

---

# 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

11 May 2015

Original: English

---

New York, 27 April-22 May 2015

## **Promotion by the European Union of the highest levels of nuclear safety: revised nuclear safety directive\***

**Working paper submitted by the European Union**

### **I. European Union response to Fukushima**

#### **European Union stress tests**

1. Nuclear safety for all nuclear installations and in particular for nuclear power plants is a long standing priority for the European Union (EU) and its Member States. The key principle is to strive for continuous improvements of safety levels in order to maintain the highest standards of safety in the light of technological change.

2. The Fukushima nuclear accident focussed attention on the paramount importance of ensuring the most robust levels of nuclear safety. The EU response to this event was immediate. Based upon a mandate from the European Council at its meeting of 24-25 March 2011,<sup>1</sup> the European Commission (hereafter 'Commission'), together with the European Nuclear Safety Regulators Group (ENSREG), launched EU-wide comprehensive risk and safety assessments ("stress tests") of all EU nuclear power plants to reassess their robustness against extreme natural events and the consequences of any other initiating events (e.g. transport accidents, such as airplane crashes) potentially leading to multiple loss of safety functions requiring severe accident management. All the operators of nuclear power plants in the EU have to review the response of the nuclear plants to those in extreme situations. The operators' reports were first reviewed by the national nuclear regulators. They, then, prepared the summary national reports. The results confirmed the high standards of nuclear safety in the EU, whilst identifying a number of improvements which could be implemented in nuclear safety approaches and industry practices in the participating countries. To ensure appropriate follow-up, the Member States have developed National Action Plans for the implementation of the identified recommendations.

---

\* The present document is issued without formal editing.

<sup>1</sup> European Council Conclusions EUCO 10/1/11.



3. The National Stress Tests Reports were submitted to the Commission and National Action Plans underwent a peer review process, organized by ENSREG. The updated reports were recently reviewed during the second ENSREG National Action Plan Peer Review Workshop in April 2015.

#### **Cooperation among European Union Member States' nuclear safety regulators**

4. The European Nuclear Safety Regulators Group (ENSREG)<sup>2</sup> is an independent, authoritative expert body created in 2007 following a Decision<sup>3</sup> of the Commission. It is composed of senior officials from the national nuclear safety, radioactive waste safety or radiation protection authorities and senior civil servants with competences in this field. All EU Member States and the Commission are represented in ENSREG. The Council of the European Union, Switzerland, Norway and the International Atomic Energy Agency have observer status in the group.

5. ENSREG's role is to help establish conditions for continuous improvement and to reach a common understanding in the areas of nuclear safety and radioactive waste management. It is also working to improve the cooperation and openness between Member States on nuclear safety and radioactive waste issues and increase transparency. It also has a consultative role in the implementation of directives related to nuclear safety. Nuclear safety and the safe management of spent fuel and radioactive waste are national responsibilities and decisions concerning safety actions and the supervision of nuclear installations remains solely with the operators and national safety authorities. However, the Commission is working closely with the competent regulatory authorities of the Member States in the framework of ENSREG. A good example of such cooperation is provided by the stress tests of nuclear power plants carried out by the national competent regulatory authorities together with the Commission following the Fukushima Dai-ichi nuclear accident.

#### **European Union cooperation with third States**

6. Contacts with EU Neighbouring Countries on stress tests started immediately after Fukushima. Switzerland and Ukraine participated fully in the 2011/12 European stress tests (as well as Croatia via its co-ownership of the Slovenian NPP), whilst similar stress tests were performed by several of the EU's neighbours, e.g. Russia, Belarus, Armenia, Turkey.

7. The EU Instrument for Nuclear Safety Cooperation (INSC) has been a major contributor towards assisting third countries to develop and implement stress tests. The INSC promotes the highest level of nuclear safety worldwide, by providing support especially to regulatory authorities, including those in countries which are beneficiaries under the EU's neighbourhood policy such as Armenia, Belarus, Egypt, Jordan, Morocco and Ukraine. The new INSC programme for 2014-2020 is a specific, technical instrument dealing with nuclear safety, nuclear waste management and nuclear safeguards. The projects implemented in these three areas contribute to a safer world by promoting a nuclear safety culture worldwide, to a cleaner environment e.g. through supporting the remediation of the legacy of uranium mining in Central Asia, and to the non-proliferation regime by establishing a sound nuclear material accountancy and control system.

