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## **RESEARCH OF THE FEATURES OF HYDRO TRANSPORTATION OF ROCKS AT LOOSE FIELDS**

The raw materials source of rare metals of Ukraine is presented by complex scatterings of the minerals connected generally with residual crust of aeration of the Ukrainian shield. The delluvial-alluvial and partially alluvial scatterings of the Irsha (Zhytomyr region) basin, as well as the coastal Samotkansk (Malishevka) scattering in Middle Dnieper Area are developed.

Today the costs for mining, considering the prime cost of the end products, fluctuate from 40 to 50%. Efficiency of mining works is defined by such processes of hydromechanization as pressurized hydrotransport and pulpification. Expenses for such works can reach 40%, and 55 - 60% of which are spent for transport. The share for hydrotransport makes 95% and 86% of the general costs for transportation.

Thus, costs for mining depend on overall performance of a hydrotransport complex.

The analysis of operational conditions and operating modes of hydrotransport complexes at Ukrainian quarries allows allocating the major factors defining efficiency of technologies of hydromechanization at open cast mining of titanite fields: complex impact on a hydraulic bias and a critical speed of polydispersity of a transported material; the content of minerals with different density and the settled pulsations of pressure; the consumption of hydromixture. In modern conditions the choice of rational parameters of the hydromechanization processes is possible only when taking into account all these factors.

Economic researches demonstrate that hydraulic transport of solid bulk material, especially coal, should be considered as a kind of pipeline transport. Economic efficiency of this kind of transport is objectively caused by features inherent in this transport technology: the transportation of a continuum instead of the separate transport units; a combination of the way and "rolling stock" in one engineering construction; a stationary arrangement of engines; and underground laying of the pipeline. The listed above factors define technical efficiency of hydrotransport which due to scientific justification turns into economic and social efficiency that is shown in various forms of realization of the main advantages of hydrotransport:

- big capacity; transportation process continuity;
- elimination of the intermediate operations demanding creations of special devices and the maintenance of personnel (delivery from railway stations, unloading at a warehouse and transportation from a warehouse, preparation of freight for use, quality control etc.);
- elimination of material losses when transporting, loading and unloading; the losses can reach 2% and more at railway transportation;

- elimination of noise, dust content and harmful emissions in environment, and also impact of the environment on the transported materials;
- sharp reduction of the number of industrial personnel in comparison with the railroad;
- increase of transport safety due to the avoidance of coming across of transport and human streams at one level;
- insignificant terms of construction and a possibility of pipelines laying in the shortest way, considering the topographical conditions and a relief;
- considerable economy of land area, because of smaller dimensions of pipeline systems, as well as smaller right-of-way; a possibility of soil recultivation;
- independence from seasonal and weather conditions;
- full automation of all production operations of a transport process.

At the same time, a hydrtransport system can also have some shortcomings: the need to prepare hydromixture of a certain concentration and granulometric composition; the need of dehydration of coal before transportation to a consumer (except a case of the high-concentrated water coal suspensions), purification of technological water and (in some cases) a construction of the return conduit; a highly specialized orientation of transportation –one way transportation of those freights which don't lose commodity value during a long contact with water.

The above-mentioned facts donot completely cover all opportunities and features of hydraulic pipeline transport of solid bulk material, but the data showthatthis type of transport is one of the main transport technologies.