

Recent Activities in the Uranium Mining Tunnel, West Kalimantan, Indonesia

*Ngadenin HADISUWITO, Center of Nuclear Mineral Technology-National Nuclear Energy Agency,
Jalan Lebak Bulus Raya No.9, Pasar Jumat, Jakarta Selatan*

The West Kalimantan Uranium Mine Tunnel was under construction for about ten years, from 1981 to 1991. The tunnel consists of a main tunnel and five cross tunnels. The main tunnel has a horizontal length of 618 meters. The cross tunnels consist of cross tunnel I, cross tunnel II, cross tunnel III, cross tunnel IV and access tunnel. The direction of the main tunnel is N 50° E which is relatively perpendicular to the direction of the uranium mineralization veins while the direction of the cross tunnels is parallel to the veins of the uranium mineralization. Inside the tunnel there are 19 veins of uranium mineralization that are east-west the direction and trending 70° to the north with a thickness of 0.5 m - 1.5 m. Uranium mining technology that was used in the tunnel consists of main activities and supporting activities. The main activities consist of dismantling, loading and transporting of uranium ore. The mining method that was applied in tunnel construction is the cut and fill. Dismantling of uranium ore was done by blasting and loading was done manually or using Load Haulage Dump (LHD). Inside the tunnel loading of uranium ore into a lorry was done manually using a shovel and hoe. Ore loading in the mine stock pile was completed using LHD. Transportation in the tunnel was carried out using a lorry while transportation from mine stock piles to the processing stock pile was carried out using dump trucks. Supporting activities consist of installing ventilation, supporting tunnels and drainage. Ventilation in tunnels was intended to reduce the concentration of radon gas and toxic gases, supply clean air, eliminate dust, reduce or normalize the temperature and humidity of the air in the tunnel, and to reduce the concentrations of CO₂, NO₂, SO₂, and AS₂O₃ gases. The ventilation system used a blower and exhaust fan that was channeled through a plastic blower. Supporting in the tunnel was carried out on weathered rock and fault zones while fresh rocks were not supported. Drainage was carried out by making drains from inside to outside of the tunnel with drainage slope decreasing $\pm 3^\circ$ towards the outside of the tunnel so that water in the tunnel can flow smoothly towards the outside of the tunnel. After mining activities were completed in 1991 the next activity until now is monitoring of radon gas in the tunnel, replacing the supported, monitoring the environment by sampling water and streams sediment around the tunnel. Sometimes this tunnel is used for student thesis.

Key words : uranium, mining, tunnel, West Kalimantan