

Ministry of Environment of the
Republic of Lithuania

On the issues of the project
for the dismantling and decontamination
of equipment from the Ignalina NPP

The Ministry of Natural Resources and Environmental Protection of the Republic of Belarus (hereinafter – MNREP) considered the information on the project for the dismantling and decontamination of equipment from the Ignalina NPP received from the Ministry of Environment of the Republic of Lithuania, but we are forced to note that the information provided by the Lithuanian side does not sufficiently answer the questions raised by the Belarusian side.

In view of the above, the Ministry of Environment of the Republic of Lithuania is invited to additionally provide complete and substantiated information on the questions/comments of the Belarusian agencies concerned on the project for the dismantling and decontamination of equipment from the Ignalina NPP (attached).

Annex in 4 pages in 1 copy.

First Deputy Minister

Baliaslau Pirshtuk

Questions/comments of Belarusian authorities¹ on the project for the dismantling and decontamination of equipment from the Ignalina NPP

1. The information provided by the Lithuanian side in paragraph 1.2 regarding the availability of information on the management of spent nuclear fuel and the environmental impact assessment in the Environmental Impact Assessment Report (EIA) of the project B1 (2007) requires additional explanations. Thus, in the 2007 EIA report "Interim storage of spent nuclear fuel from a high-power channel-type reactor (RBMK) from Ignalina NPP Units 1 and 2", information on ensuring the safety of non-project storage of damaged spent nuclear fuel is not provided. The report indicates only the intention to design and install special equipment for the processing of damaged spent nuclear fuel, including the collection and removal of fuel debris from the bottom of the pools. Please provide any missing information.

2. Information that the damaged spent fuel assemblies were stored in the conditions stipulated by the project, i.e. in special casks and places serving as an additional physical barrier to the potential spread of radionuclides in the event of project and potential beyond project accidents is considered to be distorted.

As can be seen in the figures below, damaged and severely deformed spent fuel assemblies are placed on cables without special protective equipment, which cannot be a project storage.

Fig.1, 2



In this regard, please provide information on the measures taken in compliance with the requirements of paragraphs 6.61, 6.62 of the IAEA Safety Standards GS-G-3.5 "Management System for Nuclear Installations", in terms of informing (reporting) about the incident at the INPP of 9 June 2020 to international authorities and third concerned bodies.

3. We consider untenable the remark of the Lithuanian side on the comments of the Belarusian side presented in paragraphs 1.1 and 1.2., as not related to Project 2102.

Firstly. The dismantling of Unit 1 of the INPP started in 2010 and Unit 2 in 2014, taking into account the fact that the equipment dismantling operations

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started before the removal of all nuclear fuel from the reactors and storage pools of Units 1 and 2.

Secondly. Spent nuclear fuel management works lag behind the schedule for the decommissioning of the INPP approved by the authorities of Lithuania in 2020. According to the information provided as of 30 July 2021, 153 spent fuel assemblies remain in the storage pool of Unit 2, and the term of transportation of all spent fuel of the INPP to the Interim Spent Nuclear Fuel Storage Facility (ISFSF), including leaky fuel, is shifted to the 3rd quarter of 2022 by the beginning of the implementation of Project 2102.

Since it is operations with leaky fuel that have the greatest environmental impact, the assessment of annual exposure doses to the member of the critical group of population not only for the U1DP0 and U2DP0 projects (Table 1 of supplementary non-technical information), but also for contributions to the total annual dose at each stage of the project will require major adjustments.

As stated earlier, outside the U1DP0 project (*INPP Unit 1 Decommissioning Project for Defuelling Phase*) before the final shutdown of Unit 1 and the defuelling phase for the re-use of partially burnt fuel assemblies in the reactor of Unit 2, B8 project was implemented (*Transportation of partially burnt nuclear fuel assemblies from Unit 1 to Unit 2*). Under B8 project, the use of a part of the nuclear fuel from Unit 1 for power generation in Unit 2, which has higher initial enrichment (2.4-2.8% for U-235) than the standard fuel of RBMK-1500 and, respectively, higher final burnup, led to the additional irradiation of equipment (induced activity) and activity accumulated due to the release of fission products from fuel rods and deposition on the walls of the graphite stack of R1 and R2 zones.

In this regard, we ask you to provide information on how the radiation impact on the environment due to the additional induced activity of the equipment and the accumulated activity of the graphite channels of the reactor and stack during the implementation of the project for the dismantling of R1 and R2 zones is taken into account.

