# French G7 PRESIDENCY

# 2019 REPORT

# NUCLEAR SAFETY AND SECURITY GROUP (NSSG)

1. The Nuclear Safety and Security Group (NSSG), established at the Kananaskis Summit in 2002 and responsible to Leaders, provides technically informed strategic policy advice on issues that could impact safety and security in the peaceful use of nuclear energy, in close cooperation with multilateral organizations and avoiding duplication of tasks or efforts that are being addressed adequately by existing organizations or entities.

2. The Group remains committed to promoting the highest standards of nuclear safety and security with the view to ensuring the responsible use of nuclear energy.

## 1/ Update on the Chernobyl projects

3. The NSSG has followed the progress on the ongoing projects at the Chernobyl site, notably the New Safe Confinement (NSC) which will enclose the original shelter containing the destroyed reactor and its radioactive components, and the Interim Spent Fuel storage facility (ISF-2) which will house more than 20,000 spent fuel assemblies discharged from the Chernobyl nuclear power plant. The completion of these projects will mark a major milestone in the program funded by the international community to convert the Chernobyl site into a stable and environmentally safe condition.

4. The NSSG welcomes the completion of the NSC project. Following the acceptance of the last commissioning tests, a formal handover of the facility to the Ukrainian authorities will take place in July 2019. The NSSG expects Ukraine to ensure that all the necessary organizational and financial provisions have been taken for the operation, the maintenance of the facility and also the dismantling of the unstable structures of the original shelter, as a first step of the decommissioning program inside the NSC.

5. The NSSG highlights that the dismantling of the unstable structures inside the NSC remains a technical challenge, especially with the deadline of 2023 for its completion which should be reassessed taking into account the latest state of the facility. The NSSG recommends that Ukraine considers obtaining international technical assistance to optimize the safety and security, and mitigate risks related to the remaining elements of the program.

6. The NSSG expresses concerns on the additional delays for the completion of the ISF2 and on-going claims by the Contractor for the compensation of additional costs caused by the project delays. It is important to separate the technical completion of the facility which seems to be on the right track and the claims themselves. The Contractor should also provide expeditiously all the necessary information that has been requested for the ongoing financial assessment of the cash flow situation of the project. Existing financial resources in the Chernobyl funds are limited; there are no plans for any additional financial contribution from the G7 and therefore the NSSG requests Ukraine to take the necessary measures and to support any initiative to minimize cost of the project.

7. In addition, the NSSG is concerned by the timing (some 10 years) required for the transfer of the spent nuclear fuels from the current storage facility (ISF1) to the new facility (ISF2) taking due note of the expiring date of the current ISF1 license (2025) that will not allow the transfer to be achieved in due time. Ukraine must address urgently this crucial issue.

## 2/ Responsibility of supplier states and newcomer or re-embarking countries

8. Robust implementation by all States of the highest standards of nuclear safety, security and non-proliferation is vital to ensuring the continued and responsible use of nuclear energy worldwide. It is a key challenge especially for embarking countries and the NSSG has continued to explore means to provide support, including through sharing experience. NSSG encourages Suppliers States and embarking countries to set up focussed, results orientated arrangements facilitating sharing of technical, policy or regulatory expertise to formalize this support. In addition, the NSSG expects embarking countries to take the necessary steps to be party to and fully implement the relevant international nuclear conventions and comprehensive safeguards agreements, including the IAEA additional protocol, and to empower an independent safety regulator.

9. While recognizing that it is the responsibility of each country to ensure the safety and security of their nuclear facilities, the NSSG highlights the role of all stakeholders involved in nuclear cooperation and trade, including industry, in promoting nuclear safety and security. This should include assistance with the development of robust and sustainable domestic nuclear safety, security and non-proliferation infrastructure, in line

with international recommendations as set out in IAEA safety standards and security guidance documents.

