

SYSTEM OF ASSAY PLANS IN USE AT THE HERCULES MINE, MOUNT READ, TASMANIA.

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The following system of Assay Plans is in everyday use at the Hercules Mine, Mt. Read, Tasmania.

In the first place it is necessary to go into a short description of the ore mined, and to show how it is disposed of.

The mine is worked by means of adits driven into the mountain, and the ore despatched to the narrow gauge (2ft. 0in.) Government railway at the foot of the mountain by means of the inclined haulage tramway, worked by gravity, and controlled by band brakes at the top end of the line.

The gauge of the haulage line and of the trucking roads in the mine is two feet.

The ore occurs in large lens-shaped lodes, dipping east at an angle of about 45 degrees, and pitching north at about the same incline. The lenses are from 200 feet to 500 feet in length, and up to 80 feet in width.

The ore composing these bodies is a complex zinc-lead sulphide, carrying also gold and silver values.

As a general rule, the northern end of the lens appears to carry higher zinc values, which decrease as the lode is followed south, the lead contents meanwhile improving, but as the southern limits of the lode are reached, the lead also decreases, until finally a low-grade copper ore occurs.

The lead ore is despatched to the Tasmanian Smelting Company, at Zeehan, and contains from 3 to 4 dwts. of gold per ton, 12 to 15 ozs. of silver, 10 per cent. to 12 per cent. of lead, and 20 per cent. to 30 per cent. of zinc.

The zinc ore contains about 3 dwts. of gold, 9 ozs. to 11 ozs. of silver, 40 per cent. to 41 per cent. of zinc, and 7 per cent. to 9 per cent. of lead.

The timbering used throughout the mine is the square set system. Each set is 5ft. 2in. x 5ft. 2in. x 7ft., and this was taken advantage of in drawing up the assay plans for working purposes.

In consequence of the large size of the ore bodies met with in the Hercules Mine, and the scattered nature of the workings, it became necessary to evolve a system of assay plans that would enable the manager to see at a glance which working faces were of a payable grade.

When the writer was first employed at the mine, the samples were napped from the face, and sent up to the assay office, labelled with the number of the level, the name or number of the lode, the stope, and whether taken from the north or south ends, or from the hangingwall or footwall sides of the lode. As in some cases, there were as many as five or six faces being worked in the one stope of the same lode, this method was naturally confusing, and it was simply a matter of the assayer, or sampler, being able to remember the exact spot any particular sample was taken from, if it became necessary to refer back to the assay of a face at which work had been stopped for any particular reason.

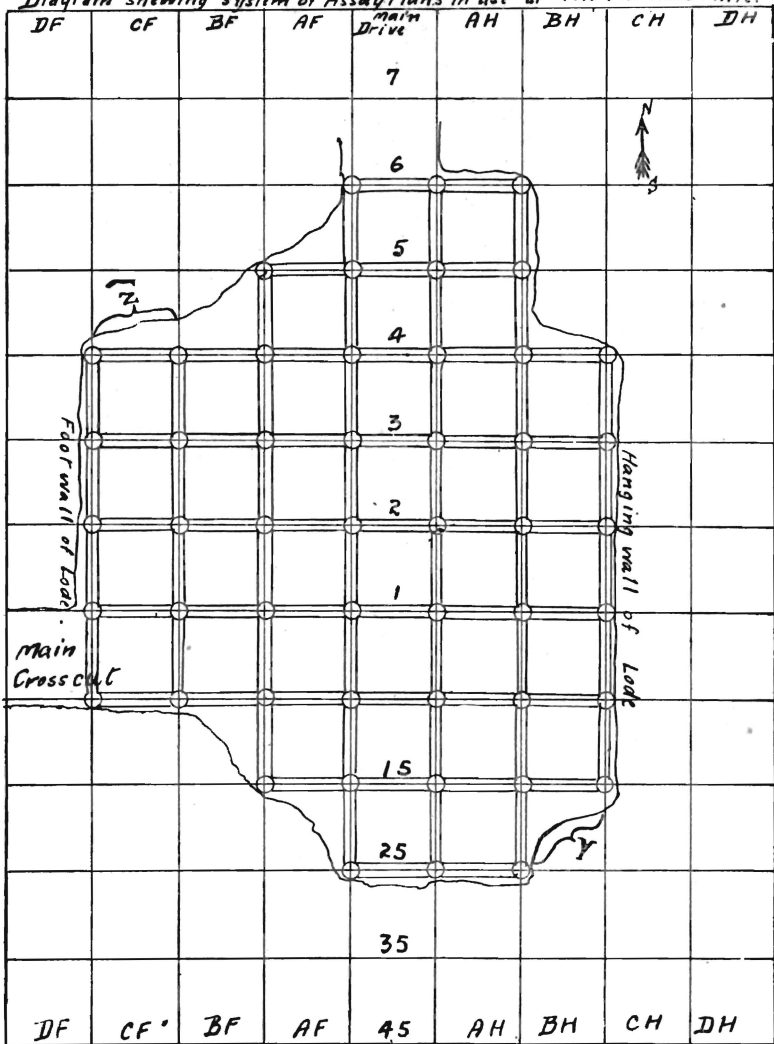
The writer was struck with the idea that advantage might be taken of the sets of timber for locating the assays, and that by numbering or lettering the sets the samples could be located and the exact position that any particular sample came from be picked out at a glance.

