FORATOM Position on the Commission's draft proposal[1] to amend the Nuclear Safety Directive

Executive summary

FORATOM **supports the intention to revise** and to enhance the current Nuclear Safety Directive (NSD) to take into account all the lessons learnt from Fukushima. However, the nuclear industry believes that it would have been more advisable, before producing a revised Directive, to wait for the feedback from the implementation of the current Nuclear Safety Directive and for the results of on-going international processes (such as the revision of the Convention on Nuclear Safety to which EURATOM is a party and the upgrade of IAEA safety requirements standards).

The Commission's proposal raises **questions of technical and legal nature**. There are some gaps and shortcomings considering the overall coherence with the work carried out by the IAEA and/or WENRA**.** For example the provisions of the WENRA work applicable to future reactors have, in the new proposal, been applied indiscriminately to both existing and future reactors. FORATOM considers that while there should be the shared objective of seeking continuous improvements to nuclear safety at both existing and future NPPs, any EU Directive needs **to recognise the operational differences between old and new reactor designs**. The suggested notion of "practical elimination" should remain focused on the prevention of the *severe accident* sequences, and should not imply that all off-site consequences can be eliminated in any incidental or accidental conditions. Furthermore, the application of the provisions of the revised Directive to other nuclear installations (non-reactor) should be also clarified.

The Directive should **not try to provide new definitions** to already existing concepts by IAEA and/or WENRA: some of these new definitions are in several cases **inconsistent with those of the IAEA** as currently applied within particular Member States and lead to confusion. It is therefore of the utmost importance that the proposed Directive ensures consistency and avoids the introduction of new technical terms in what is to become a legally binding instrument. Indeed, some of

[1] COM(2013) 343 final of 13 June 2013

these could be interpreted differently, leading to **serious difficulties and litigation in their implementation.**
The draft NSD still provides too many detailed prescriptions, instead of taking a goal-setting approach. This runs counter both to best practice and one of the lessons from Fukushima. Furthermore **Article 8c** that contains detailed technical requirements coming from Light Water Reactors is not applicable to other nuclear installations and, as recommended by ENSREG**, should be deleted**.

FORATOM agrees on the fact that independent **peer review processes** can be a powerful way to improve nuclear safety. However, given the number of already existing national and international peer review processes, which imply heavy burdens on the regulatory authorities and on operators, the new European peer review processes to be established by the Directive **should be carefully targeted and justified.** For FORATOM, there is a risk of **undermining the authority of the (national) regulators** if the definition of the peer review topics, their management and the control of the implementation of the recommendations do not strictly remain **the exclusive responsibility of the latter**.

FORATOM, ENISS and ENEF have worked together over the past year to review the Commission's draft proposal to amend the Nuclear Safety Directive. This resulted in the agreement of a common position.

Detailed Comments

1. Timeline for the revision of the Nuclear Safety Directive

FORATOM supports the idea of a future revision of the Nuclear Safety Directive to take all the lessons learnt from the Fukushima accident into account. However FORATOM has constantly argued that there is no need to undertake this revision urgently:

- The present Nuclear Safety Directive has only recently been transposed into national legislations and the first 3 yearly reports of its implementation are due in July 2014. It would be very important to take into account the feedback from this first implementation phase in a revision of the Nuclear Safety Directive.
- The revision of the Nuclear Safety Directive should be consistent with the principles and objectives set by the IAEA Convention on Nuclear Safety (CNS) and the IAEA's Fundamental Safety Principles (jointly sponsored by Euratom). The extraordinary meeting of the contracting parties of the CNS, in August 2012, proposed amendments to the CNS which are currently being developed further for adoption during the spring 2014 meeting of the contracting parties. The Nuclear Safety Directive should be in line with these changes.
- The IAEA has undertaken a revision of its safety standards and especially its key safety requirements. This work will be completed by mid 2014 and it would be very important that European standards be consistent with these international requirements.

Taking the time to include these elements would seem all the more appropriate since the peer review of the stress tests has shown that operating nuclear power plants in Europe are safe and can continue to operate, and that significant actions to further improve their safety and to further minimise risks are already undertaken in every Member State, documented and published in national action plans and closely followed by ENSREG through regular workshops.