---

<sup>2</sup> ENSREG website: [www.ensreg.eu](http://www.ensreg.eu).

<sup>3</sup> OJ of 27.7.2007 L 195/44.

## II. European Union legal framework for nuclear energy

8. The role and a key objective of the European Union/Euratom Community<sup>4</sup> is to develop — in the interest of all its Member States — the most advanced legal framework for nuclear energy, meeting in particular the highest standards of nuclear safety and radiation protection, including research and training.

9. The existing legislative framework at the EU level is an example of a binding set of rules that can be achieved at regional level. It has been significantly strengthened in the past four years with the aim of supporting the continuous enhancement of nuclear safety and radiation protection both in the EU and at the international level. The Commission is working closely with Member States to facilitate the implementation of the EU safety framework on national level. This entails a major effort by Member States.

10. The Council Directive for the responsible and safe management of spent fuel and radioactive waste<sup>5</sup> was adopted in July 2011. It obliges the EU Member States (hereafter ‘Member States’) to establish a national legislative, regulatory and organizational framework covering all aspects of the management of spent fuel and radioactive waste from generation through to final disposal. The Member States must define and detail their waste management policies and explain the modalities for implementation of these policies in national programs which are to be communicated to the Commission by August 2015. Furthermore, Member States are required to periodically invite international peer reviews to exchange experience and ensure the application of the highest standards.

11. The Euratom Treaty empowers the Community to establish basic safety standards to protect the health of workers and the general public against dangers arising from ionising radiation. The first Euratom Basic Safety Standards Directive was adopted in 1959 and has since been regularly updated. The most recent revision from December 2013<sup>6</sup> takes account of scientific and technological progress since the 1990s, and consolidates five earlier legal acts into a single piece of legislation.

---

<sup>4</sup> The European Atomic Energy Community (Euratom Community) was established in 1958 by the “Euratom” Treaty and has **maintained a legally distinct personality from the European Union, although it has the same membership and is governed by the same EU institutions**. The general objective of the Euratom Treaty is to contribute to the formation and development of Europe’s nuclear industries, so that all the Member States can benefit from the development of atomic energy, and to ensure security of supply. While it is for each EU Member State to choose whether or not to use nuclear energy in its energy mix, the role of the Euratom Community is to develop — in the interest of all Member States — the most advanced legal framework for nuclear energy, meeting the highest standards of safety safeguards and non-proliferation. The Euratom Treaty empowers the Community to act in the nuclear field in order to: (a) promote and facilitate research and technology; (b) establish uniform standards for safety, radioactive waste management and radiological protection; (c) facilitate nuclear investments and developments, particularly through the setting up of joint undertakings; (d) ensure a common supply policy; (e) ensure the non-diversion of nuclear materials (nuclear safeguards); (f) achieve a common nuclear market and (g) enter into international relations to foster progress in the peaceful uses of nuclear energy.

<sup>5</sup> Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L 199, 2.8.2011, p. 48).

<sup>6</sup> Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom (OJ L 13, 17.1.2014, p. 1).

12. The new directive offers better protection of: workers, in particular in medicine, radon-prone workplaces and industries processing naturally occurring radioactive material (NORM); the public, in particular from indoor radon; and patients, in particular with regard to accidents in radio therapy and radio diagnosis. The directive strengthens the requirements on emergency preparedness and response, and focuses on better cooperation between Member States and with third countries, especially with a view to the lessons learned from the Fukushima accident.

13. In view of the lessons learned from the Fukushima Dai-ichi accident and the EU stress tests findings, acting on the request of the March 2011 European Council to also review the existing legal and regulatory framework for nuclear safety in the EU, the Commission adopted in October 2013 a proposal for a Directive amending the 2009 Nuclear Safety Directive.<sup>7</sup> The new directive was adopted in the Council in July 2014 and is to be implemented by the Member States by August 2017.

### **III. Revised Nuclear Safety Directives<sup>8</sup>**

14. Based on the philosophy of continuous improvement of nuclear safety, the 2014 amendment to the Nuclear Safety Directive aims at further reinforcing the common nuclear safety framework in the EU by five principal means:

#### **Strengthening the rules concerning the role and independence of national regulatory authorities**

15. Under the amended directive, the obligations as regards the regulatory authorities' independence from undue influence in their regulatory decision-making and their appropriate means and competencies to properly carry out their responsibilities have been further enhanced.

