

Regulatory/Licensing Framework Issues

REGULATORY GAPS DISCUSSED IN THIS SECTION:

- ✓ Gap 1 – Regulatory Framework Options, Part 50 or Part 70
- ✓ Gap 6 - Definition for Reprocessing Related Terms
- ✓ Gap 10 - One-Step Licensing and Inspection, Testing and Acceptance Criteria (ITAAC) Requirements
- ✓ Gap 12 - Financial Protection Requirements and Indemnity Agreements (10 CFR Part 140)
- ✓ Gap 13 - Schedule of Fees (10 CFR Part 170)
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Choosing the proper regulatory framework for spent nuclear fuel reprocessing facilities is important for the safe and effective licensing of these facilities. Although the NRC (through its predecessor agency, the Atomic Energy Commission) previously licensed reprocessing facilities in the U.S. during the 1960's and 1970's, the termination of these activities and lack of domestic interest during the 1970's prevented necessary revisions to reprocessing regulations. A revised regulatory framework for reprocessing facilities will allow NRC regulations to adapt to advances in reprocessing technology, improvements in safety and risk assessment methods, and improvements in security and safeguards practices; and provide for a more efficient and effective licensing process.

OPTIONS CONSIDERING PART 50, PART 70

The NRC staff is seeking input from stakeholders on several alternatives for revisions of NRC regulations for reprocessing facilities. The Atomic Energy Act, as amended, defines reprocessing facilities as production facilities, and specifies requirements for them. Currently, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," provides the licensing framework for reprocessing facilities. Nuclear power reactors are defined as utilization facilities and are also regulated by 10 CFR Part 50. On the other hand, 10 CFR Part 70 establishes the licensing framework for fuel cycle facilities, such as the Mixed Oxide Fuel Fabrication Facility.

Over the past three-plus decades, Part 50 has evolved to focus on nuclear power reactors. Consequently, its use for potential reprocessing facilities would create a licensing process that is inefficient, unstable, and unpredictable. In addition, 10 CFR Part 70, as currently written, does not provide a suitable regulatory framework to license a production facility. The Part 70 framework would need to be revised to appropriately consider the hazards associated

with reprocessing, such as handling of large quantities of fission products and transuranic isotopes, and potentially high radiation levels.

The NRC is evaluating the option of creating a new regulatory framework that will incorporate applicable provisions from both parts and any new provisions necessary to ensure the safe and secure operation of the facility.

RISK-INFORMED, PERFORMANCE-BASED, AND TECHNOLOGY-NEUTRAL REGULATIONS

Currently, all operating international reprocessing facilities use, with small process variations, aqueous separation technology. Aqueous separation is a process that separates the components of nuclear fuel using two liquid solvents. However, reprocessing technologies using alternate technologies, such as electrochemistry and molten salts, have

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been demonstrated in laboratory studies and may reach commercial use in the future. Different processes have different potential hazards and safety controls.

Given these alternatives, the NRC is exploring the option of establishing regulations that can apply to all reprocessing facilities, regardless of the separation method used. The NRC is evaluating which aspects of reprocessing facility operations are consistent for all separation methods, and which ones are specific to the separation method used. These insights will allow NRC to implement a regulatory framework that is performance-based, and can accommodate advancements in separation technologies without significant revisions to the regulatory framework.

ONE-STEP LICENSING

The NRC staff is evaluating the option of establishing a one-step licensing process for reprocessing facilities. In the past, the NRC licensed nuclear power plants and reprocessing facilities under a two-step process. This process requires separate reviews for a construction permit and then for an operating license. The NRC licensed previous US reprocessing facilities and all of the currently operating reactors under this process. This two-step process can still be an appropriate approach for licensing a reprocessing facility or a nuclear power plant. In 1989,

in an effort to improve regulatory efficiency and increase the predictability of the process, the NRC established alternative licensing processes for nuclear power reactors in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." These provisions include a one-step licensing process for new reactor licenses. However, these revised licensing procedures do not specifically reference reprocessing facilities.

The type of reactor license issued in NRC's one-step licensing process is called a combined operating license (COL). A COL authorizes construction and **conditional** operation of a new nuclear facility. After construction, the NRC must verify that the applicant has completed the required inspections, tests, and analyses, and meets the acceptance criteria (also called ITAAC). Once the required inspections, tests, and analyses are performed, and NRC verifies that the acceptance criteria are met, then the NRC can authorize operation of the facility.

Fuel cycle facilities licensed under 10 CFR Part 70 can also use a one-step licensing process. Revisions to Part 70 enacted in 2000 included requirements for a one-step licensing, which authorizes construction and conditional operation of the facility, or a two-step licensing process. Under the Part 70 licensing process, NRC must verify through inspection that the facility has been built in accordance with the license conditions, before operation of the facility

can begin. Most licensees or potential new licensees follow the one-step approach. The NRC staff is considering implementing similar requirements for the operation of a reprocessing facility.

REPROCESSING TERMS AND DEFINITIONS

As part of the regulation development process, the NRC will include definitions of reprocessing terms that currently are not defined in the regulations. An example of potential terms lacking new or revised definition are "reprocessing" and "recycling." Defining terms like these will ensure NRC has consistent and clear regulations.

FINANCIAL PROTECTION, INDEMNITY; FEES

Federal law and NRC regulations require reprocessing facilities to pay for specific levels of indemnity insurance. In addition, Federal law authorizes NRC to recover part of its annual budget from licensees and applicants through annual and service fees. Currently, NRC regulations do not specify the indemnity levels and fees for reprocessing facilities.