2. General comments on the explanatory memorandum

1. The explanatory memorandum does not, in our opinion, fully justify the need for a revision of the Nuclear Safety Directive in the light of lessons learnt from Fukushima; it fails to provide a convincing, auditable, technical justification. It would have been useful to include:

    - The results from the online questionnaire – for example what was the level of public response from across the EU?
    - Actual evidence that substantiates the claim that there is a significant level of public demand to extend the current Directive to emergency preparedness and response.

2. The explanatory memorandum highlights as areas for revision of the NSD:

- Safety procedures and frameworks
- Role and means of nuclear regulatory authorities
- Openness and transparency
- Monitoring and verification

However, the draft seeks to create a legal safety framework around these issues that is much more detailed and prescriptive than is appropriate or necessary for EU legislation.

3. In doing this, it risks undermining the role of the national regulatory authorities as well as discouraging the adoption of the "goal setting" approach which currently enables national regulators to take note of international standards.

4. Comments on the proposed text of the directive

4.1 Preamble (43 Recitals)

1. The § 8 of the existing directive has been deleted. The principle of National responsibility as well as the principle of prime responsibility of the license holder should be clearly restated in the preamble
2. The preamble is much longer than necessary and some of the points fail to make adequate arguments to justify changes. For instance:

   Paragraph 16: Asserts the need to strengthen the independence of national regulators even though this is already provided for in the existing Nuclear Safety Directive which has only been in force across the EU since July 2011 and so awaits feedback from its implementation (reports due 2014).

3. Paragraph 16: "…arrangements should be made to ensure that there is no conflict of interest for those organisations that provide the regulatory body with advice or services". This provision could lead to the disappearance of balanced advisory safety committees which have proven their effectiveness for many decades (e.g. German RSK or French "groupe permanent"
4. Paragraph 23 & 24: Asserts the need for Member States to prepare "transparency strategies" covering as a minimum a number of areas (several of which are already covered by existing EURATOM Directives). While openness and transparency is an important principle it does need to be applied in a way that enhances rather than "undermines" safety. For example, the requirement for the national regulator to provide "any safety-related information" without prior consent of any other public or private body could compromise nuclear safety or security.
5. Paragraph 14 of Directive 2009/71has been deleted and should be reintroduced as reference is made to WENRA Safety Reference Levels. The WENRA Safety Objectives for new Nuclear Power Plants should also be added as a reference in this paragraph
6. Paragraph 27 is written on the basis that the nuclear regulatory systems within Member States grant time-limited licences, which therefore need to be extended to prolong operating lives. At one time this was a relatively common approach. Now very few Member States impose licences that are time-limited in this way, but all require ageing and obsolescence to be taken into account within Periodic Safety Reviews. The paragraph should be re-drafted to reflect this and should remove the reference to 40 years since the economic design lives of reactors in Europe have increased over time from 20 years to up to 60 years.

7. Paragraph 29: it is unreasonable to summarise the concept of defence in depth in 6 lines. It took years of discussion and careful wording by WENRA to define this concept. Therefore taking into account the complexity of the defence in depth concept, its definition should not appear in the proposed Directive.
8. Paragraph 30 starts talking about the “containment function”, which corresponds reasonably well to the IAEA fundamental safety function “confinement of radioactive material”. However it then goes on to talk about the containment systems used by Light Water Reactors. The Directive needs to be technologically neutral to encompass both existing plants and Generation IV plants using different confinement strategies. The aim should be to limit releases beyond the site boundary.
9. Paragraph 33: “…the Commission should select one or more topics to be subjected to the peer reviews” is contrary to the European Union's principle of subsidiarity. It is not appropriate to confer to an EU organisation a kind of watchdog status.
10. Harmonization of safety requirements at the European level has been strongly supported by SWG/NIS. The preamble of the revised Safety Directive should include encouragements for further harmonization of safety requirements in Europe by WENRA.
11. Compared with the 2009 Directive, recitals weaken the link between the case-law of the European Union Court of Justice which defines the shared competence of the EURATOM community with the Member States in the field covered by the Convention on Nuclear Safety and the national responsibility for nuclear safety. The deletion of former recital number 8 which stated that "National responsibility of Member States for the nuclear safety of nuclear installations is the fundamental principle on which nuclear safety regulation has been developed at the international level, as endorsed by the Convention on Nuclear Safety" is not appropriate and contributes to the justification of provisions which are likely to diminish national responsibility.

