



The Swedish Environmental Protection Agency

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Referral response

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Consultation according to Article 4-5 Espoo Convention - Lifetime extension of the reactors Doel 4 and Tihange 3 Belgium

The Radiation Safety Authority (SSM) has been given the opportunity by the Environmental Protection Agency to participate in consultations according to Article 4-5 of the ECE Convention on environmental impact assessments in a cross-border context (the Espoo Convention) regarding the life extension of the nuclear power reactors Doel 4 and Tihange 3 in Belgium.

SSM hereby submits the following views.

Views The potential

environmental impact in Sweden from Doel 4 and Tihange 3 in case of life extension is assessed by SSM to be the same or lower compared to the time before the life extension.

SSM notes, however, that the material (the non-technical summary) that is available in English is very general and does not enable a deeper review.

SSM further states that it is not clear from the non-technical summary whether any re-examination was carried out regarding the best possible technology for emission limitation during normal operation in connection with the decision on long-term operation being made.

10.2.1 Impact on people and the environment in normal operation SSM can

state that the reporting of radiation protection effects in the form of radiation dose to the public in case of life extension is low for the most exposed individual and that effects on the environment are said to be negligible. Based on the previous operation of Doel 4 and Tihange 3 and the monitoring and international reporting carried out by Belgium, the account seems reasonable.

10.2.2 Impact on people and the environment in the event of an accident SSM notes

that the report regarding transnational consequences in the event of an accident at Doel 4 and Tihange 3 is represented by three different accidents, two design basis accidents, DBA (LOCA and FHA) and a beyond-DBA that includes core meltdown (CSBO). However, in that case, the discharge takes place via a breakdown filter (CFVS), which has limited consequences. SSM can state that in Sweden, contingency planning includes a severe accident where the mitigation systems do not work. SSM notes that it is not clear from the non-technical summary whether the Doel 4 or Tihange 3 reactors may



be in full power operation even if the breakdown filter is not ready for operation, for example during service. It is also not clear if the contingency planning for Doel and Tihange is based on any of the reported events or if the planning is based on a severe accident outside of design, i.e. from events not taken into account in the design of the nuclear power reactor.

10.2.3 Impact on the generation of radioactive waste and spent fuel SSM notes

that the report regarding nuclear waste produced during life extension of Doel 4 and Tihange 3 is stated to be of the same waste categories that were handled previously and that availability in the existing repository appears to exist.

In this case, the head of department Anna Törner has decided. Investigator Anders Verneholt has been the presenter. The investigators Anna Maria Blixt Buhr, Karolina Stark and Karin Aquilonius have also participated in the final proceedings.

The decision has been made digitally and therefore lacks signatures.

THE RADIATION SAFETY AUTHORITY

Anna Törner

Anders Verneholt

Onsala 14 May 2023



Environmentalists for nuclear power
- Founded in 1988 -

The Swedish Environmental
Protection Agency registrar@naturvardsverket.se

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Case: NV-07077-22

Consultation under Article 4-5 of the Espoo Convention regarding the life extension of the nuclear power reactors Doel 4 and Tihange 3 in Belgium Case No. NV-07077-22

Public consultation on the life extension for Doel 4 and Tihange 3 nuclear reactors

The federal government of Belgium has approved a preliminary draft of April 1st 2022 aimed at amending the law of January 2003 on a gradual exit from nuclear energy for industrial electric power generation.

The preliminary proposal at hand aims at authorizing the activation of reactors Doel 4 and Tihange 3 for further 10 years of operation, taking into account proper results of environmental impact assessment in every international respect.

The Swedish non-profit association *Environmentalists for Nuclear Power, MFK*, has got the opportunity to react on this preliminary law draft. This is our opinion and statement:

There is a worldwide consensus that well-kept nuclear power plants have a life time span of up to 80 years of operation. It is extremely vital to keep national and European electric power support and security in the best possible way in every respect. A step in this direction is to support the spirit of this 1st April law draft.

Best regards
Carl Erik Magnusson
chairman MFK

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Opinion regarding the Invitation to consultations according to Art. 4-5 Espoo Convention - Life extension of the Doel 4 and Tihange 3 reactors Belgium

The Swedish Energy Agency's position The Swedish Energy Agency has no views to report.

Decisions in this matter have been made by unit manager Fredrik Svartengren. The rapporteur has been the administrator Amanda Ros.

Fredrik Svartengren

Amanda Rose

This decision is electronically signed in the Energy Agency's case management system and therefore lacks a signature



The emergency unit

Opinion

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2023-06-01

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The Swedish Environmental Protection Agency

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Response to consultations according to Article 4-5 of the Espoo Convention regarding life extension of the nuclear power reactors Doel 4 and Tihange 3 in Belgium

The Swedish Environmental Protection Agency's case number NV-07077-22

The Swedish Environmental Protection Agency has given the Swedish Agency for Agriculture the opportunity to comment on the environmental impact statement from DG Energy, Belgium, which concerns a 10-year life extension of the nuclear power reactors Doel 4 and Tihange 3 in Belgium.

