

Appalachian States Low-Level Radioactive Waste Compact Commission

Comments on the NRC's Proposed Decommissioning Rulemaking

Background

In May 2018, the NRC staff issued a SECY paper (SECY-18-0055) outlining the proposed changes to the regulations for nuclear power plant decommissioning. According to the NRC, the goal of the proposed changes is to “provide for a safe, effective, and efficient decommissioning process; reduce the need for exemptions from existing regulations and license amendment requests; address other decommissioning issues that the NRC staff considers relevant; and support the principles of good regulation, including openness, clarity, and reliability.” The NRC expects that the proposed approach will improve the effectiveness and efficiency of the decommissioning regulatory framework.

General Comments

We acknowledge that the NRC's proposed decommissioning rulemaking provides a clear distinction between an operating reactor and a reactor that is shutdown permanently. One of the positive aspects of the proposed rulemaking is anticipated reductions in the number of license amendment requests (LARs) and the need for seeking exemptions during transition from operation to decommissioning. However, in some areas the proposed rulemaking does not adequately address the interest of states or local communities.

Post-Shutdown Decommissioning Activity Report (PSDAR)

The current decommissioning regulations requires that the licensee submit a PSDAR for a permanently shutdown nuclear power plant. The PSDAR is made available for public review but it is not subject to NRC approval.

It is recommended that the NRC establish a formal process, similar to the process for review and approval of LARs, to seek input from the host States. In general, there is a need for the NRC to improve its public involvement activities for decommissioning of the nuclear power plants.

It is recommended that the NRC:

- Require approval of the PSDAR prior to the start of the decommissioning activities.
- Conduct more frequent public meetings than the two meetings required by the current regulations.
- Require the establishment of a Citizens Advisory Panel.
- Establish a mechanism for providing timely information to the local communities.
- Establish a formal process for the local and host State inspectors to observe or participate in the NRC's inspections through a memorandum of understanding (MOU).

Timeframe for Decommissioning

The NRC is seeking feedback on the timeframe of 60 years for completion of decommissioning activities after permanent cessation of operations. However, the NRC is not proposing changes to the decommissioning timeframe requirements. The three options that are available for decommissioning of nuclear power plants are DECON, SAFSTOR and ENTOMB.

- **DECON** or immediate dismantling approach is clearly our preferred approach for decommissioning. There are several nuclear power plants in the United States that have been successfully decommissioned using the DECON method. The key advantage of this method is regulatory predictability. The concern is that the NRC's current regulatory scheme does not ensure that every licensee has set aside adequate funding to proceed with immediate dismantlement. Additional discussion on decommissioning funding is provided under "Financial Assurance and Site-Specific Cost Analysis" of this report.
- **SAFSTOR** or deferred dismantling is another option for decommissioning of nuclear power plants. The key advantage of this method is that it allows for many years of radioactive decay reducing radiation exposure to workers. However, one of the disadvantages of this method is that for a relatively long period of time (60 years) the site would not be suitable for public uses. Additionally, there are several uncertainties associated with SAFSTOR due to the extended period of time, that would make this option less desirable than DECON. The uncertainties are:
 - The NRC regulations for decommissioning might change during the extended period of SAFSTOR.
 - The existing commercial LLW disposal facilities might close or increase their disposal fees substantially.
 - There is a potential for unplanned release of radioactive materials into the soil and ground water during SAFSTOR.
- **ENTOMB** has never been used for decommissioning of a commercial nuclear power plant in the United States. This method involves encasing the radioactive materials on-site for many years until they have decayed to permissible levels. ENTOMB might be a

viable option for smaller research reactors that did not operate long enough to build up significant inventories of radioactive materials. The lack of experience with ENTOMB, the large quantities of radioactive materials contained in a commercial nuclear plant, and the proximity of these plants to a river or a coast would make ENTOMB an unsuitable option for decommissioning commercial nuclear plants in the U.S. at this time.

Emergency Planning (EP)

The NRC proposes to reduce the requirements of emergency preparedness at a decommissioning nuclear power plant as compared to that for an operating nuclear plant. The NRC has concluded that dry cask storage and spent fuel pools are both very safe. The NRC believes that 10 hours is sufficient amount of time for an emergency response to a spent fuel pool accident based on an all hazards plan. The proposed rule requires that the licensees notify the offsite agencies within 60 minutes of declaring an emergency for permanently defueled plants.