16. In particular, the regulatory authorities shall have sufficient legal powers; sufficient staffing with necessary qualifications, experience and expertise; and sufficient financial resources for the proper discharge of their assigned responsibilities.

17. The regulatory authorities should be involved in the definition of national nuclear safety requirements — conflicts of interest must be prevented.

#### **Introducing a high-level Union-wide safety objective to prevent accidents and avoid radioactive releases**

18. This objective, applicable to nuclear installations licensed for construction after 14 August 2014, calls for significant safety enhancements in the design of new reactors, for which State of the art knowledge and technology should be used, taking account of the latest international safety requirements. In particular, such installations must be designed, sited, constructed, commissioned, operated and decommissioned with the objective of preventing accidents and, should an accident

---

<sup>7</sup> Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations (OJ L 172, 2.7.2009, p. 18).

<sup>8</sup> Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations (OJ L 219, 25.7.2014, p. 42).

occur, mitigating its consequences and avoiding early radioactive releases that would require off site emergency measures but with insufficient time to implement them, and large radioactive releases that would require protective measures that could not be limited in area or time.

19. As for the existing nuclear installations, this objective enshrines the principle of continuous improvement of nuclear safety by indicating the need to identify and implement in a timely manner reasonably practicable safety improvements. This objective has been also introduced at the international level (see 4.2).

#### **Setting up a European system of peer reviews on specific safety issues every six years**

20. A European topical peer review, as set out by the amended Nuclear Safety Directive, is a cooperation and coordination mechanism amongst the EU Member States with the aim of building confidence, developing and exchanging experience and ensuring the common application of high nuclear safety standards.

21. The main benefits of the new peer reviews are (i) in-depth examination of a specific technical feature, (ii) common understanding on nuclear safety issues, (iii) translation of the safety objectives into concrete recommendations including a follow-up of actions, (iv) knowledge and experience sharing at European level, and (v) enhanced transparency on nuclear safety issues.

22. The introduction of topical peer reviews was largely inspired by the peer review process conducted during the nuclear stress tests undertaken after the Fukushima accident. In accordance with the amended directive, peer reviews will focus on specific safety topics. They will complement the already existing reviews according to which the Member States must, at least every ten years, arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and/or authorities with the aim of continuously improving nuclear safety.

#### **Increasing transparency requirements on nuclear safety matters, informing and involving the public**

23. The amended Directive also requires the competent regulatory authority and licence holders to provide the public with information on normal operating conditions of nuclear installations as well as prompt information in case of incidents and accidents.

24. Moreover, the public is given the opportunity to participate in the decision-making process relating to licensing of nuclear installations.

#### **Promoting an effective nuclear safety culture**

25. The directive includes provisions to promote and enhance an effective nuclear safety culture which aim in particular at promoting the commitment to nuclear safety and its continuous improvement at all levels of staff and management within an organisation.

26. These provisions, related to the human factor, complement the more technical provisions (nuclear safety objective, defence-in-depth concept, initial assessments

and periodic safety reviews of nuclear installations) also introduced in the amended directive, reflecting the two pillars of nuclear safety.

27. The amended directive enhances accident management as well as on-site emergency preparedness and response, and provides for regular safety reassessments of nuclear installations to identify further safety improvements which take into account various issues, including ageing.

28. This directive does not prevent Member States from taking more stringent safety measures.

## **IV. Nuclear safety in the international context**

### **Strengthened cooperation with the International Atomic Energy Agency**

29. Senior Officials from the International Atomic Energy Agency (IAEA), the Commission and the European External Action Service have been regularly meeting together since early 2013 to review their nuclear-related cooperation activities and plan future work. In addition to nuclear safety, the Senior Officials Meetings also cover areas of cooperation such as nuclear security, safeguards, nuclear applications, and research and innovation in nuclear energy. They provide a forum for senior level dialogue on new areas and forms of cooperation and a trigger for detailed investigation of the potential that each party has for contributing to common goals.