4. Information is not provided and the assessment of the possible impact of the planned activity (Project 2102) on the environment and population in a transboundary context is not carried out. Moreover, the zone (radius) of the possible impact of the specified activity is not defined.

5. Information should be provided on the assessment of the contribution of the planned activity to the cumulative effect of the possible negative impact on the environment and the population of Belarus.

6. According to the information provided by the Lithuanian side (paragraph 8) the safety culture management procedure and the security and safety culture assessment procedure at the INPP are implemented in accordance with Supplement 1 of the IAEA Safety Standards GS-G-3.5 "Management System for Nuclear Installations". However, information on self-assessments performed and their results is not provided in the response. In addition, please provide information on the existence and functioning of a division responsible for

independent safety culture assessment at the INPP and its powers.

7. According to the information provided (paragraph 10), safety assessment and analysis was conducted only for prospective technological processes and equipment designed for the management of damaged spent nuclear fuel. Information on safety assessment under the conditions of current storage of damaged spent nuclear fuel is not provided, therefore it is impossible to make a conclusion about the accuracy of the obtained results of stress tests.

8. Please also provide information on the current state of experimental fuel (paragraph 10, page 13) - whether its storage in the spent fuel pools continues or it has already been loaded into spent fuel casks. Submit the results of the monitoring of its condition.

9. According to the information provided (paragraph 11), graphite waste will be placed in unconditioned form in the existing storage facility (bld. 158/2). Thus treatment/processing of graphite waste will be performed only after the clarification of the eligibility criteria for disposal in deep geological repository.

Current plans of the Republic of Lithuania envisage the development of the project of deep geological repository in 2048-2057, its construction and commissioning (in 2058-2067), operation (in 2068-2074) and decommissioning (in 2075-2080).

In view of the above, please provide the following information:

- what packages will be used for the interim storage of graphite waste, whether they will ensure the necessary integrity and safety during long-term storage;
- what technology is envisaged in the dismantling project for the immobilization of graphite debris in the matrix;
- whether calculations were made for releases of radioactive substances during the storage of irradiated graphite;
- how are personnel and the environment protected from the exposure of chlorine-36 and tritium during graphite extraction, treatment and sorting of the extracted graphite;
- what kind of equipment will be used for graphite stack dismantlement. Whether interactive simulation models were developed and implemented for graphite stack dismantlement training of personnel who will perform the works;
- whether the Lithuanian side is fully provided with the necessary financial resources (accumulated funds) for the performance of works on site selection, design, construction and commissioning, operation and decommissioning of the deep geological repository.

10. Please also note that in the submitted materials of the supplementary Non-Technical Summary of Project 2102, the results of the annual effective dose assessment of $7.47E-06$ mSv to the member of the critical group of population during Project 2102 implementation period of 2023-2028 do not comply with the

presentation data of *Ignalina Nuclear Power Plant Commissioning - Transboundary consultation on EIA - Dismantling and Decontamination of equipment from Ignalina Nuclear Power Plant Unit 2 reactor R1 and R2 zones*, stating that the maximum annual effective dose is $7.47E-04$ mSv. Annual effective dose at the boundary of the sanitary protection zone in 2023-2028 to the members of the critical group of population of all projects under implementation on the INPP site is $1.62E-02$ mSv per year (16.2 μ Sv per year), which exceeds the value of effective dose 10 μ Sv per year - minimum dose limitation, when there is no need for radiation protection of the population of the Republic of Belarus.

11. It is worth noting that according to the approaches of the International Commission on Radiological Protection, in the Republic of Belarus the effective dose limit of 1 mSv/year is applied when there is no direct benefit to potentially exposed people from the planned economic activity but there is a public benefit.

Minimum dose limitation, when there is no need in radiation protection, is the value of effective dose 10 mSv/year (*Sanitary norms and rules of the Republic of Belarus "Requirements for radiation safety", approved by the Decision of the Ministry of Health of the Republic of Belarus No. 213 of 28 December 2012*). Considering the fact that the placement of spent nuclear fuel storage facilities and other new INPP nuclear installations on the border does not provide public benefit for the population of Belarus, the application of the effective dose limit of 10 μ Sv/year in the implementation of the INPP decommissioning projects shall be deemed justified.

In view of the above, the statement that the impact of the planned economic activity on the environment within the sanitary protection zone is negligible, and that no additional radiological impact on the population of the Republic of Belarus will occur is not correct.