

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.



UZ0302062

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

Rudnev S.V., Eremin A.M., Neruschenko Y.V., Tsuppinger A.A.

Navoi Mining & Metallurgy Complex, Navoi, Uzbekistan

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.



UZ0302063

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

Rudnev S.V., Potapov V.A., Neruschenko E.V., Tsuppinger A.A.

Navoi Mining & Metallurgy Complex, Navoi, Uzbekistan

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.

As a result of it significant quantities of barren rock as well as various mixtures of economic kinds of ore but not their separated types are delivered for processing

The above trends in mining technology are irreversible, so to reach compensation of harmful consequences for ore quality an additional cycle of operations for ore preparation is added to production line at the joint between ore mining and processing System of ore preparation based on remote easily automated and computer aided nuclear – physical express methods of sampling is the most perspective in this field

The paper gives the grounds for possibility of preliminary concentration of sulfide ores of Kokpatas Deposit by means of small portions and large particles sorting It is shown that processing properties of ores of the Deposit are favorable for their effective concentration by X-Ray –Radiometric method owing to close paragenic relation between gold and sulfides (pyrite and arsenopyrite) Their presence in ore particles and portions of ore fines is detected due to distinctive X-ray radiation of iron and arsenic

The paper gives technical description of X-Ray – Radiometric Separation Units (RRS and RRU-L series) as well as flowsheet of ore separation by X-Ray – Radiometric method Special attention is paid to the design and principles of operation of irradiating – measuring devices and mechanism of ore particles and ore fines portions separation according to boundary distinctive feature

Introduction of this technology at Kokpatas Deposit will make it possible to reject up to 70% of dump tails from ore mass and gives 1.5 – 1.6 times increase of gold content in concentrated product



UZ0302064

NUCLEAR-PHYSICAL METHODS OF DETERMINATION OF GOLD AND IMPURITY ELEMENTS IN ION-EXCHANGE RESIN

¹Muzafarov A., ¹Kamilov Zh., ¹Sattarov G., ¹Kadirov F., ¹Latyshev V.E.,
²Kist A.A., ²Bakiev S.A., ²Petrenko V.D., ²Karimov Yu.N.

¹Navoi Mining & Metallurgy Complex, Navoi, Uzbekistan

²Institute of Nuclear Physics, Uzbekistan Academy of Science, Tashkent, Uzbekistan

Analysis of ion-exchange resin for gold determination is necessary for on-line testing of sorption and desorption processes as well as for continuous calculation of gold quantity contained in the resin, which is being transmitted between different NMMC's divisions Gold assay and atomic-absorption analysis methods are mostly used for gold determination in the resin

The paper includes the results of researches for gold and impurities (Ni, Zn, Fe, Co, Cu, Se) determination in air-dry and swollen resin using different nuclear-physical methods of analysis

- gamma - absorption, neutron – radiation, neutron – activation analysis (NAA) using ¹²⁴Sb-Be and ²⁵²Cf neutron source, X-ray fluorescent analysis (RFA) using semiconductor and scintillation detectors

The paper shows analytical abilities of nuclear-physical methods of analysis (Table 1) as well as their advantages and disadvantages