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Preparing to License Accident Tolerant Fuel

**Comment On:** NRC-2017-0236-0001  
Preparing to License Accident Tolerant Fuel

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## Submitter Information

**Name:** Anonymous Anonymous

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## General Comment

See attached file(s)

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## Attachments

COMMENTS ON DOCKET ID NRC-2017-0236

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COMMENTS ON DOCKET ID: NRC-2017-0236  
"PREPARING TO LICENSE ACCIDENT TOLERANT FUEL [ATF]"

1. The Draft ATF Project Plan and associated Memorandum of Understanding (MOU) between the NRC and U.S. Department of Energy (DOE) are in conflict with NRC independence under the Energy Reorganization Act of 1974. There have been a number of fully-closed meetings between DOE, reactor licensees, and the NRC, over a period of years, prior to issuance of the MOU (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17130A815). The public has had no opportunity to participate in or review the information subject to these closed meetings.
2. Contrary to Assumption No.1 in the Draft ATF Project Plan, the NRC has an obligation to perform independent confirmatory analysis prior to any new materials (fuel or cladding) being introduced as lead test assemblies (LTAs) and/or proposed for use in batch loading. Commercial operating reactors are not licensed as research and test reactors for DOE.
3. The applicability of licensing processes is poorly defined in the Draft ATF Project Plan. The items in Task 1 and Task 3 neglect any discussion of amendments that may be required in accordance with 10 CFR 50.36 and 10 CFR 50.90. Contrary to licensing-avoidance strategy implicit in the Draft ATF Project Plan, any new materials other than zircaloy and ZIRLO cladding and UO<sub>2</sub> fuel require prior NRC approval in accordance with the regulations and licensee technical specifications.
4. The Draft ATF Project Plan does not address plant-specific licensing issues including revising the accident analysis in Chapter 15 of the Updated Final Safety Analysis Report (UFSAR), changes to instrument setpoints, use of NRC approved codes and methods, current licensed fuel limits less than or equal to 5% U-235 enrichment, issues related to changes in core reactivity and approved methods in the core operating limits report (COLR). For enrichments greater than 5% U-235, the regulations in 10 CFR 50.68 may require additional controls and criticality instrumentation and associated regulatory approvals.
5. The regulatory evaluation in Task 1 of the Draft ATF Project Plan seems to presume all operating reactors are licensed based on 10 CFR 50, Appendix A, "General Design Criteria [GDC]." Approximately 40% of the U.S. operating reactors are licensed before the GDC and are commonly referred to as "non-GDC plants." The Draft ATF Project Plan does not state what emergency core cooling system (ECCS) acceptance criteria will be used by the NRC for non-GDC plants, if 10 CFR 50.46 is not useful as a means of satisfying GDC 35.
6. The regulations in 10 CFR 50.46 are explicit in stating that use of materials other than zircaloy or ZIRLO cladding and UO<sub>2</sub> fuel, requires an exemption to be put in reactors with zircaloy or ZIRLO cladding and UO<sub>2</sub> fuel. The Draft ATF Project plan should be more explicit in providing guidance on the expectation for exemptions for all material combinations other than zircaloy and ZIRLO cladding and UO<sub>2</sub> fuel.
7. Explicit discussion of topical report reviews is lacking in the Draft ATF Project Plan. The Draft ATF Project Plan should provide for explicit NRC review the results of research in topical reports for each cladding and fuel variation. NRC should issue independent safety evaluations on those topical reports prior to approval of batch loading of ATF fuel. This is especially important if any research and/or associated topical reports are used as a basis to propose new coping times for time-to-core-damage.
8. In Task 1, the Draft ATF Project Plan appears to be biased toward crediting safety enhancements for fuel that is not yet demonstrated. It is not apparent that ATF fuel will perform as well as current operating

reactor fuel. It is, therefore, premature to assert changes in the regulatory framework may be needed for crediting safety enhancements as described in Task 1.

9. The regulations in 10 CFR 50.69 provide for special treatment of structures, systems, and components (SSCs). The regulations in 10 CFR 50.69 would exclude ATF fuel from special treatment based on defense in depth as a primary fission product barrier.
10. For Task 3, use of Standardized Plant Analysis Risk (SPAR) models are insufficient as the sole basis for NRC approval of risk-informed licensing actions. The MELCOR code is not normally used to supplement incomplete probabilistic risk assessment (PRA) analysis for risk-informed licensing actions. NRC approved topical reports, incorporating results of research, is essential for consideration of any relaxations of coping times and need to be supported by Chapter 15 UFSAR accident analysis.
11. The Draft ATF Project Plan does not address the regulations in 10 CFR 20 that provide explicit "dose" criteria for protecting workers and the public from exposure to radioactive materials. While core damage frequency (CDF) and large early release frequency (LERF) are useful tools for risk-informed decision making, they are not surrogates for requirements concerning dose to workers and members of the public. The Draft ATF Project Plan should have explicit milestones for evaluating changes impacting dose to workers and the public, including to changes to plant source term, release fractions, accident dose, control room habitability, and effluents.
12. The Draft ATF Project Plan lacks adequate discussion of resources. In particular, there are timelines, but no resource estimates. Additionally, there is no discussion of funding and fee billing. The section entitled, "Preparatory Activities," states that a "separate, non-public document also includes resource estimates each activity that will be used to develop budgets." A publicly available version should also be provided.
13. Although Assumption 3 and the discussion of Stakeholder Interactions provides a general intent according to NRC public meeting policy, a more explicit communications plan is needed for the general public and to address the interests of residents in local areas near the plants where ATF is proposed to be put in reactors.