4.2 Articles

12. The current draft version underwent significant positive improvements from the 28/12/2012 version. It takes into account several ENSREG suggestions. However it still contains numerous difficulties both legal, about the role of the Commission, and technical. One should be very cautious about introducing some technical terms in a legally binding document as some of these terms that are well understood by nuclear engineers might be interpreted quite differently by lawyers, and that could be the cause of serious difficulties and litigation in their implementation.
13. The Commission’s proposal has certain deficiencies with respect to definitions, technical content and overall coherence with the work carried out by the IAEA and/or WENRA. This could lead to misinterpretation and harmful practices. For example the provisions of the WENRA work applicable to future reactors have been retained to be applied indiscriminately to existing reactors, future reactors and other nuclear facilities, with the only protection “to the extent reasonably achievable”. We think this is technically understandable and applicable, but not with the definition given for reasonably achievable (grossly disproportionate); legally it might also be difficult to apply. Operating and future NPPs must be clearly distinguished. In addition these provisions (article 8c) have been written for Nuclear Power Plants by WENRA and its application to other nuclear installations is quite questionable.
14. The Commission’s text raises important technical and legal policy questions about the Commission’s role and powers within the framework of the peer review process and monitoring (independence of national regulators, establishment of guidelines,

etc.).

Article 1

15. We suggest modifying the last sentence of article 1c by replacing "…*so as to avoid unauthorised radioactive releases*." with the following: *… in a way to avoid unplanned radioactive releases and* to *minimise as far as is reasonably achievable* other releases".

    Rationale: In accident conditions there are no authorised releases limits and it is always necessary to minimise releases.

Article 3

16. The definitions used are generally a mixture of IAEA and WENRA ones but do include some departures. Furthermore, some of the IAEA definitions are being revised in the light of the lessons learned from Fukushima as part of DS 462. When this process is completed (planned for November 2014) these definitions should be adopted. In addition:

    - 7 "abnormal event" and 8 "accident" have insufficient distinction from the consequences point of view and are furthermore neither in line with IAEA definition nor with the INES one. We suggest using IAEA terminology for "Anticipated Operational Occurrences" and "Accident Conditions" as stated in the IAEA glossary.
    - 9 "early releases" and 10 "large releases" are not IAEA terms. They are used by WENRA but these definitions are too simplistic. WENRA have recently published a booklet to record their agreed positions with respect to such terms.
    - 12 the definition of "reasonably achievable" is vague (e.g. meeting requirements of good engineering practice, grossly disproportionate) and also already used in a different context in other EU-Regulations (e.g. Directive 96/29 Art. 6, Art. 10). Especially the term "grossly disproportionate", even though it is used in some Member States already, might induce in others, the installation of measures that would be "disproportionate".
    - 14 the use of the term "authorised limit" is not correct here. Design basis accidents (DBA) are analysed against established criteria for fuel damage and radioactive releases but the IAEA note that the term "authorised limits" should only be applied when exceeding them would lead to legal action. There are no such limits for fuel damage and the DBA limits used in analysis are not the same as the normal operational authorised discharge limits.
    - 15 "beyond design basis accident". The current safety glossary simply defines it as "*Accident conditions* more severe than a *design basis accident*", whereas the most recent IAEA requirement SSR-2/1 "Safety of NPPs: Design" introduced the concept of design extension conditions which supersedes beyond design basis accident.
    - 16 "design extension analysis" is neither an IAEA nor a WENRA definition and by limiting the term to "analysis" completely misses the point. Design Extension Conditions (DEC) are used for new plants to extend the design basis but with modified design/assessment rules which are still conservative but less demanding than the traditional design basis rules. The term is used in the European Utility Requirements and has been adopted by IAEA in SSR2/1. It is straightforward for new plants but for existing plants effectively defines a set of Beyond Design Basis Accidents (BDBAs) which must be analysed to see if it is reasonably achievable to meet the DEC release criteria. DEC includes multiple

failures where preventing core damage is the desired outcome as well as severe accidents leading to core melt.

