



Conclusions of the ERS Meeting Nr. 2012-02

Brugg, ENSI premises 16 November 2012

Safety Cases and Dose Limits

Based upon various international practices, the experts agree that the following answers to the questions adequately represent their position on the issues. This position reflects the experts' opinion and not the one of the national regulators.

Question 1: In the view of the experts, is it appropriate to limit deterministic analysis of external events and resulting accidents to events on frequency interval borders (e.g. events occurring once in 10,000 years) or is it appropriate also to consider events between the borders (e.g. events occurring once in 9,000 years)?

Question 2: In the view of the experts, is it appropriate to apply the acceptance criteria defined for a specific frequency interval also to cases on the interval border (e.g. apply the acceptance criteria for cases with an occurrence of between 10^{-6} and 10^{-4} per year to cases with an occurrence of 10^{-4} per year)?

Experts' position: It should be noted first that it is rather contradictory to work with sharp limits on one hand and to combine them with very conservative calculations on the other hand as Switzerland does. Upon ERS opinion Switzerland should try to follow the international path: first define a set of DBA, then assign each DBA to an event category on the base of best available expert judgement rather than based on constricted and sometimes misleading frequency calculations.

The frequency of $10^{-4}/y$ for natural external hazards is in compliance with the current IAEA standards but there are countries which go beyond that, e.g. for a new build, $10^{-4}/y$ is not considered to be enough. The principle of continuous improvement is obeyed in all European countries and practical processes to improve safety (e.g. through backfitting) are in place.

However it has to be mentioned that it is not enough to cross compare only the hazard frequency, other important aspects have to be considered in a comparison too. Examples are the method for the hazard determination, the actual design rules and the safety margins applied in the design process.



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Question 3: Is it appropriate to analyse accidents both with and without a single failure considering the respective frequencies with and without single failures with regard to acceptance criteria?

Experts' position: Although the Swiss way of dealing with single failures complies with the Specific Safety Guide of the IAEA on the Deterministic Safety Analysis for Nuclear Power Plants (SSG-2 Para. 2.9) the ERS notices that the Swiss practice is not common international practice. Usually, frequency categorisation is done based on the event frequency and a single failure is added afterwards only, within the technical analysis.

Question 4: Is it appropriate to take credit for accident management and mobile equipment in the deterministic analysis of specific accidents caused by external events within the design basis that allow sufficient response time (e.g. flooding caused by long lasting strong precipitation)?

Experts' position: It can be accepted in exceptional cases if the scenario and the respective mobile equipment is well defined, if there is enough time available to perform the action on site (more than an hour), if the mobile equipment is tested and covered in the procedures and the personnel regularly trained.

Question 5: What is the rationale behind the national radiological acceptance criteria for doses to the public in Germany, France, and Finland?

Experts' position: All countries have historically grown dose acceptance criteria. Comparison between countries can be made only if the calculation methods (incl. boundary assumptions) are comparable, which is not actually the case.

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