

29.11.2024

N 11-1-1/262-Uko

Ministry of Environment of  
the Republic of Lithuania

On the provision of answers

The Ministry of Natural Resources and Environmental Protection of the Republic of Belarus together with the interested agencies have considered the questions of the Lithuanian side on the Report on Radiation and Environmental Monitoring in the Area of the Belarusian Nuclear Power Plant (hereinafter – the Report) submitted by letter of 9 September 2024 No. (10)-D8(E)-4160 of the Ministry of Environment of the Republic of Lithuania and on the substance of the questions asked, we inform the following.

*Question 1. The Report is missing a table, summarizing the results of chemical monitoring of groundwater tri 2023 (similar to Table 8.3 of the Report for the year 2022).*

Answer: The results of chemical monitoring containing information on numerical values of indicators are presented on pages 30-31 of the Report.

*Question 2. Fig. 8.8 of the Report does not visually represent the amplitude and correlation of the changes in groundwater levels, because a single scale has been chosen to represent the levels of all boreholes, although the difference in the levels of individual boreholes is significant, up to 15 metres. In order to illustrate the results, the boreholes should be grouped according to the changes in the groundwater level and should be represented in separate graphs. Please take into consideration that this comment was also provided in 2023 and was not taken into account.*

Answer: Figure 8.8 of the Report has an illustrative character. The exact indicators are given in the text of the Report. At the same time, the State Enterprise “Belarusian NPP” has additionally prepared separate graphs reflecting the amplitude and correlation of the changes in groundwater level taking into account the difference in levels of individual wells (see. Attachment 1).

*Question 3. The statement in the Chapter 1 of the Report: "The design of the Belarusian NPP meets the most modern, so-called "post-Fukushima" standards of reliability and safety" does not correspond to reality. From the very beginning of implementation of the Belarusian NPP project Lithuania has been raising a wide range of issues related to the safety of this nuclear facility on the Astravets site, but up to now we have not seen any practical efforts from the Belarusian side to resolve these issues (see Lithuanian State Nuclear Power Safety Inspectorate's letter of 22 May 2024 to the Ministry of Emergency Situation of the Republic of Belarus).*

*Answer:* In compliance with the Decision of the 6th session of the Meeting of the Parties to the Espoo Convention, the Republic of Belarus conducted an IAEA's SEED mission from 16 to 20 January 2017 to assess the safety of the Belarusian NPP with respect to specific external hazards.

The mission included screening of external hazards, characterising of both natural and human-induced external hazards, studying the design parameters of the site construction, providing site and environmental monitoring, and incorporating lessons learned from the Fukushima Daiichi accident. In its conclusions, the SEED mission team noted that the design parameters for the Belarusian NPP consider site-specific external hazards such as earthquakes, floods and extreme weather conditions, as well as events caused by human factor. The experts indicated that the hazard monitoring programmes that will be implemented throughout the life cycle of the NPP are adequate and properly documented. In addition, measures have also been taken to respond to the challenges caused by external events in light of the lessons learnt from the Fukushima Daiichi accident.

The full report of the IAEA's SEED mission is publicly available on the IAEA website.

In addition, the Republic of Belarus conducted stress tests of the Belarusian NPP, which also proved the safety of the NPP within the framework of the post-Fukushima safety requirements.

*Question 4. It is stated in Chapter 1 of the Report, that "The safety of" the Belarusian NPP project has been repeatedly confirmed by experts of the International Atomic Energy Agency (hereinafter - IAEA) and the World Association of Nuclear Operators (hereinafter - WANO)". It shall be noted that ensuring of safety of nuclear installation is a national responsibility. Neither external experts nor international review missions can "confirm" the safety of any installation. Review by external experts and missions usually results in formulation of recommendations and suggestions. National efforts should be concentrated on timely implementation of those recommendations and suggestions thus improving the real safety level of nuclear installations. Plans and results of their implementation should be communicated to the general public and the international community.*

