process Therefore, there was put a task to elaborate a method capable of on-line determining tungsten in the product

We have solved the problem by a gamma-absorption method using permanent control of tungsten contents Using the model solutions with various concentrations of WO_3 the relations of the gamma-radiation absorption rates according to different radionuclide sources (^{57}Co, ^{241}Am, ^{109}Cd) at different thickness of the solutions were studied experimentally Based on these results we have elaborated an optimal construction of gamma-absorption equipment The equipment consists of an ^{241}Am gamma-source, placed in a lead collimator, cuvette for the solution subject to X-ray exposure, NaI(Tl) scintillation detector of 25x25 mm collimated with a lead screen and the measuring device There is an inlet tube in the lower part and an outlet tube in the upper part of the cuvette that provides permanent filling of the cuvette with the solution To detect a signal from the detector a dosimeter UIM-1eM was used The scale of the dosimeter was calibrated at WO_3 concentration directly

The error of visual reading of tungsten contents by the scale of the device at concentration level of 60 g/l was 1 5% The total error taking into account maximal instability of the work of the device (2 3%) was 2 6% that was satisfactory for the given task

The device, placed on the table of operator has sound and light alarm It works when the required concentration is reached This allows one to control and operate the technological process directly

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CONCENTRATION OF POOR COMPLEX ORE BY X-RAY – RADIOMETRIC SEPARATION METHOD

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In the process of long operation of complex deposits at mining sites of the Republic of Uzbekistan the dumps (stocks) have been formed Significant volumes of mined mass including non-ferrous metals ore have been accumulated there However, the total mineral concentrations in them are insufficient to involve them into commercial processing at metallurgical plants of the Republic At the same time analysis of mineral composition of poor complex ore has shown that ore mineralization is distributed in ore extremely irregularly It is favourable for their concentration both by conventional methods and by means of new technologies including X-Ray –Radiometric Ore Separation, used by NMMC's specialists as a method of gold ore concentration

In that connection and taking into account NMMC' capabilities, Cabinet of Ministers of the Republic of Uzbekistan commits NMMC to carry out combined researches and consolidated tests for concentration of lead-zinc ore mined at Uchkulach Deposit by means of X-Ray –Radiometric Sorting (Separation) according to the technology developed by INTEGRA GROUP

The paper includes grounds for possibility of complex ore concentration by X-Ray – Radiometric method and results of works in that direction carried out by NMMC and INTEGRA GROUP's specialists for poor ore of Uchkulach Deposit.

The results of the above tests made it possible to draw some conclusions important for solving strategic task of processing of so called man-caused deposits, i e mined mass stored in dumps and mining costs of which have been already included into the costs of previous mining works

Thus, average lead concentration in Uchkulach dumps is 0 43% and zinc – 0 58% Planned output of concentrated product is expected to be 15% and tailings – 85% Lead

concentration in concentrate amounts to 1 4%, zinc – 1 8% but concentration in tailings will be at the level of flotation tailings It will make it possible to send about 3 million tons of concentrated ore from Uchkulach dumps to the processing plant of Almalyk Mining Complex and produce from it 42 thousand tons of lead and 54 tons of zinc

Higher quality of currently mined ore and shift from unprofitable mining operation to profitable one have been reached by X-Ray – Radiometric concentration because lead content in concentrate increased by means of ore separation from 1 5-1 8 till 3 0% and zinc – from 1 6-1 9% till 3 1% Output of concentrated product is expected to be at 45-50% level with 90% lead and zinc recovery from it, and mineral contents in concentration tailings will correspond with their contents in flotation tailings

The results obtained served as sufficient grounds for making decision on development of Feasibility Study for construction of Ore Separation Complex designated for concentration of lead-zinc ore of Uchkulach Deposit as well as Ore Control Station designated for preliminary large-portion sorting of initial mined mass for the purposes of decreasing of its volume delivered to ore preparation and separation

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ORE CONTROLLING X-RAY - RADIOMETRIC COMPLEX FOR TRUCK-BY-TRUCK SORTING OF GOLD ORE

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Ore Controlling X-Ray – Radiometric Complex (RKS-A) is used for large-portion sorting of gold bearing ores at Kokpatas Deposit

The paper describes the principles of X-Ray – Radiometric presorting of mined mass by portions consisting of truck body volume into the process ore classes according to the gold content and the ore contrast The description of RKS-A process flowsheet and the reasons of use of different distinctive features are given in the paper Special attention is paid to software of RKS-A and irradiating - measuring device Also data on technical and economic effectiveness of ore presorting by means of RKS-A are given there

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X-RAY – RADIOMETRIC UNITS FOR SMALL PORTION AND PARTICLE SEPARATION OF ORES

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Current conditions of mineral-raw material base of gold deposits of Navoi Mining & Metallurgy Complex require that constantly increasing volumes of poor and low grade ores being complex by their substantial composition is involved into production Simultaneously scope of mining production has been expanding, intensive methods of mining works (powerful mining equipment, synchronized –on-line production technologies) have been introducing All the above results in increase of excavated volumes of mined ore-rock mass and respectively leads to more dilution of ore by barren rock and lower selectivity of mining