The sets being 5ft. 2in. x 5ft. 2in. centres, a piece of tracing cloth was sectioned into $\frac{3}{4}$ in. squares, and by keeping a separate plan for each stope, the exact extent of the stoping could always be seen at once, these plans also proving of much use when measuring up the stopes at any time. By shading the old and leaving new work unshaded, the extension for the half-year can be measured up in a few minutes from the plan.

The method adopted for numbering and lettering the plans can be seen by reference to the accompanying diagram; the main drive and main crosscut were taken as the datum lines. Each set in the drive (as shown on the plan) was numbered north and south of the main crosscut; in the case of sets north, only plain numerals being used, as 1, 2, 3, 4, etc.; where the sets extended south from the main crosscut, 1S, 2S, 3S, etc., was written.

The wing sets off the main drive were lettered AH, BH, CH, etc., if on the hangingwall side; AF, BF, CF, etc., if on the footwall side.

Diagram showing system of Assay Plans in use at The Hercules Mine.



To demonstrate the method of using the plan, a sample taken from the spot marked X on the plan would be marked when taken (Over crosscut and drive); one taken from the spot marked Y (2S.BH); one from the spot marked Z (4.CF), and so on, each sample also having the level, lode, stope, and date when taken clearly marked.

Thus a specimen label might be marked:—

No. 4 Level.

“E” Lode, 4th Stope.

12.EF.

24. 4. 11.

The sample is entered in the assay book under the following headings:—Date. Number. Locality. Plan Reference. Assays. And on looking up a sample in this book it can be at once located on the plan. This is of great value in a mine like the Hercules, as the ore varies in character, some being suitable for despatch as a lead ore, some as a zinc ore, and some being of too low a value to be of use at present; the change from the one to the other being in some instances very abrupt.

The same datum lines are taken for each stope. Thus a set marked, say, 5.BH on the main stope plan has the same distinguishing letters in the 1st, 2nd, 3rd, or any other stope.

The size of the sets, viz.: 5ft. 2in. x 7ft., gives a very suitable sized face of ore for a sample, and by daily samples of the various working faces, a very close approximation to the actual value of the ore mined is arrived at.

In some instances, where a large face of ore of good value is exposed, two, or sometimes three, sets are taken in the one sample, but as a general rule the face in one set is taken for each sample.

The plans are brought up-to-date at frequent intervals, the length of which is governed by the amount of the ore being broken and despatched.

The stopes are visited, and, as new timber is put in, this is entered in a rough field-book underground, and then plotted on the office plan. These plans are also of use for showing the amount of filling in the depleted stopes, which may be done by tinting the filled sets some distinguishing colour.

