Contribution ID: **179** Type: **ORAL**

Considerations for Transportation of Radioactive Waste During the Decommissioning of RADON Type Storage Facility in Lithuania

Maisiagala Radioactive Waste Storage Facility (RWSF) is located about 30 km northwest of the Lithuanian capital Vilnius. Facility was built in 1961-1963 according to a typical design for a RADON type facility for low and intermediate level radioactive waste storage from research, medicine, military units and industry. Similar storage facilities have been built in several countries of the former Soviet Union and Eastern Europe. The key structure of Maisiagala RWSF is a 200 m^3 capacity monolithic reinforced concrete vault constructed at a depth of 3 metres under the ground surface. Maisiagala RWSF had been receiving institutional waste since 1963 until its closure in 1989. During this operational period, about 114 m^3 of unsorted long-lived and short-lived radioactive waste of various activities were loaded into the storage vault. When the facility was closed, the remaining vault cavity was filled with concrete and sand. In 2016, the implementation of the project "Decommissioning of the Maisiagala RWSF"was started. The main objective of the project was to retrieve radioactive waste from the storage vault, dismantle and demolish the storage structures, place all stored institutional and decommissioning waste into appropriate transportation packages and transport it to the Ignalina Nuclear Power Plant (which is located approximately 180 km from the Maisiagala RWSF) for further management. At the beginning of 2024, all the technical, design and licence documents necessary for the decommissioning of the Maisiagala RWSF were obtained, including transportation of radioactive waste to the Ignalina Nuclear Power Plant.

This paper discusses in detail waste transportation aspect of the project in the perspective of selecting an appropriate package for transportation based on the properties of institutional and decommissioning radioactive waste. Firstly, the radioactive waste streams that need to be transported, such as institutional radioactive waste mixed with disused sealed radioactive source (DSRS) that cannot be separated, separated DSRS, contaminated concrete structures, contaminated soil, etc., were identified. Then based on historical records, the radionuclide compositions and activities of each waste stream were analysed and transportation packages (IP-1, IP-2, Type A or Type B) that meets the requirements of International Atomic Energy Agency (IAEA) SSR-6 "Regulations for the Safe Transport of Radioactive Material"and "International Carriage of Dangerous Goods by Road (ADR)"were selected for each radioactive waste stream. The 200-liter drums or flexible intermediate bulk containers (FIBC), either standard or IP-1/IP-2 type, were proposed for the transportation of radioactive waste that can be classified as Low Specific Activity material (LSA) and Surface Contaminated Objects (SCO). Assessment has shown that Type A, and in some cases Type B, transportation packages were required for the transportation of institutional waste mixed with unseparated DSRS and separated DSRS (especially for high-activity sources like cesium-137 or neutron sources). Moreover, when choosing a package, it was also necessary to consider the geometrical dimensions and condition of the retrieved waste and the packages that are available on the market. Therefore, various packaging options for radioactive waste transportation were analysed, checking their compliance with safety requirements, as well as evaluating economic aspects of purchasing different types of transportation packages.

Country or International Organization

Instructions

Author: Dr SMAIZYS, Arturas (Lithuanian Energy Institute)

Co-authors: SIMONIS, Audrius (Lithuanian Energy Institute); Dr NARKUNAS, Ernestas (Lithuanian Energy

Institute); Prof. POSKAS, Povilas (Lithuanian Energy Institute)

Presenter: SIMONIS, Audrius (Lithuanian Energy Institute)

Track Classification: Track 3 Safety and Security during Transport Operations