10. The NSSG recognizes the key role of the IAEA, whose membership comprises all nuclear supplier countries and embarking countries alike. The NSSG encourages recipient states to avail themselves fully of the benefits of international cooperation, including hosting IAEA peer reviews and follow-ups missions as their programs develop and to implement the corresponding recommendations. The NSSG also encourages maximum transparency on the outcomes of these missions while taking into account the confidentiality of information as appropriate.

11. The NSSG underlines the importance in particular for embarking countries to participate in international, regional and thematic nuclear safety and security networks to share experience and to assure the dissemination of best practices.

12. The NSSG takes note that Small Modular Reactors (SMR) represent an emerging technology which could be potentially disseminated in particular in many embarking countries. The deployment of SMRs will raise new challenges in safety, security and also safeguards. The NSSG supports the actions initiated to address them, in particular by the IAEA and NEA.

## 3/ Strengthening Nuclear Safety and Security international legal framework

13. The strengthening and the universalization of the legal frameworks for nuclear safety and security remains a key focus of the NSSG agenda. The NSSG commits to continue supporting the implementation of international legal instruments for nuclear safety and security by advocating for their universal ratification and fulfilment of related obligations, in consultation with relevant international organizations and bodies. The NSSG takes note of and continues to support the important work undertaken by the IAEA to continue to promote the importance of these instruments and Conventions and to assist Member States upon request, including through the provision of advisory services.

14. The NSSG focused its efforts on the universalisation and implementation of the Convention for the Physical Protection of Nuclear Material (CPPNM), its 2005 Amendment (CPPNM/A) and the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT). Coordinated demarches have been performed in several countries in 2019 encouraging those countries to join the relevant conventions.

15. The NSSG reaffirms the importance of establishing a global nuclear liability regime addressing the concerns of all states that could be affected by a nuclear accident by providing appropriate compensation for nuclear damage. The NSSG encourages all states to join an international nuclear liability instrument as a step toward establishing such a global regime.

## 4/ Effective independence of safety authorities

16. The independence of nuclear regulators is crucial to avoid external influence, pressure and conflict of interests, while allowing appropriate mechanisms for external professional dialogue, with both licensees and independent experts. It includes the implementation of decision making processes based on science, proven technology and relevant experience to assure traceability and transparency to the public.

17. Regulatory independence is a core principle of the IAEA safety standards. The NSSG supports the IAEA in its related activities in strengthening safety infrastructure.

18. The NSSG is very concerned that no progress has been made on the restoration of the legal independence of the Ukrainian nuclear regulator, the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU), regarding licensing and inspections. The NSSG recalls also that the international support that Ukraine is able to receive is limited by the continued lack of legal SNRIU independence.

19. The NSSG welcomes the existing cooperation and support tools of the IAEA and regional organizations for the strengthening of regulatory authorities. In particular, the NSSG encourages countries to request Integrated Regulatory Review Service (IRRS) missions from the IAEA and strongly supports transparency of the outcomes. The NSSG also takes note of significant contributions made by G7 member states and the European Union which help embarking countries develop efficiently their organization and regulatory framework dedicated to nuclear safety. These include for example the European Instrument for Nuclear Safety Cooperation, IAEA Capacity Building Centre in Fukushima, Japan, the US contributions to IAEA capacity building initiatives as well as US bilateral and regional capacity building activities.…

## 5/ Availability and durability of scientific expertise in support to nuclear safety decisions

20. Recognizing the broad diversity of nuclear safety organizations in G7 countries, the NSSG underlines the requirement to ensure the availability and durability of sustainable high-level scientific expertise to support nuclear safety decisions by licensees and competent authorities. Therefore, all nuclear safety organizations in G7 countries deem necessary to invest in science-based and long-term research dedicated to nuclear safety and radiation protection, and to foster international cooperation in order to guarantee the availability and optimize the use of research capacities and related skills.

21. The availability of such high-level scientific expertise, which is crucial to independent decision making, is becoming a concern and is particularly acute as nuclear safety

research facilities throughout the world are ageing and, for some of them, closing down (recently the HALDEN reactor). The NSSG highlights that it is important to preserve the remaining operating research facilities, when appropriate, to ensure durability of scientific expertise.

