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DIRECTORATE-GENERAL JRC
JOINT RESEARCH CENTRE
Institute for Energy and Transport
Safety of Present Nuclear Reactors

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Article 4(1)(b)

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Background

The present report gives a preliminary list of questions on the basis of the Environmental Impact Assessment [1] for a new Nuclear Power Plant (NPP) in Belarus.

This document aims at supporting the assessment coordinated by DG ENER.

1 General issues

Q1: The Espoo convention (Article 2, General provisions, clause No 3) states: *"The Party of origin shall ensure that in accordance with the provisions of this Convention an environmental impact assessment is undertaken prior to a decision to authorize or undertake a proposed activity listed in Appendix I that is likely to cause a significant adverse transboundary impact."* This requirement of Espoo convention does not seem to be met, because procedure of discussions on EIA at the moment (2011 12 01) is not finished (many comments raised by countries of the region are not yet answered), however, the President of the Republic of Belarus signed a Decree No. 2418 from 15.09.2011 on the location and design Nuclear Power Plant in Belarus.

2 Site specific issues

Q2: Could you please clarify what were the main significant factors and acceptance criteria considered that eventually lead to selection of Ostrovec site for NPP construction, compared to the other sites mentioned?

[redacted]

Art.4(1)(a) first indent

3 Radiological protection and radiological consequences

Q4: Would you please clarify whether the radiological criteria used in the national standards NRB 2000 and OSP 2002 are consistent with the International Commission on Radiological Protection (ICRP) standard currently in force?

Q5: Selection of a set of initial data for the assessment of the potential migration of radionuclides' to the territory of countries concerned does not seem adequately

substantiated. For example, it is stated (EIA 8.3, cl. 15.3), that: "under the beyond design basis accident the integrity of protective shells is preserved, leakages through containment - 0.2 % per day and the emission stops through one day". These values does not seem realistic. Such assumptions lead to calculated values of emergency emissions of reference isotopes much lower than could be in the reality or under more conservative approach.

Q6: There is a statement in the EIA (chapter 14.6.6.1) saying that "the total effective dose of irradiation over the population does not exceed the criteria for interference in no one of the given scenarios for the maximum design basis accident (100 mSv on the whole body). Execution of countermeasures in the manner of covertures, deactivation and/or evacuation for the population will not be needed". The given reference value of the total effective dose of irradiation over the population does not correspond to international requirements; the conclusion derived from this statement seems to be not substantiated and should be explained or corrected. Sub-comment for information: In most countries, the current maximum permissible dose to radiation workers is 20 mSv per year averaged over five years, with a maximum of 50 mSv in any one year. Public dose limits for exposure from uranium mining or nuclear plants are usually set at 1 mSv/yr above background.

Q7: Chapter 14.6.6.1 of the EIA states that "maximum expense dose for irradiation over the thyroid gland in case of the maximum design basis accident does not exceed the criteria for interference (50 mSv for the first 7 days after emergency), consequently, execution of blocking the thyroid gland is not obligatory". The given reference value of the maximum expense dose of irradiation over the thyroid gland does not correspond to international requirements; the conclusion derived from this statement seems to be not substantiated and should be clarified or corrected.

Q8: EIA (part 8.3, chapter 14.6.6.1) states that "the dose at the expense of consumption polluted milk constitute units or tenth shares of millisievert". Please clarify this statement.

Q9: EIA (chapter 4.6.6.2) states that "maximum expense dose for irradiation over the thyroid gland under the given scenarios of the beyond design basis accident will exceed the criterion for interference of 50 mSv for the first 7 days after emergency at a distance up to 25 km from the station), consequently, within the radius of 25 km from the station as the necessary countermeasure will be execution of blocking the thyroid gland at early stage of emergency". What is the distribution of the thyroid dose at a distance above 25 km from the station?

Q10: Would you please clarify how the radiological impact of the chosen plant design was assessed for the plant personnel, population and the environment during the normal operation and transients?

4 Emergency planning and preparedness

Q11: Several emergency planning measures does not seem in agreement with the modeling results. For example:

- ... the estimated radius for the area for planning obligatory evacuation of the population

does not exceed 800 m from the reactor department;

- an obligatory introduction of protective actions for the population (the covertures, iodine preventive maintenance) is limited by the area having radius not over 3 km from the energy unit.

are not achieved taking into account results of modeling and other data presented in the EIA report.

Q12: As the plant site is nearby the borders of neighbouring countries, please explain if there is existing emergency planning arrangements with Belarus neighbouring countries (including communication protocols, trans-border exercises, etc.).

5 Design specific issues

[redacted] Art.4(1)(a) first indent

[redacted]

5.2 Post-Fukushima issues

Q14: Could you please clarify whether the station blackout event (i.e. loss of all alternate current power supply) is considered in the design? Could you please describe the envisaged provisions for coping with the station blackout event?

Q15: Could you please describe how a post accident monitoring of the plant vital parameters will be ensured following the station blackout and degraded core / containment conditions?

Q16: Please describe how the design of the plant will concretely take into account the numerous lessons learned from the Fukushima nuclear accident.

Q17: More broadly, could you please explain if the intended design will address the list of topics described in the EU stress test technical specification?

6 Availability of qualified and experienced staff

Q18: Please describe the strategy for ensuring availability of adequate qualified staff (technical expertise + experience) during the construction, commissioning and operation of the plant. Please describe in particular the strategy and training programme for the future operation and maintenance staff.

Q19: Please explain how the Operator's staff will have access to and ensure proper use of operating experience from similar plants. Is there an agreement with the Vendor about this?

7 Regulatory context

Q20: Please clarify how licensing activities during different stages i.e siting, design, construction, commissioning, and operation of nuclear power plants will be formally regulated through licences that authorize actions and place conditions on the licensee?

Q21: Please describe the arrangements at the level of the Regulatory Body to ensure the independent control of the project during design, licensing, construction and operation. Please also explain in particular how the necessary expertise and experience will be available at the level of the Regulatory Body.

Q22: Please clarify how the quality oversight for implementation of the entire project will be ensured by describing e.g. the organization, roles and responsibilities of all involved partners, quality requirements, project documentation, project communication, project control, etc

8 References

[1] Ostrovets NPP, Environmental Impact Assessment - 06/07/2010 version.