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Industrial Exploitation of Testing Ground for Treatment of Radwaste of Alkaline Coolants under Decommissioning of Fast Research Reactors

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Since 2002 Research Reactor BR-10 (BR-10) has a status of the decommissioning. Currently, BR-10 is implemented in transition period between final shutdown and decommissioning. These works are connecting with bringing of BR-10 in nuclear-safety and radiation-safety condition.

In accordance with the Programme of decommissioning of BR-10, before dismantling of equipment and systems of reactor, works must contain the remove all nuclear materials (last batch submitted for processing in 2016) and liquid radwaste, which also include radwaste of coolants. As a coolant at BR-10 was used a sodium and sodium-potassium alloy. Thus, after 46 years of operation, has accumulated 18 m3 of radwaste of alkaline coolants, including the sodium from 16 cold traps oxides from first circuit.

For implementation of activities in transition period at BR-10 was established the Testing Ground for treatment of total volume and residual of radwaste alkaline coolants, which are contaminated in individual equipments of reactor and in storage tanks [1]. The technologies, which are used for treatment, have had experimental and estimated studies for events with decommissioning project of BR-10 and protected by patents [2].

For treatment of total volume of radwaste alkaline coolants was organized Conditioning Site [3]. Ongoing site activities include: preparation, transporting of oxidant and alkaline coolant to the place of conditioning; reaching the stationary operating parameters of equipment and systems; portion holding of alkaline coolant; cooling and transporting of product of conditioning for temporary storage in the protective container. Now is carry out of works on conditioning radwaste of secondary sodium.

For removal of residual of radwaste alkaline coolant from inside surfaces of individual equipment was organized Neutralization Site [3]. Ongoing site activities include: transporting equipment (for example, cold trap oxides) from storage protective box; draining of radwaste alkaline coolants from equipment; neutralization of residues inside of amount of equipment; washing and decontamination of internal surfaces of equipment; transporting to the site for treatment of solid radwaste. Now is carry out of works on neutralization of another cold trap oxides from first circuit, was drained the volume of radwaste of sodium and sent to Conditioning Site.

In recent time, together with the conditioning radwaste of secondary sodium, is preparing for treatment of radwaste of primary sodium. Namely, tryout of activities to prevents of possible contamination of equipments and communications of Conditioning and Neutralization Sites.

Country/Int. Organization

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