*Answer:* Safe operation of the Belarusian NPP is ensured by the State by establishing and improving the national nuclear and radiation safety infrastructure. To assess and improve the national infrastructure, the Republic of Belarus requested and hosted all key missions the IAEA recommended for newcomer countries to nuclear energy:

The INIR (Integrated Nuclear Infrastructure Review) mission was carried out in 2012 and 2020 for a comprehensive assessment of nuclear infrastructure development for phases 2 and 3 of the nuclear power programme development;

in 2016 and 2021. – the IRRS (Integrated Regulatory Review Service) mission and post-mission comprehensive assessment of the regulatory infrastructure for nuclear and radiation safety;

in 2017. – the SEED (Site and External Events Design Review Service) mission to assess the safety of the NPP site and project considering external hazards;

in 2018. – the EPREV (Emergency Preparedness Review Service) mission to assess emergency preparedness and response

in 2019. – the ISSAS (State Systems of Accounting for and Control of Nuclear Material mission) advisory mission on accounting and control of nuclear materials;

in 2019 and 2021. – the pre-OSART (Operational Safety Review Team) mission and post-mission on operational preparedness;

in 2021 – the IPPAS (International Physical Protection Advisory Service) mission on nuclear safety.

Administrative mechanism of implementing the recommendations of IAEA missions are the relevant national plans that contain activities with realization deadlines. These plans are approved and controlled by the Government of the Republic of Belarus. Information on international assessment missions and their results is publicly available on the Internet, including on the IAEA website, and is also regularly reported to the general public and the international community through presentations at thematic forums, conferences, meetings, and press releases.

*Question 5. Chapter 3 of the Report states that “...carrying out activities on the use of atomic energy in accordance with the provisions in the field of radiation safety reflected in international contracts, agreements and conventions ratified by the Republic of Belarus, national legislation of the Republic of Belarus, local legal acts of the enterprise, as well as IAEA recommendations”. This statement is misleading since Belarus does not adhere to all recommendations of IAEA (see Lithuanian State Nuclear Power Safety Inspectorate's letter of 22 May 2024 to the Ministry of Emergency Situation of the Republic of Belarus).*

*Answer:* The IAEA requirements set out in the IAEA safety standards and binding on all IAEA Member States are integrated into the legislative and regulatory acts of the Republic of Belarus in the field of nuclear and radiation safety and are implemented by all users of ionising radiation sources and facilities for the use of nuclear energy, including the State Enterprise “Belarusian NPP”.

*Question 6. Chapter 6.9, Tables 8.3 and 8.4 of the Report refer to such indicators as PD (Permissible Discharge) and MPD (Maximum Permissible Discharge). It should be specified: 1) what is the difference between these two indicators and 2) how their values should be interpreted, especially taking into account that information about these indicators was not available to Lithuania before receiving this Report. We would also like to receive information about the basis of determination of the discharge limits set for Unit 1 and Unit 2 of the Belarusian NPP, both of which are already in commercial operation.*

*Answer:* The Report contains information required by the Programme of post-project analysis of the Belarusian NPP (approved on 24 December 2014 by the Chief Engineer of the State Enterprise “Belarusian NPP”).

Additional information on actual emissions and discharges of radionuclides from the Belarusian NPP (into air and water) and comparison with the established maximum permissible emissions and discharges is included by the State Enterprise “Belarusian NPP” in the Report for 2023 in accordance with the suggestion of the Lithuanian side (question 9) to the Report on Radiation and Environmental Monitoring in the Area of the Belarusian NPP for 2022.

In accordance with the requirements of legislative and regulatory legal acts of the Republic of Belarus, as well as international requirements and recommendations, the values of maximum permissible emissions and discharges (hereinafter – MPE and MPD) and permissible emissions and discharges (hereinafter – PE and PD) of radioactive substances into the environment should be established for a specific nuclear facility as part of the licensing process, taking into account the specific characteristics of the installation and the site, based on an assessment of safety for the surrounding population (representative persons).