30. Regarding the area of nuclear safety in particular, significant cooperation had developed over many years and in order to make this cooperation more effective and efficient, the European Atomic Energy Community and the IAEA signed a Memorandum of Understanding (MoU) on Nuclear Safety cooperation in 2013. This MoU provides an overarching framework for the two parties to coordinate their respective activities, thereby seeking to avoid duplication and maximising the effectiveness of their efforts. For the follow-up of the implementation of the MoU, a Senior Officials Liaison Committee (SOLC) was established. The SOLC gathered for its first annual meeting in early 2014. One of the conclusions of the 2nd meeting in February 2015 was that the structurally strengthened communication had helped both in timely planning of future actions and in the review of ongoing projects. Further steps to ensure efficient use of available resources are currently being taken by further identifying possible synergies, starting from the area of education and training.

31. Euratom is party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management signed under IAEA auspices and will participate to the next Review Meeting of Contracting Parties in May 2015. It is also a party to the Convention on Nuclear Safety (see below).

### **Reinforcing the Convention on Nuclear Safety**

32. The lessons learned from the Fukushima accident following the Tōhoku earthquake and tsunami on 11 March 2011 led the international community to take steps to further strengthen nuclear safety throughout the world. The 55th IAEA General Conference endorsed the IAEA Action Plan on Nuclear Safety, providing for the improvement of the effectiveness of the international legal framework,

including, if necessary, the amendment of the Convention on Nuclear Safety (CNS), the cornerstone of the global nuclear safety regime.

33. The Contracting Parties to the CNS agreed to hold an Extraordinary Meeting in August 2012 where they decided to establish an “effectiveness and transparency” working group, open to all Contracting Parties, tasked with reporting to the 6th CNS Review Meeting on a list of actions to strengthen the CNS and on proposals to amend, if necessary, the Convention.

34. The UK, supported by all the EU Member States and the Euratom Community, submitted a package of proposals based on the list of 68 actions suggested by the working group, mainly aiming to amend the CNS Guidance documents. Agreed by consensus at the 6th Review Meeting in spring 2014, the new rules set out clear guidance on actions to be taken by the Contracting Parties to meet the objectives of the Convention, enhance preparation of National Reports, improve the review process, strengthen international cooperation and provide for more transparency towards the public.

35. In addition, Switzerland decided to formally submit an amendment to the Convention with a view of making the principle of “avoiding off-site contamination” legally binding. Given the lack of consensus during the review meeting, the Contracting Parties decided to submit the proposal to a Diplomatic Conference. The support of EU Member States for the convening of a Diplomatic Conference was determining.

36. At the Diplomatic Conference held on 9 February 2015, all the attending Contracting Parties, including the 28 EU Member States and the Euratom Community, agreed upon a text for a Declaration containing a set of principles and implementation mechanisms to improve and enhance the safety of nuclear power plants. These principles, already enacted in legally binding legislation in the EU, aim to prevent nuclear accidents and mitigate their consequences for the population, and include the safety objective of avoiding off site contamination.

37. In addition, this consensus outcome is largely in line with the EU’s goal to promote internationally the Nuclear Safety Directive’s “safety objective”.

38. The Declaration asks Contracting Parties to report on how they implement the safety objective in the siting, commissioning and operation of nuclear power plants. Through the principles agreed, the Contracting Parties not only open the way for further improvements to new nuclear power plants, but also make clear commitments to safety improvements of existing plants through periodic reviews and the timely implementation of necessary safety upgrades. The implementation of these principles will be subject to peer reviews in the framework of the next CNS Review Meeting in 2017.

## V. Conclusion

39. Nuclear safety is an absolute priority for the EU. The EU and its Member States acted promptly to learn the necessary lessons of the Fukushima accident. First, by drawing upon the existing structures of regulatory cooperation within the EU to carry out EU-wide stress tests which also involved neighbouring countries.

40. Second, based upon the outcomes of the stress tests coupled with other sources such as IAEA and WENRA,<sup>9</sup> the EU adopted a major revision of its legal framework for nuclear safety — the Nuclear Safety Directive that significantly reinforces the safety requirements for nuclear installations. In particular, the new Directive strengthens the power and independence of national regulatory authorities; introduces a high-level EU-wide safety objective to prevent accidents and avoid radioactive releases; sets up a European system of peer reviews on specific safety issues every six years; increases transparency on nuclear safety matters and promotes an effective nuclear safety culture.

41. The EU also provides support to third States for improving nuclear safety by means of the Instrument for Nuclear Safety Cooperation and is an important actor in international cooperation with IAEA in nuclear safety. The EU and its Member States were also leading players in the recent strengthening of the review process of the Convention on Nuclear Safety.

---

---

<sup>9</sup> Western European Nuclear Regulators Association.