Article 4

17. 1(a) sounds reasonable but needs care in interpretation as to what is meant by "design" since the designers are not licensed and installations may be designed long before a customer within an EU Member State considers it. The key issue is the design acceptance process since it is quite possible for a designer to want to sell a fully designed plant to a potential licensee. The real issue for licensing is the suitability for operation on a given site. 1(a) as written requires all stages to be licensed activities, which is not correct. The reference to Article 3(4) should be dropped and the existing text of the Nuclear Safety Directive should be maintained.

18. The current NSD states in article 4.1a the following "…*the adoption of national nuclear safety requirements. The determination on how they are adopted and through which instrument they are applied rests with the competence of the Member States*." The second sentence which is fully in line with the subsidiarity principle has been deleted and should be reintroduced.

Article 6

19. Art 6.4(a)"…*the applicant, when applying for a licence, is required to submit a detailed demonstration of safety*." In some member States the licence is granted for a site and not for a specific design or the first application is for a decision in principle. At these early stages a detailed demonstration of safety is not required. It is required for a following step, the construction permit. We suggest the following wordings: 4a. *Member States shall ensure that the national framework requires that when applying for a licence, the applicant is required to submit a* ***demonstration*** *of safety (its scope and level of detail in the different licensing steps should be commensurate with the potential magnitude and nature of the hazard presented). It shall be reviewed and assessed by the competent regulatory authority in accordance with* ***defined*** *procedures*.

20. Art 6.5 It might be difficult for the operators to demonstrate that the obligation to provide for and maintain adequate financial and human resources for subcontracted workers is being fulfilled when this obligation is extended to subcontracted workers (who will be responsible for demonstrating?)

Article 7

21. "Mutually recognised expertise and skills of all parties": does it mean that regulators will have to control / accept (validate) the training of operators? *Mutually* and *all parties* should be defined

Article 8

22. Article 8(1) We do not question that the transparency strategy should cover communication in case of abnormal events and accidents. But the new definition of "*abnormal events*" includes potential consequences. The word **potential** should be deleted (it has previously been requested to change the definition). We suggest in this article to replace "*abnormal events*" by *"incidents"* in order to refer to the INES scale which uses the wording "*incidents*" and "*accidents*"

23. We support the objective of achieving openness and transparency. However, Para 1 imposes a very general requirement on Member States for the availability of "information in relation to the nuclear safety of nuclear installations" for workers and the general public. The information has to be kept "*up to date*" and be provided in a "*timely manner*". Legal interpretation of this is likely to be open to extensive debate, be inconsistently applied throughout the EU and could create onerous reporting

requirements rather than improvements in nuclear safety.

24. We suggest that Para 1 be deleted on the basis that Para 2 requires Member States to define and implement a *"transparency strategy"* to cover the Para 1 objectives. This would avoid the need for specific detail to be included as requirements in the Directive.

25. Para 8.2 coming from the existing Directive deletes the wording interalia in mentioning the overriding interests. This wording should be restored or all the exceptions of Aarhus Convention should be referred to.

26. "The public shall be given early and effective opportunities to participate in the licensing process": clear/explicit provision has been made for public participation but not in the licensing process, it would be difficult to demonstrate that the opportunities provided to the public were "early and effective".

Article 8a Para 1and 2

27. We recognize that the wording of these 2 articles is nearly identical to the WENRA safety objectives for new NPPs and are suggested by ENSREG. However, it seems questionable to transfer them to a legally binding document without further explanation or guidance for interpretation, especially the wording of "practically eliminating" in relation to its unclear definition (high degree of confidence). In addition, the expression "practically eliminate", should it be kept, must remain focused on prevention of severe accident fast sequences which would jeopardize the containment and lead to early and large releases. More generally, these WENRA objectives address severe accidents: this should be clarified. Finally, there is no distinction between new installations and existing ones, reactors and other facilities, although article 8a 2 goes some way toward this, but in relation to the definition of "reasonably achievable" it becomes vague.

28. We support the idea of having safety objectives in the revision of the Safety Directive. However to avoid the problems stated above and also highlighting the importance of prevention we suggest referring to the following wording:

    8a 1" Member Sates shall ensure that the national framework requires that nuclear installations be designed, constructed and operated with the objective of preventing accidents and, should an accident occur, mitigating its effects and avoiding large, long term, off-site contamination"

    8a 2" Member states shall ensure that the national framework requires that the objectives set out in paragraph 1 applies to new reactors and shall be considered as a target for existing reactors and other nuclear installations and to the extent reasonably achievable".

