



ISTANBUL UNIVERSITY- CERRAHPASA
Engineering Faculty
Mining Engineering Department



Subject: Letter of Thesis
Number: 17

To: Satbayev University

Student: Toktarov A.A.
Degree: Doctor (PhD) in specialty 6D070700 – "Mining"
Title of Thesis: Development of the mining transport system of iron ore mines with the increase of mining depth
Foreign Supervisor: Dr. Ataç Başçetin

Mr. Toktarov has been working on the above thesis, which is a study of the development a mining transport system of iron ore open pits with the increase of mining depth based on the establishment of the boundaries of the effective use of links of combined transport schemes using a high-angle conveyor to reduce the cost of transporting rock mass.

The work that he has performed has involved:

- the systematization of vehicles for deep open pits and the systematization of lifting and transport equipment of CFT complexes for the use on steep pit walls of deep open pits were carried out;
- selection of configuration and justification cyclic-flow technology complexes for the conditions of the Kacharsky open pit;
- developing and testing an algorithm of optimization of working zones from top to bottom in terms of depth for the railway transport, haul trucks for lifting with reloading of rock mass to railway transport, as well as lowering and lifting with reloading of rock mass to the conveyor lift;

In the thesis it is proved that the transition from a combined haultruck-railway to a combined haultruck-conveyor-railway mode of transport is economically feasible and will expand the boundaries of the effective use of an open method of development of iron ore deposits.

A number of complex research methodologies were applied to derive the results. Importantly, the novelty of the research has been demonstrated through the publication of initial findings in a high-ranking per-reviewed publication.

The dissertation submitted for defense suggests that A.A. Toktarov has a high level of scientific preparation, has sufficient knowledge of scientific analysis methods.

I take no hesitation in recommending that the work undertaken by Mr. Toktarov meets all the requirements of the Education Control Committee of the Ministry of Education and Science of the Republic of Kazakhstan and that he is fully deserving of the Ph.D. degree in specialty 6D070700 – «Mining».

Seal and signature:

Date: 25th October 2021

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