. The chutes are cross lagged outside with 2 inch plank and lined inside with 3 inch plank to the floor of the fifth lift. This is the second mucking floor. The stope is now ready for backfill. Fill is obtained from cross cuts on the fifth floor which explore the walls for parallel veins and from any necessary widening of the floor to make room for mucking. When the sets between the chutes have been filled and the fill levelled off a 2 inch floor is laid and the sixth lift commenced. This procedure is repeated until the stope is worked out or the level above is reached. Stope boundaries are usually major offset faults or main access manways.

This is a very flexible stoping method since sets can be added in any direction. Pillars can be left at will and exploration done both on and off the vein. Flexibility is very necessary when stoping a narrow vein through offset faults and variations in grade, attitude and wall rock.

When mining such a variable vein it is sometimes difficult to maintain a steady flow of ore of uniform grade to the mill. To make sure enough stopes are producing while others are backfilling, some stopes are broken into shorter sections so that the whole stope is not backfilling at the same time. There is very little room to store broken ore underground in such small ore passes so the muck reaches the outside quickly, and any changes

*Get by
muck
fall on to
backs to
mucking
clean-up*

*or filled
w. develop.
muck via
through-
raises.*

of
in grade¹ ore quickly reflected. The ore from different chutes is mined as evenly as possible to try and maintain a steady grade from day to day.

Since the ore is trucked and milled on a custom basis the grade is kept as high as possible by careful mining and by sorting out waste at every opportunity. The ore handled a great deal en route to the trucks so a good deal of waste and direct shipping ore is picked out. - on the 6" grizzlies over ore passes and/or over the 4" grizzlies on the mine ore bins.

Despite the difficulties encountered in ground requiring so much timber and hand work, the grade of ore recovered has made possible a very profitable little operation.