22. To face this situation, the global nuclear research community (safety authorities, technical safety organizations, research organizations, industry, intergovernmental organizations) needs to increase its level of coordination. This coordination could provide strategic guidance on research programs needed to guarantee robust nuclear safety decision-making based upon cutting-edge scientific expertise to the benefit of the public and environment protection and it will increase the quality of research. Governments also need to support this effort in the long term.

23. To achieve this objective while tackling budgetary constraints, it is crucial to further preserve, optimize and develop collaborative nuclear research infrastructure/platforms to guarantee their long-term availability. Intergovernmental organizations, academic, scientific and multilateral networks can help to achieve these goals by providing strategic guidance. Long-term funding, from design to decommissioning, to finance such research infrastructures should also be taken into account.

24. Embarking countries should be encouraged to fully take into account the necessity to develop nuclear safety and radiation protection programs and supervisory bodies in advance of any decisions related to the development of a new installation. Their participation in the collaborative research platforms should be considered early in the process and is very welcome.

25. Safety and radiation protection collaborative platforms should also promote learning by doing and ensure knowledge availability, proper transfer of knowledge and know-how to the young generation. The NSSG welcomes the development of international initiatives providing opportunities for the young generation to ensure high level skills required for the safe and efficient use of nuclear technologies.

## 6/ Ageing of nuclear facilities

26. Ageing management constitutes a challenge for the coming years worldwide, as current nuclear power plants (NPPs) in the world, comprising more than 450 NPPs of different designs, are ageing, meaning that roughly 22% of them are already 40 years old and beyond.

27. The NSSG recognised that, despite various regulatory approaches, there are common technical challenges to address in order to implement an efficient management of ageing nuclear facilities. The NSSG encourages benchmarking and information exchanges with the help of multilateral fora such as the NEA's Committee on Nuclear Regulatory

Activities and tools such as the IAEA's International Generic Ageing Lessons Learned or Safety Aspects of Long Term Operation missions and related guidelines.

28. The NSSG recognizes the importance of periodic and regular self-assessments as noted by the Vienna Declaration on Nuclear Safety adopted by the contracting parties to the Convention on Nuclear Safety (CNS) on February 9, 2015.

29. The NSSG recognizes the value of the European Topical Peer Review (TPR) on ageing management and similar processes undertaken in other G7 member countries, and encourages other countries to take the results these processes into account during their country's revision of IAEA safety standards, and to evaluate their applicability into their national frameworks.

30. The NSSG also highlighted the fact that it is crucial to consider an appropriate ageing management of all nuclear installations, such as the research reactors or facilities and nuclear fuel cycle facilities.

## 7/ Decommissioning and dismantling of nuclear reactors

31. After shut-down of nuclear facilities, new challenges need to be taken into account for their decommissioning and dismantling, from technical and operational considerations for a safe and cost efficient decommissioning to the disposal of radioactive waste. This includes regulatory and social issues such as the economic effects of a shutdown on local communities, public acceptance and transparency.

32. In particular, the NSSG underlines the challenge to develop and maintain the knowledge and technical expertise needed for the dismantling of NPPs. With this perspective, decommissioning operations should be carried out as soon as reasonably practicable.

33. Nevertheless, there could be a long time between the final shutdown of a facility and its dismantling, to take advantage of the radioactive decay but more sensitive because of the lack of disposal or treatment options. The retrieval of the irradiated graphite of the graphite gas reactor technologies is a particularly acute issue in this regard.

34. The NSSG encourages exchanging best practices and disseminating knowledge related to decommissioning and dismantling of nuclear reactors with the help of relevant international organizations, such as the NEA and IAEA.

