

Draft Temporary File

We found that at times we did not clearly describe our analysis. An example is the use of "typical" or best estimate assumptions vs. conservative assumptions for the deterministic analysis. In defining a spent fuel pool configuration for analysis, the currently decommissioning plants are not typical. They are very atypical because they all shutdown prematurely. We expect that operating plants will decommission in the future according to a plan. We expect that they will use their resources, such as spent fuel pool space, to coincide with their plan. This will lead to plants decommissioning with full spent fuel pools. The most recently discharged fuel contributes the greatest to the decay heat load in the pool. Plants today are achieving burnups of 60 GWD/MTU. We expect that the largest contributing spent fuel to the decay heat load will be burned this amount. Therefore, what we called "near-bounding assumptions" in the draft report is really not near-bounding. They are the conditions we expect of a typical decommissioning plant that may follow the rulemaking.

We also found that we may not have described our review of the past analyses and why they are not appropriate for direct application or rulemaking for decommissioning plants very well. From our preliminary work, we found that the differences between decommissioning plants and operating plants are greater than expected. Past PRA studies looked at operating plants and took credit for equipment, procedures, and personnel responses that do exist in decommissioning plants. For example, for a LOOP event, operating plants can load the spent fuel pool cooling system onto the emergency diesel generator and have multiple sources for makeup water. In a decommissioning plant, the emergency diesel generators are removed, there is typically one offsite power source, and the number of water sources have been reduced. In short, we found the decommissioning plants are more vulnerable to certain initiating events because they lack defense in depth in the ability to respond compared to the operating plants.

For the past deterministic analysis, we found that they did not represent what we expect for future decommissioning plants, due to the assumed burnups and storage racking spacing (density). The increases in these characteristics have increased the decay time necessary to reduce the decay heat load and the potential for a zirconium fire. The one analysis that was performed for decommissioning plants (NUREG/CR-6451), was based on a code that the staff found flaws, which underestimated the decay time for the spent fuel significantly (at least a factor of two) and did not include all of the important characteristics of a spent fuel pool configuration to properly estimate the decay time.