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ON SOME ISSUES RADIOACTIVE WASTE MANAGEMENT IN UKRAINE

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In the technological cycle of nuclear power plants in the production of energy in nuclear reactors remains spent nuclear fuel (SNF) and radioactive waste: solid (SRW) and liquid (LRW). Wastes are divided by type for low active (LRW), the active medium (MRW) and high (HRW). By the time of the half-life, there are short-lived, medium-lived and long-lived wastes.

After discharge from the reactor core SNF is loaded into the pre-reactor cooling ponds (CP). In these ponds SNF is maintained for certain time, necessary to reduce the energy release due to the radioactive decay of fission products to permissible values. After storage in CP for a limited time, spent fuel assemblies (SFA) should be removed from the NPP power unit and sent to storage (disposal) or recycling. This is due to the fact that NPP's CP capacity is limited and they always must have free volume for unloading nuclear fuel from the reactor core or regular audits of shell and intracorporeal equipment of VVER reactors.

At the same time, when handling SNF, it is necessary to take into consideration the factors that determine the specification of this material: high radioactivity and presence in the SNF valuable components (uranium, plutonium, germanium, erbium, palladium, zirconium, etc.) that potentially could be used, in other nuclear fuel cycles (nuclear fuel for fast neutron reactors, MOX-fuel for light water reactors). Given the above SF does not refer to nuclear waste.

The current state of nuclear power in the world shows that at the present level technology development, conclusions about the economic feasibility of recycling or disposal of SNF, the final stage of nuclear-fuel cycle (NFC), cannot be made. In this connection, Ukraine, like most countries that develop nuclear energy, adopted for a so-called "deferred decision", which includes the organization of long-term storage of spent nuclear fuel. The above "deferred decision" allows you to decide the final stage of the nuclear fuel cycle later, with the use of technology development in the world and economic benefits for the state.

Currently in Ukraine operated two shelters provided for temporary storage of spent fuel: "wet" spent fuel storage type – WSFST-1 of Chernobyl NPP and "dry" spent fuel storage type – DSFSF of Zaporizhzhya NPP.

In addition, in Ukraine built two storage, spent fuel storage "dry" type – WSFST-2 of Chernobyl NPP and centralized repository for SNF of native plant VVER type – CRSNF.

Radioactive waste, accumulated during Chernobyl NPP emergency, in 1986, and those which formed by decommissioning of units number 1, 2, 3, and transformation of the "Shelter" into an environmentally safe system, are stored in the existing district in the Chernobyl NPP radioactive waste repositories: storage of solid radioactive waste, storage of liquid radioactive waste, storage of liquid and solid RAV2 or transferred for disposal in a repository "Buriakivka."

In total, at the end of year 2016 in the storage of liquid radioactive waste accumulated 14 thousand m³ waste residue; about 4.5 thousand m³ of spent ion exchange resins; 2,5 thousand m³ of perlite pulp; 150 m³ of radioactively contaminated oil-fuel mixture.

Low- and medium-level solid radioactive waste formed within the decommissioning and transformation of the "Shelter" into an environmentally safe system for disposal transferred into repository "Buriakivka"

High-level radioactive waste gathered in containers and placed in temporary storage of solid HRW, organized in the former structure of nuclear fuel.

On the platform SSE "Chernobyl", in the framework of international technical assistance projects built and put into operation a number of facilities for radioactive waste management. Commissioning of these facilities will provide recycling accumulated and forming radioactive waste to bring them into a state, which is suitable for safe disposal.

The plant for processing liquid radioactive waste (PPLRW) is designed to processing of liquid radioactive waste (LRW) accumulated in tanks of liquid waste storage and storage of liquid and solid radioactive waste and liquid radioactive waste formed as a result of decommissioning.

December 11, 2014 SNRCU issued a separate permit OD Number 000040/7 to operate PPLRW. However, work on the plant operation can be started in the presence of Certificate of completed construction in accordance with the "Order of adoption operation of the completed construction of the facility ", approved by Cabinet of Ministers of Ukraine number 461 of 13.04.2011.

Implementation of these work requires additional time and funding from the State Budget of Ukraine.

State Nuclear Regulatory Committee considered and approved the following documents due to PPLRW:

- "The decision about the sequence of processing LRW of Chernobyl NPP with considering the results of operations during commissioning PPLRW";
- "Regulations radiation monitoring during operation of the plant for processing liquid radioactive waste of Chernobyl NPP".

The message also will be considered the most problematic issues for improving the technology of radioactive waste management, including:

- nuclear waste drain water to prevent the formation of LRW;
- approaches to solving the problem of salt and waste residue floating NPP
- creating a deep geological repository for the disposal of HRW.