## 8/ Update on the decommissioning of the Fukushima Daiichi NPP

35. The NSSG took note of the following update from Japan concerning the Fukushima Daiichi decommissioning program:

- The water management is based on isolating groundwater from contamination, preventing leakage and removing the contamination source. As a result, the concentration of radioactive materials outside the port is now below the regulatory limit and the volume of contaminated water has declined. Data was collected by the use of muon scanning and remote control robots to prepare the fuel debris retrieval.

- Japan informed on the 4th IAEA Review held on the site in November 2018. Its conclusions highlighted significant progress in the management of the sub drains, the improvement of working conditions and the work towards spent fuel removal. However, the IAEA found urgent to reach a sustainable solution for treated water containing tritium, currently stored in tanks on site, as the current tank capacity is planned to be reached within 3 to 4 years. Various options are under consideration.

## 9/ Experience feedback from the Ru106 event in 2018

36. The NSSG supported a workshop on improving and strengthening IAEA incident reporting arrangements in February 2019 at the International Atomic Energy Agency headquarters in Vienna. The event was dynamic and thought provoking, with 60 delegates attending from the capitals and Permanent Missions of over 30 Member States. Participants shared insights, made suggestions and discussed creative ideas to further strengthen, promote and improve transparency, information sharing and confidence building in international nuclear safety. The contributions and constructive spirit made the workshop a success, and demonstrated the strong commitment of the G7 nations and the global community to raising the bar on the global nuclear safety framework.

## 10/ Cybersecurity

37. With the rapid development of digital technology, challenges in cybersecurity should be identified and addressed to ensure effective safety and security at nuclear facilities. Following the discussions held under the Canadian presidency in 2018, the NSSG decided to focus its efforts on political and regulatory issues related to civil nuclear cybersecurity frameworks. Detailed technical issues will be left to experts.

38. The NSSG welcomes the large number of activities conducted by the IAEA which are envisioned in its Nuclear Security Plan for 2018-2021, for the strengthening of cybersecurity.

39. The NSSG will support the IAEA for the review of its Nuclear Security Series publications and will actively participate in the preparation of the nuclear security resolution of the annual IAEA General Conference. The NSSG considers it highly valuable to enhance coordination between experts before IAEA consultancy meetings, the sharing of best practices and information, and initiating the observation of regulatory activities for willing G7 countries.

40. In preparation for the 2021 CPPNM/A Review Conference, the NSSG will consider coordination and exchange on our respective positions.

## 11/ Coordination with the NPDG and NRSWG

41. The NSSG held joint sessions with the G7 Non-Proliferation Directors Group (NPDG) and the Nuclear and Radiological Security Sub-Working Group (NRSWG) of the G7-led Global Partnership against the Spread of Weapons and Materials of Mass Destruction to reinforce linkages between the Groups and ensure there is no duplication of efforts.

42. The joint session between the NSSG and the NPDG focused on preparation for the 2020 NPT Review Conference and stressed the need for a balanced approach in support of the NPT. The session highlighted that the NPT is an important element in the further development of the applications of nuclear energy for peaceful purposes under the highest safety, security and non-proliferation standards in energy and applications, and that discussions in this regard benefit from the involvement of a broad range of stakeholders.

43. With regards to the preparation of the upcoming IAEA International Conference on Nuclear Security (ICONS) on 10-14 February 2020, outcomes of which will be taken into account for the IAEA's Nuclear Security Plan 2022-2025, participants reaffirmed the importance of presenting nuclear security as an opportunity rather than as an obstacle and to include new and emerging challenges such as cybersecurity in the conference agenda.

44. The joint session between the NSSG and the NRSWG provided a general overview and a group discussion on the IAEA's nuclear security advisory services. The IAEA presented its activities that support the identification by States of their needs in nuclear security, in particular with Integrated Nuclear Security Support Plans (INSSP). The IAEA also provides advisory services to review requesting Member States' nuclear security regimes, such as through the International Nuclear Security Advisory Service (INSServ) and the International Physical Protection Advisory Service (IPPAS). Participants recognized the importance of these tools to strengthen nuclear security regimes and underlined that they also contribute to increased public confidence in nuclear energy.