

NRC comments on the draft report of the Secretary of Energy Advisory Board (SEAB)

Task Force on the Future of Nuclear Power

September 21, 2016

The NRC appreciates the opportunity to comment on the draft report. Overall, we find the report to be well balanced and provides many useful recommendations and insights. In working with new nuclear-related companies and legislators, both DOE and NRC have found that education on the responsibilities of the Agencies, and the consistent and accurate application of facts are extraordinarily critical to be able to advance the innovative nuclear technologies in a positive and congenial manner. To this end, we offer the following comments to clarify statements.

1. General comment – use of the term “*demonstration plant*” should be clarified as SEAB applies it. There is not a regulatory definition of demonstration plant and it has been used in several contexts by companies and other entities. 10 CFR 50.43(e)(2) refers to a prototype plant and indicates, in part that, “If a prototype plant is used to comply with the testing requirements, then the NRC may impose additional requirements on siting, safety features or operational conditions for the prototype plant to protect the public and the staff from the possible consequences of accidents during the testing period.” Perhaps use the term prototype plant in lieu of demonstration plant.
2. Page 2 “*DOE should work with the NRC expeditiously to resolve issues associated with SMRs, such as the size of the Emergency Planning Zone and the number of operators in the control room (see Section II).*”
 - Comment: The recommendation is valid and a good one; however the examples are somewhat dated. The NRC has already embarked on Rulemaking for *Emergency Preparedness (EP) for SMRs and Other New Technologies*, and has developed guidance for control room staffing.
3. Pages 2 and 3 “Each of the candidate systems has different reactor operating characteristics and prospects for surpassing LWRs in a number of key performance indicators, such as ... safety (a factor of 10 fewer expected incidents per year of reactor operation...)”
 - Comment: This sentence can be interpreted to mean that LWR designs could not be made safer than they already are. An LWR can be made just as safe as a non-LWR but the design would likely be more expensive. For instance, a sodium fast design with low seismic margin, resulting in an elevated fire hazard, could be much less safe than an existing LWR.
4. Page 4 “*The NRC is working to develop a capability to review and license non-LWR technologies, and there is great interest in the advanced nuclear reactor community in a less expensive and more rapid process.*”
 - Comment: NRC has the capability to review and license non-LWR technologies and we are looking at enhancements to increase efficiency.
5. Page 4 “*The Task Force believes that the current licensing framework is sufficiently flexible to accommodate a staged licensing process that will be more efficient and predictable than the present system. This expansion of the NRC scope will require additional resources.*”

- Comment: It is not clear what the last sentence means about expansion of NRC scope. Is the sentence meant to say that in order for NRC to define a staged licensing process additional resources are needed?
- 6. Page 5 *“The United States should take the lead, working with the International Atomic Energy Agency (IAEA), to assure that nuclear facilities, both at home and abroad, are secure against terrorist attack, theft of nuclear materials, and cyber intrusion.”*
 - Comment: The U.S. should provide leadership but it’s not clear the scope of this effort and which Agency or Agencies they are talking about (i.e., State, NRC, DOE, NNSA).
- 7. Page 5 and 46 *“The Task Force recommends that a quasi-public corporation be established, governed by an independent board of directors, nominated by the President and confirmed by Congress, with the authority and responsibility to undertake all four phases of the advanced nuclear initiative.”*
 - Comment: It should be clarified that the NRC would retain its independent regulatory authority.
- 8. Page 38 *“The United States’ licensing process is the global gold standard for rigorous attention to reducing accident risks. However, the cost burden is substantial; licensing involves a formidable front-end investment and can approach \$1 billion because of the required submission of extensive confirming data to support the performance of the safety systems.”*
 - Comment: It should be made clear that NRC fees are a small percentage of the \$1 billion. The Government Accountability Office’s July 28, 2015 Technology Assessment Report on Nuclear Reactors (GAO-15-652) clarified the extent of NRC’s fees by stating that “Designing and certifying a new type of nuclear reactor design can cost up to \$1 billion to \$2 billion, with much of the cost going to R&D and reactor design work, and around \$50 million to \$75 million paying for NRC’s fees for design certification.” NRC fees are less than 10% of the cost of the R&D and design work.
- 9. Page 39/40 needs some clarity regarding use of prototype and citation to section 104 vs. 103.
 - Comment: The NRC’s licensing process for “prototype reactors” is discussed in 10 CFR 50.43 “Additional standards and provisions affecting class 103 licenses and certifications for commercial power.” And is conducted under Section 103, not Section 104. Section 104 pertains to Medical Therapy and Research and Development Licenses.
- 10. Page A-14 *“Although the design certification authorized under Part 52 provides early certainty as to the design’s adequacy, it requires a complete design to be defined in the application.”*
 - Comment: For a standard design certification, 50 CFR 52.47 (a)(1) states that an application “must provide an essentially complete nuclear power plant design except for site-specific elements such as the service water intake structure and the ultimate heat sink. In this context, essentially complete refers to the scope of the design (in contrast to portions thereof). For a standard design certification and approval 52.47 states that, “the application must contain a level of design information sufficient to enable the Commission . . . to reach a final conclusion on all safety questions associated with the design before the certification is granted.” For a standard design approval, Part 52.135(a) indicates that, “The submittal may consist of either the final design for the entire facility or the final design of major portions thereof.” Therefore, a review can be done in portions.

11. Page A-14, *“Yet another risk is a regulatory risk—the risk that the NRC under the existing regulatory processes may find a new technical approach to be unacceptable.”*
 - Comment: The regulatory and safety findings that are necessary for the NRC to conclude will not change based on the process. The findings are aligned with the regulation for the intended use of the facility, such as commercial, research or testing. The staff would like to ensure that a vendor or potential applicant to misinterpret that new licensing processes will have less regulatory review.
12. Page A-15 *“The staff can issue pre-application safety evaluation reports, guidance documents, topical reports, technical reports, regulatory exemptions, and so forth as way to address technical issues, and thereby reduce the risk, long before an application is formally resolved.”*
 - Comment: The staff does not issue exemptions at the pre-application stage. Exemptions would be discussed during the pre-application stage, but issuance would be limited to actual applicants at the time of licensing. This sentence combined the staff products with vendor submittals. The staff can issue pre-application SERs and guidance documents and can review topical reports, technical reports, regulatory exemption approaches and so forth
13. Page A-15, *“The staff welcomes and, and in fact insists, on pre-application meetings with a potential applicant so that there is a common understanding of the regulatory process.”*
 - Comment: NRC does not require pre-application meetings. These are voluntary.
14. Page A-17 *“The NRC recently approved a staff plan for a rulemaking pertaining to emergency preparedness for SMRs”*
 - Comment: The rulemaking applies also to other new technologies, such as advanced non-LWRs and medical isotope production facilities. The staff suggests this be added to accurately reflect the scope of the rule.