

Talking points for NRC presentation to BRC on Advanced Fuel Cycle

The NRC issues licenses to fuel cycle facilities under 10 CFR Parts 70 and 40. The requirements in these parts are technology neutral as licenses are issued for the possession and use of (1) source material, which includes natural uranium and thorium, and (2) special nuclear material (SNM) which includes uranium enriched in uranium-233 or uranium-235, plutonium or uranium-233. Under these parts, industry can submit license application to the NRC for a wide variety of uses of SNM including uses involving new and advanced technology.

Existing major Part 70 licenses include possession and use of SNM at: (1) four low-enriched uranium fuel fabrication facilities in Richland, WA, Lynchburg, VA, Columbia, SC and Wilmington, NC ; (2) two high-enriched uranium fuel fabrication facilities in Erwin, TN, Lynchburg, VA; and (3) two uranium enrichment facilities in Eunice, NM and Piketon, OH. The license application for AREVA's Eagle Rock facility to be located in Idaho Falls, ID is currently under review. Licensing for possession and use of SNM (plutonium and uranium) at the mixed-oxide (MOX) fuel fabrication facility, which is under construction in Aiken, SC, is also ongoing.

Other smaller facilities, involving non-reactor possessions and uses of SNM at institutions and research facilities such as universities, GE's R&D facility in Vallicitos, CA, and NIST, are also licensed under 10 CFR Part 70.

Similarly, the NRC has licensed the possession and use of source material at various facilities. These include Honeywell's uranium conversion facility in Metropolis, IL, and other facilities in non-Agreement states whose operations may have involved large quantities of natural uranium or thorium at concentrations greater than 0.05% by weight.

In regulating fuel cycle facilities, the NRC also relies on guidance documents (Regulatory Guides, Standard Review Plans, etc.) to guide NRC staff in performing their functions such as in reviewing license applications. These documents, which also provide guidance to applicants and licensees, may or may not be technology neutral. For example, the Standard Review Plan for a MOX facility (NUREG 1718) would be used by NRC staff to review an application to possess and use SNM at such a facility, while the Standard Review Plan for fuel cycle facilities (NUREG 1520) would be used to review other license applications.

The NRC responds to any interest/intent expressed by industry to submit a license application involving new or advanced fuel cycle technology, by reviewing the regulations to ensure that there are no gaps. The NRC also determines whether appropriate guidance documents exist to review such an application. Any gaps identified are appropriately filled.

The staff is currently considering revisions to its regulatory framework that would be necessary to license a potential commercial reprocessing facility. Although NRC staff understands that the current commercially available technology is based on the aqueous separation process, the staff intends, to the extent practical, consider a risk-informed, performance-based, and technology neutral regulatory framework.

The NRC staff is following the development of public policy debates and decisions regarding the disposition of spent fuel. If the policy decision is for reprocessing, it may be necessary to develop insights on the types of regulatory issues that might confront NRC in the area of advanced reprocessing. For example, pyro-processing, High Temperature Gas Reactor (HTGR) fuel reprocessing, and implications of burner reactors would be areas for future research consideration.