It is recommended that the NRC require licensees to maintain their existing onsite and offsite emergency plans as long as spent nuclear fuel (SNF) is being stored in the spent fuel pool. It would be inconsistent with “defense in depth” concept to dismiss offsite emergency plans while SNF fuel is being stored in the spent fuel pool. A zirconium fire incident involving spent fuel pool could result in serious consequences. During a “beyond design-basis accident (BDBA)”, the operators may not be able to take timely mitigating actions due to equipment breakdown or if there is considerable damage to the spent fuel pool building. Additionally, it is possible that the operators may not be able to physically intervene and take timely mitigating actions during a “security-based event” that results in damage to the spent fuel pool and loss of water. A study that was conducted by the NRC and involves spent fuel pool leakage due to a large earthquake concluded that, “in cases where the analysis led to fuel damage, the existing emergency

procedures would keep the population around the plant safe. Those emergency procedures could mean relocating people from a large area of potentially contaminated land.” The probability of a zirconium fire incident at a nuclear power plant is low however, the removal of the NRC requirement to maintain the offsite emergency response capability, while SNF is being stored within the fuel pool, can erode public confidence in the NRC and the decommissioning process.

It is recommended that licensees continue to provide financial support and opportunities for training and conducting radiological emergency drills and exercises with offsite agencies as long as SNF is being stored in the spent fuel pool (Level 1 and Level 2 of the NRC’s Graded Approach to EP).

It is recommended that licensees establish and maintain a MOU with the local law enforcement agency (LLEA) for response to a security-based event at the station (Level 1 through Level 3).

At a minimum, the MOU should address training, conducting periodic drills and exercises, and sharing of licensee’s Security Plan and Security Contingency Plan with the LLEA.

It is recommended that the NRC proposed notification timeline be reduced from 60 minutes to 30 minutes or sooner after declaring an event. This is important during a security-based event that requires a prompt response on the part of the LLEA, and the establishment of an Incident Command Post.

It is recommended that the NRC require licensees to provide the appropriate resources to maintain an effective radiological dose assessment capability for Level I through Level 3.

Level 1 - Post Shutdown Emergency Plan (PSEP)

Level 2 - Permanently Defueled Emergency Plan (PDEP)

Level 3- ISFSI Only Emergency Plan

Level 4 - No Emergency Planning

Insurance

The proposed rule would allow nuclear reactor licensees in decommissioning to reduce the offsite liability and onsite property insurance amounts once a plant enters Level 2.

It is recommended that the licensee be required to maintain the existing level of liability insurance until all SNF has been removed from the spent fuel pool and is placed inside dry cask storage facility (Level 3). The justification for this recommendation is provided under “Emergency Planning” and it involves the potential consequences of a spent nuclear fuel accident initiated by a beyond design-basis accident.

Financial Assurance and Site-Specific Cost Analysis

Currently, NRC licensees can use either the generic amount under 10 CFR 50.75 (c) or a site-specific cost estimate under 10 CFR 50.75(b)(4) to determine the certified amount of decommissioning funding. According to the NRC, the current table of minimum amounts or minimum decommissioning formula has not been updated for over 30 years. The escalating factors or adjustment factors are added to account for increased cost of labor, energy and waste burial. The NRC formula provides a useful reference for calculating the minimum amount of decommissioning funds. However, depending on site-specific conditions, the results of the NRC formula compared to the site-specific estimates and actual costs could vary significantly. Some licensees experienced delays of several years due to the difficulties associated with the segmentation and packaging of the reactor internals and the pressure vessel. Delays generally

result in increase in project costs (millions of dollars) that includes project management and staffing costs, property taxes, regulatory fees, and insurance premiums.

It is recommended that the NRC require site-specific cost estimates during operations and later, as part of the PSDAR submittal. Decommissioning should be considered as a part of plant life cycle and not something that belongs to the future only. The NRC should reexamine its cost estimate for decommissioning and use the information obtained from the decommissioned nuclear plants in the U.S. to determine whether the current methodology is adequate for estimating the cost of decommissioning.

Decommissioning Trust Fund

Under the existing regulations, the amounts set aside for radiological decommissioning should not be used for the maintenance and storage of SNF in the spent fuel pool, or for the design or construction of spent fuel dry cask storage facility (ISFSI). The regulations require that licensees provide funding (independent of decommissioning trust fund) for the management of all irradiated fuel at the reactor following permanent cessation of operation until title of the fuel is transferred to the Department of Energy (DOE). In the event of a funding shortfall, the licensee must submit a plan to obtain additional funds to cover the cost.

We support the Commission's decision not to allow licensees to use decommissioning trust funds for their ISFSIs. There are uncertainties associated with decommissioning of nuclear power plants that could increase the overall cost. The NRC should not allow the licensees to use the decommissioning trust funds for other purposes even if the licensee commits to returning the assets to the decommissioning fund.