In accordance with the sanitary norms, rules and hygienic standards “Hygienic Requirements for the Design and Operation of Nuclear Power Plants” approved by Resolution of the Ministry of Health of the Republic of Belarus of 31 March 2010 No. 39, PE (PD) and MPE (MPD) are determined as follows:

permissible emission (discharge) – the level of emission capacity set as a working norm, but not higher than the maximum permissible emission;

maximum permissible emission (discharge) – a standard of emission rate determined by the dose limit taking into account all external and internal exposure pathways.

MPE (MPD) of NPP should be established on the basis of non-exceeding the limit dose to a representative person – 100  $\mu\text{Sv}/\text{year}$  (50  $\mu\text{Sv}/\text{year}$  each from gas-aerosol emissions of radioactive substances into the atmosphere and liquid discharges into a water body). At the same time, when optimising radiation protection of the population, the minimum exposure dose equal to 10  $\mu\text{Sv}/\text{year}$  is taken as the lower limit of radiation dose in the mode of normal operation of NPP.

In this regard, the standards for MPE (MPD) of radioactive substances during normal operation of NPP should be established on the basis of the fact that the predicted annual effective dose of a representative person (hereinafter – AED) should not be higher than 50  $\mu\text{Sv}/\text{year}$  and are established for radionuclides that contribute most to the AED of the population exposure (not less than 99 %). PE (PD) standards are calculated on the basis of fivefold tightening of MPE (MPD) standards, which state that the public exposure dose will be about 10  $\mu\text{Sv}/\text{year}$ .

The following documents of the IAEA and the International Commission on Radiological Protection were taken into account in the development of PE (PD) and MPE (MPD) standards:

Safety Standards. Radiation Protection and Safety of Radiation Sources: International Atomic Energy Agency (IAEA) International Basic Safety Standards No. GSR Part 3. – Vienna: IAEA, 2014;

Regulatory Control of Radioactive Discharges to the Environment. General Safety Guide No. GSG-9. – Vienna: IAEA, 2018;

Environmental and Source Monitoring for Purposes of Radiation Protection. Safety Guide. RS-G-1.8 – Vienna: IAEA, 2016;

Criteria for Radionuclide Activity Concentrations for Food and Drinking Water. IAEA-TECDOC-1788. – Vienna; IAEA, 2016;

Generic models for use in assessing the impact of discharges of radioactive substances to the environment: IAEA Safety Reports Series. No. 19 – Vienna: IAEA, 2001;

Programmers and systems for source and environmental radiation monitoring. IAEA Safety Reports Series № 64. – Vienna: IAEA, 2010;

Handbook of Parameter Values for the Prediction of radionuclide Transfer in Terrestrial and Freshwater Environments: Technical reports series no. 472. – Vienna: IAEA, 2010;

Assessing Dose of the Representative Person for the Purpose of the Radiation Protection of the Public: ICRP Publication 101a. – ICRP, 2006.

The standards for MPE (PE) and MPD (PD) of radioactive substances of the Belarusian NPP into the environment have been developed in accordance with the requirements of the regulation on the procedure of development and approval of standards of permissible emissions and discharges of radioactive substances into the environment, approved by Resolution of the Council of Ministers of the Republic of Belarus No. 497 dated 21 August 2020 “On the Implementation of the Law of the Republic of Belarus dated 18 June 2019 No. 198-3 “On Radiation Safety” and enacted by the order of 20 June 2022 No. 278 of the First Deputy General Director – NPP Chief Engineer based on approval of the state regulatory and supervisory authorities.