Article 8b

29. It is repeatedly stated, that something "…*is minimized*" without having a stop point for minimization (e.g. as in Directive 96/29, "as low as reasonably achievable"). This could lead in some Member States to heavy burdens for further and further minimizing.

30. (b) We suggest writing this paragraph as follows: *"designed, constructed, commissioned, operated and decommissioned based on the defence in depth concept* ***with the objective that***:" This emphases that the 5 objectives listed below (b) are not levels of defence in depth and that although there may be different ways to implement the concept, there is only one concept.

31. (b)(i)*Authorised* limits should be used instead of prescribed limits

32. (b)(iv) *minor radiological impact* will be difficult to legally interpret

33. (b)(v)Consequences of external natural hazards could be minimised but the events themselves could not be avoided. In addition man-made hazards are not defined in the Directive. This Directive should not cover security aspects.

Article 8c

34. This article contains too many detailed technical requirements that are inconsistent with the more recent IAEA standard on design requirements (SSR-2/1) and IAEA definitions. It introduces severe accidents in 8c 1a, Design Extension Analysis in 8c 1b (IAEA knows Design Extension Conditions - DEC), combination of events in 8c 1c and beyond design basis accidents in 8c 1d (since introduction of DEC not used by IAEA any more). The creation of a specific paragraph on severe accidents, beyond design basis accidents and on combination of events is not coherent and could lead to problems (e.g. combination of events not limited to credible combinations), especially as the whole concept of events is unclear and definitions are inconsistent with IAEA (e.g. beyond design basis accident). Moreover the sub-paragraph 3 of this article "*the design practically limits the effects of reactor core damage within the containment"* is not technically sound, as it is not possible to limit all effects of a core damage within the containment (e.g. small releases cannot be retained as well as gamma-radiation leaves the containment).The only acceptable wording could be to recall the objectives we proposed in comment 28 with respect to Art 8 (a) namely "… should an accident occur, mitigating its effects and avoiding large, long term, off site contamination".

35. We question the EC to have sufficient level of safety expertise to promulgate the requirements as defined in this article. We believe that these should be left to the national regulators.

36. Furthermore Article 8c. 1a extends in a questionable manner the aim of the EURATOM Treaty (workers and the general public) also to air, water and soil.

    To avoid all the above mentioned points, this article 8c shall be completely deleted.

Article 8d

37. The Licence holder does not bear sole responsibility for emergency preparedness

38. (a)(ii) here again a new "unclear" term is introduced, "severe events".

39. (e): These protective measures are not only the responsibility of the licence holder but should be developed and taken in close cooperation with public authorities.

40. (g): It extends in a questionable manner the aim of the EURATOM treaty (workers and the general public) to air, water and soil.

Article 8e

41. Given the number of existing national and international peer review processes at the country level, regulator level and utility level, one should avoid introducing another layer of systematic European peer review processes which implies heavy burdens on the regulatory authorities and operators. The new text proposes topical peer reviews at least every six years**: they should be clearly defined on a very specific scope.**

42. In addition the Commission shouldn't be involved in the definition of these peer reviews. This would be in contradiction with article 5 regarding the independence of national regulatory authorities. In participating in the selection of topics for peer

review and in the peer review process itself, the Commission would infringe this article that ensures that national regulators shall not be influenced by any interests in their decision making. Moreover this article raises the question of the Commission's interference in the peer review process and monitoring. In 8e(2c) the European Commission would be invited to participate as **an observer.** 8e(4) would create a supranational mechanism of control and require international intervention which would undermine the independence of the national competent regulatory authorities.

In 8e(5), the word "abnormal event" seems inappropriate for a situation that requires off site emergency measures or protecting measures for the public. We suggest to delete "*abnormal"* and to stick to "*event*" (in the INES sense).

Article 8f

43. This article mentions the establishment of guidelines as an outcome of the peer review. Would an update of the WENRA Safety RLs which already exist not suffice, and would new guidelines be necessary, their establishment should remain within WENRA's responsibility. This article should therefore be deleted.

Article 9a

45. Delete this article. Penalties are within the competence of the Member States.