

Integrated Management System Applied in Dismantling and Waste Management of the Primary Cooling System from the VVR-S Nuclear Reactor Magurele, Bucharest

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Abstract : The VVR-S nuclear research reactor owned by Horia Hubulei National Institute of Physics and Nuclear Engineering (IFIN-HH) was designed for research and radioisotope production, being permanently shut-down in 2002, after 40 years of operation. All amount of the nuclear spent fuel S-36 and EK-10 type was returned to Russian Federation (first in 2009 and last in 2012), and the radioactive waste resulted from the reprocessing of it will remain permanently in the Russian Federation. The decommissioning strategy chosen is immediate dismantling. At this moment, the radionuclides with half-life shorter than 1 year have a minor contribution to the contamination of materials and equipment used in reactor department. The decommissioning of the reactor has started in 2010 and is planned to be finalized in 2020, being the first nuclear research reactor that has started the decommissioning project from the South-East of Europe. The management system applied in the decommissioning of the VVR-S research reactor integrates all common elements of management: nuclear safety, occupational health and safety, environment, quality- compliance with the requirements for decommissioning activities, physical protection and economic elements. This paper presents the application of integrated management system in decommissioning of systems, structures, equipment and components (SSEC) from pumps room, including the management of the resulted radioactive waste. The primary cooling system of this type of reactor includes circulation pumps, heat exchangers, degasser, filter ion exchangers, piping connection, drainage system and radioactive leaks. All the decommissioning activities of primary circuit were performed in stage 2 (year 2014), and they were developed and recorded according to the applicable documents, within the requirements of the Regulatory Body Licenses. In the presentation there will be emphasized how the integrated management system provisions are applied in the dismantling of the primary cooling system, for elaboration, approval, application of necessary documentation, records keeping before, during and after the dismantling activities. Radiation protection and economics are the key factors for the selection of the proper technology. Dedicated and advanced technologies were chosen to perform specific tasks. Safety aspects have been taken into consideration. Resource constraints have also been an important issue considered in defining the decommissioning strategy. Important aspects like radiological monitoring of the personnel and areas, decontamination, waste management and final characterization of the released site are demonstrated and documented.

Keywords : decommissioning, integrated management system, nuclear reactor, waste management

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