As described in the description of the Guidelines (page 2, “Description”), the Guidelines (consisting of the introduction and a document containing the Dutch Safety Requirements (DSR)), set out the safety requirements for the design and operation of light water-cooled nuclear reactors. This is the scope of application also indicated in the DSR page 12 (page 12, “Scope of application”). The requirements contained in this Guideline may also be applied to research reactors using a graded approach. Annex 6 of the DSR explains in outline how the graded approach may be applied to alternative reactors.

The key observation is that the technical requirements formulated in the DSR are too much means-oriented and essentially applicable to pressurized water reactors. As formulated, they do not leave sufficient room for application to all new reactor types, and in particular to nuclear reactors with non-water coolants and a technology basis different from pressurized water-based systems.

There is an opening in the Guideline (page 4, “Equivalence”), where it is mentioned that an applicant for authorization can demonstrate in his application that the same level of safety can also be achieved in another manner, but the number of requirements relating to pressurized water reactors that may not find applicability in new reactor types is too large.

Without being exhaustive, some of the main themes on which more openness to new reactor concepts is needed, without this being to the detriment of achieving the fundamental objectives, are the following:

- The notion of severe accident: this is expressed in the entire guide as a “core melt” (page 5, “Defence-in-Depth concept”, page 6&7, “Radiological objectives”, page 13, “Technical safety concept”,….): This does not apply to reactors with liquid fuel (molten-salt reactors)

- The barrier concept (page 6, “Barrier concept” and page 15, “2.2 Concept of the multi-level confinement of the radioactive inventory (barrier concept)”…): this concept is expressed as it applies to pressurized water reactors: “Barriers are understood to mean, inter alia, the cladding of the fuel rod, the pressure boundary (the metal shell of the reactor cooling circuit) and the containment”. This does not apply to liquid fuel reactors (molten salt reactors), where the fuel is not solid, the cooling system is not necessarily pressurized, and the containment does not necessarily have the same requirements as a pressurized water reactor (not being subject to the same stresses).

The majority of the safety requirements expressed in the main document, and the other elements presented in the annexes and in the glossary, are based on these concepts (not all the points on which this is the case are listed in this general commentary, as they are too many). This makes their strict application impossible for new concepts, especially for molten-salt reactors.

In view of the above and current developments in the field of SMRs, we would like to suggest that this guide and the DSR evolve by expressing more objective-oriented requirements, and when means-oriented requirements are expressed, that they indicate the concept for which they strictly apply.