

Summary

The informative capability of mine maps regarding macro-petrographic information in the hard coal mining of the Lower Rhine-Westphalian upper carbon

For the hard coal mining in the area of the Lower Rhine-Westphalian upper carbon in the period from the middle of 19th century up to the present the informative capability of the mine maps (1) was examined regarding macro-petrographic information.

Bases for this were 335 legal provisions and 293 publications, the mine maps of several mines that existed for a long time, cross sections of all mines for a year of reference as well as a comprehensive questioning of 35 specialists about the practical handling of the macro-petrographic observations and their representation used by them. The quality of the mine maps depends on the knowledge of macro-petrographic informations at different times. Legal provisions lay down both the terminology and the mode of graphic and terminological representation.

For 635 macro-petrographic terms and representations, existing over 150 years, a time-invariant tree structure with 256 knots was developed for the first time. In this tree structure the kinds of rock arising in the North Rhine-Westphalian upper carbon are arranged according to both its coarse and fine structure. It thus became possible to implement time-independent investigations.

It was shown that the mine-map-relevant legal provisions are defective as to the respective knowledge conditions. The number and the distribution of kinds of rock differ as to their classification. This holds true for both a given period and in general.

40 representatively selected and objectively determined rock samples were to be determined by 35 specialists in macro-petrographic. An evaluation methodology was developed, which makes possible objective comparisons. An evaluation due to the selected rocks showed substantial differences. Close investigation showed that matte coal and mixed types of coal and stone were badly recognized. It also was shown that the rock samples were likely to be determined as too sandy or too coarsegrained. Kinds of rock, which are at the border to other rough classes of rock, can lead to faulty classifications. The quality of the fine determination mostly depends on very different characteristics of the person, in particular on status and duration of his activity, the number of different stratigraphic layers in which macro-petrographic observations were made, as well as the self-assessment of the person's experience. The informative quality of the macro-petrographic information in mine maps can be regarded almost as rough and ready.

The mine maps examined (manuals and maps themselves) partially contained more macropetrographic information than the mine-map-relevant legislation demanded in each time-intervall.

The mine maps possessed the largest informative capability regarding macro-petrographic information in the time of the early 50's to the early 70's of the last century.

From the results of the work consequences were drawn, which can lead to an improvement of the informative capability of mine maps.

(1) The mine maps contain those parts of the miner's mine maps ("Bergmännisches Reißwerk"), which were demanded since the year 1865 to the present by the legislator, generally speaking the mining law for the Prussian States (ABG) and "mine maps" ("Reißwerk") in the federal mining law (BBergG) and in the regulation of markscheiderous work (markscheiderology is the science and practice of a generalist for deposit management, environmental and underground works and a specialist in mine surveying) and observations of the surface (Markscheider-Bergverordnung – MarkscheiderBergV).