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Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor

Comment On: NRC-2013-0136-0002

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General Comment

See attached file(s)

Attachments

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STATE OF NEW YORK
OFFICE OF THE ATTORNEY GENERAL

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DIVISION OF SOCIAL JUSTICE
ENVIRONMENTAL PROTECTION BUREAU

August 1, 2013

Electronic Submission

Cindy Bladey, Chief
Rules, Announcements, and Directives Branch (RADB)
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Docket ID NRC-2013-0136, 78 Fed. Reg. 39,781 (July 2, 2013),
State of New York Comments, Draft Consequence Study of a
Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool
for a U.S. Mark I Boiling Water Reactor

Dear Ms. Bladey:

The State of New York submits this letter in response to NRC's requests for comments on its Draft Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor, Docket ID NRC-2013-0136 (the "Draft Study").

As an initial matter, the State reiterates its request for more time to provide comments on this long-term Draft Study. During the week of July 22, New York State Assistant Attorney General Janice Dean communicated with NRC Staff to request an extension of the comment period noticed in the Federal Register. As AAG Dean explained to Don Algama at NRC's Office of Nuclear Regulatory Research, the 30-day comment period did not afford sufficient time for the State to identify and retain expert consultants to review the highly technical Draft Study. The 30-day comment period provided to the States is disproportionately short when compared with the time NRC Staff and its consultants devoted to the study. It has been over a year since

NRC reported that its Staff was working on the Draft Study.¹ Moreover, the short 30-day comment period and the release of the study occurred in the middle of the summer vacation season, which further complicated review and expert interaction. Although the Draft Study examines consequences at a Mark I Boiling Water Reactor, “NRC plans to use the insights from this analysis to inform a broader regulatory analysis of the spent fuel pools *at all U.S. operating nuclear reactors.*” Draft Study at iv (emphasis added). Given the time and effort NRC Staff invested in this lengthy and highly technical Draft Study—as well as NRC’s future plans to broadly use this study—the public should be afforded more than 30 days to provide comments. Given these constraints, the State reserves the right to submit supplemental comments.

Nonetheless, given the short time the State has had to review the Draft Study, the State submits the following comments. The State is concerned with the study’s failure to perform a benchmarking or bounding analysis. The Draft Study relies upon assumptions that underestimate the likelihood of a spent fuel pool accident. For example, the Draft Study assumes that liner damage is the only way to cause a radiological release. Thus, the Draft Study fails to address other ways cooling water could be lost, such as water boil-off. Instead of examining partial boil-off and partial drain-down, the study focuses solely on rapid drain-down. Also, the Draft Study fails to address the impact of a prolonged loss of power. As the events at the Fukushima facilities demonstrated, natural disasters often cause prolonged power loss and equipment failures, and such events at multi-unit sites can have synergistic and cascading consequences; therefore, it is important for NRC to conduct an in-depth study of the

¹ See SECY-12-0095, Tier 3 Program Plans and 6-Month Status Update in Response to Lessons Learned from Japan’s March 11, 2011, Great Tohoku Earthquake and Subsequent Tsunami (July 13, 2012) (ADAMS Accession No. ML12208A208) (“staff is also performing a spent fuel pool scoping study, which includes best-estimate calculations of potential consequences from a postulated beyond-design-basis earthquake at a U.S. Mark I boiling-water reactor.”).

consequences of such occurrences.

Additionally, the offsite consequence analysis in section 7 of the Draft Study is flawed. In particular, the Draft Study fails to use realistic input values for its MACCS2 analysis. For example, the Draft Study unreasonably relies upon “Sample Problem A” generic values developed decades ago for the Surry site in rural Virginia. Instead, Staff, in drafting the study, should have developed site-specific MACCS2 input values. The Draft Study underestimates land contamination, land interdiction, and displaced individuals.

Given NRC’s stated plans to use the study to “inform a broader regulatory analysis of the spent fuel pools at all U.S. operating nuclear reactors,” the State is concerned with the choice of Unit 3 of the Peach Bottom Atomic Power Station as the reference plant. As compared to Indian Point, for example, Peach Bottom is surrounded by a much lower population and building density, resulting in fewer offsite consequences. Furthermore, the seismic assessment and earthquake risk is different for Indian Point as compared to Peach Bottom, and indeed, is different at every plant given local geological and seismic conditions. Lastly, Peach Bottom Unit 3 is a Boiling Water Reactor (“BWR”), while many other reactors such as Indian Point are Pressurized Water Reactors (“PWRs”). The study itself notes that “there are differences between the major design types (PWRs versus BWRs) that make each more or less susceptible to SFP accidents on a scenario-specific basis.” Draft Study at 4. Furthermore, the Draft Study mentions that a previous study (NUREG-1353) found that the “conditional probability of a Zircaloy cladding fire given a complete loss of water was found to be 1.0 for PWRs and 0.25 for BWRs in high-density configurations based on differences in assumed rack geometry.” Draft Study at 11. Such findings indicate that there are significant differences in PWR and BWR spent fuel pools that must be examined more thoroughly before NRC concludes that accelerated

transfer of spent fuel to dry cask storage at both kinds of facilities is not warranted. The State recommends that the NRC clarify the differences between Peach Bottom and other U.S. nuclear reactors, and that it make clear that the Draft Study is limited to the reference plant and not necessarily indicative of conditions at other plants.

Finally, the State submits that the Draft Study's conclusion—that “expediting movement of spent fuel from the pool does not provide a substantial safety enhancement for the reference plant”—is not adequately supported or explained in the Draft Study. Draft Study at iv. In fact, the Draft Study found numerous significant advantages of decreasing the amount of spent fuel in pools. For example, “the low-density cases generally resulted in a smaller release due to the smaller inventory of radioactive materials and the lower potential for hydrogen combustion.” Draft Study at ix. The Draft Study also found that for low-density loading, “considerably less land interdiction and displaced individuals are predicted.” Draft Study at x. In particular, “[t]he amount of land interdiction for the studied scenarios could be *up to two orders of magnitude greater* for certain high density loading situations as compared to the low density loading situations.” Draft Study at 248 (emphasis added). The Draft Study does not give proper weight to the substantial benefits associated with low density spent fuel pool storage. Nor does it properly take into consideration the fact that spent fuel must someday be transferred to dry casks in order to be shipped to an interim or permanent waste site, and therefore, it would be prudent to transfer it sooner rather than later in order to better protect communities around nuclear reactors and spent fuel pools.

The State appreciates the opportunity to submit comments on the Draft Study and looks forward to providing additional input should the NRC grant the public additional time to comment.

Sincerely,

s/

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