The two nuclear power reactors are in operation, and according to the revised plan must continue to be so until the end of the year 2037. Other sister reactors at the respective facilities have been decommissioned or will be decommissioned by the year 2025.

The focus of the analysis is on non-radiological or radiological impact on the environment and public health during operation of the two nuclear power reactors. These parts of the analysis are detailed, and the Swedish Agency for Agriculture has no views on them.

However, the Swedish Agency for Agriculture sees certain problems in the fact that the investigation's non-technical summary (which is in English) ignores possible international consequences for agriculture and forestry in the event of a serious accident in the form of a reactor failure with meltdown (Complete Station Blackout - CSBO). Both reactors are pressurized water reactors with emission filters that protect the containment from excessive pressure and limit the release of radioactive substances to the environment in the event of extreme accidents. Even so, there is, under certain circumstances, a risk of release of radionuclides during a meltdown. In such cases, weather conditions and other circumstances can mean radioactive fallout far beyond the neighboring countries that the investigation states are "at a safe distance" from the reactors.

In the detailed report (which is in French – subject to severe linguistic limitation in the translation), assessments of consequences at CSBO appear to have been made based on experience from the Fukushima Daiichi nuclear accident (initial INES 5, later upgraded to INES 7), and it is among otherwise calculated fallout maps (see below). From these maps, the Swedish Agency for Agriculture believes that it appears that a CSBO could have certain consequences on Swedish territory.

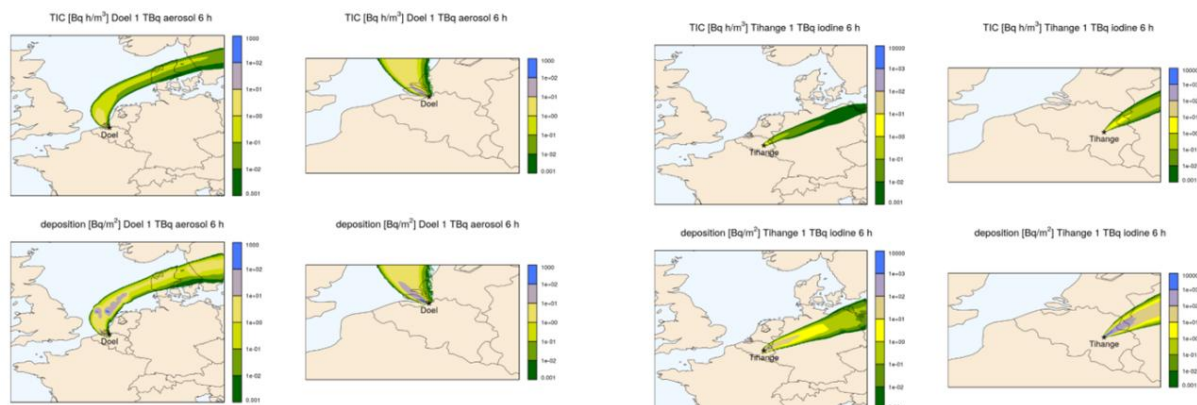


Figure 20 : Exemple de calcul Flexpart pour un rejet fictif au 1er janvier 2020 entre 00h00 UTC et 06h00 UTC de 1 TBq d'aérosols radioactifs de la centrale nucléaire de Doel. La ligne du haut indique la concentration intégrée dans le temps ; la ligne du bas indique le dépôt total. Les résultats des calculs sont présentés pour la grande grille (colonne de gauche) et la petite grille (colonne de droite).

Figure 21 : Exemple de calcul Flexpart pour un rejet fictif au 1er juillet 2020 entre 00h00 UTC et 06h00 UTC de 1 TBq d'iode élémentaire 131 de la centrale nucléaire de Tihange. La ligne du haut indique la concentration intégrée dans le temps ; la ligne du bas indique le dépôt total. Les résultats des calculs sont présentés pour la grande grille (colonne de gauche) et la petite grille (colonne de droite).

The technical report describes some impact in the Netherlands, Germany, France and the UK from radioactive fallout after CSBO, but not in any other countries. The EU's limit values for radioactive substances in food and feed are low, which means that even a limited radioactive fallout can have long-term consequences for agriculture and forestry in affected countries.

The nuclear power reactors Doel 4 and Tihange 3 do not pose a new risk because they are already in use. Despite that, it is desirable to have a clarification (in English) of the grounds on which the impact is considered to be limited for other countries in the event of a CSBO event.

In this case, unit manager Patrik Moström has decided. Lotta Andersson has been rapporteur. In the final handling, the works lawyer Sara Sundelius has also participated.

Patrik Moström

Lotta Andersson

The statement has been digitally signed and therefore lacks signatures.

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