Deputy Minister

I.Prykhodzka

Figure 1. Results of groundwater level changes for the Szohsky finite-marine aquifer (H2) 2023

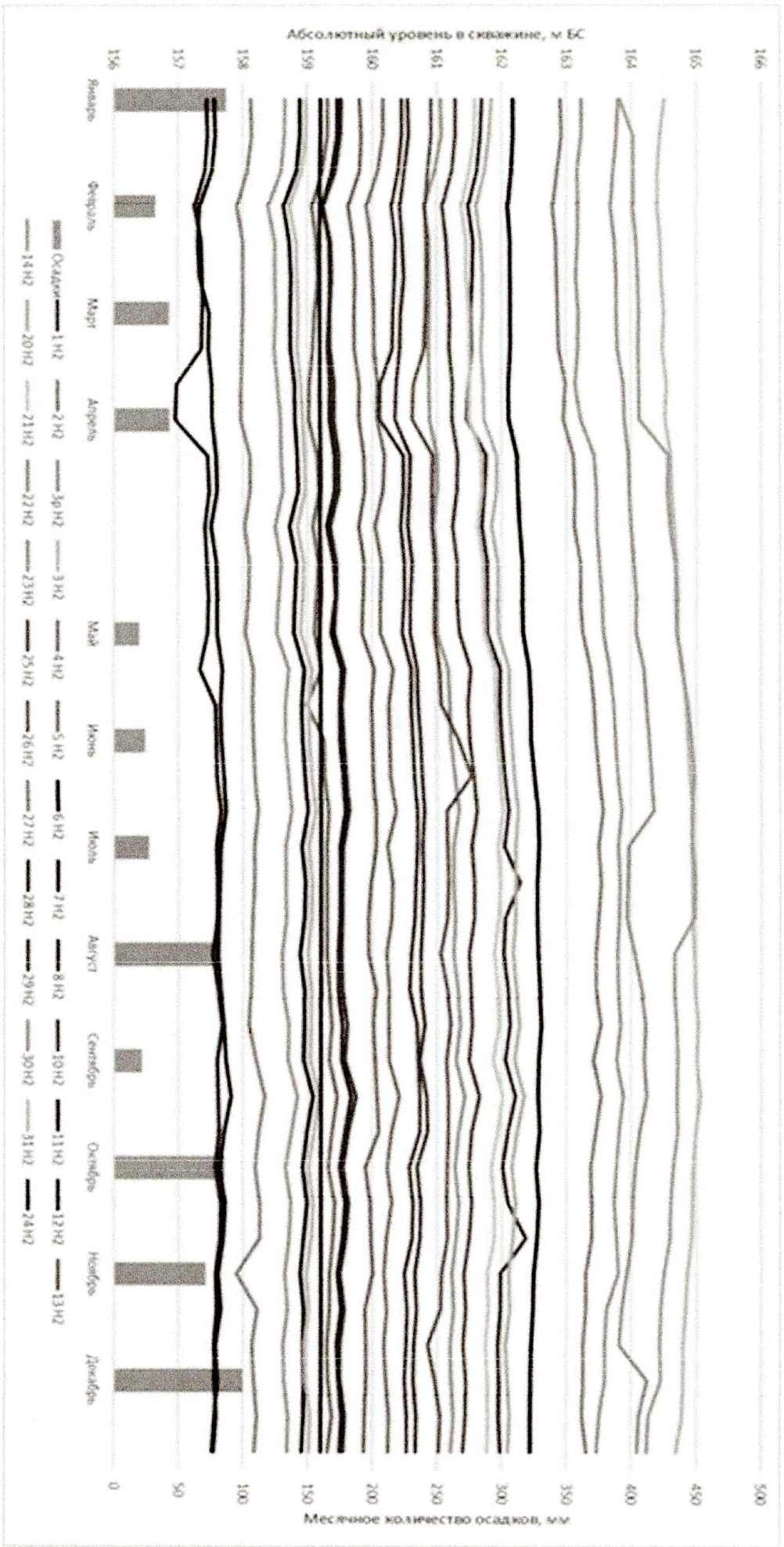


Figure 2. Results of groundwater level changes for the Szohsky finite-marine aquifer (H3) 2023

