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US Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. David L. Meyer, Chief
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Division of Administrative Services
Office of Administration
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Westinghouse Owners Group
Westinghouse Owners Group Response Request for Public Comments on Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants, Notice (MUHP-4018)

Reference: Federal Register Notice 7590-01-P

The Westinghouse Owners Group (WOG) would like to thank you for this opportunity to comment on Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants.

As noted in the Federal Register Notice, comments were due by April 7, 2000. However, at the April 26, 2000 WOG /NRC Senior Management meeting, the NRC extended the review period to enable the WOG to provide comments. Hopefully, it is still practical for the NRC to consider these comments. The WOG believes peer review by the industry will help to strengthen these type activities and allows both the NRC and industry to benefit from the final documents.

If you have any questions regarding these comments, please contact Mr. Selim Sancaktar, Westinghouse, at (412) 374-5983, or myself at (914) 681-6262 or email at jacobs.k@nypa.gov.

Very truly yours,

Karl Jacobs
Chairman, Westinghouse Owners Group

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Add: R Dudley (RFD)

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cc: D.L. Meyer, USNRC (1L, 1A)
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Comments on Draft Final Technical Study of SFP Accident Risk at Decommissioning Nuclear Power Plants

This document contains review comments on the "Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants", dated February 2000, and issued by the NRC as the final draft for comments. The review was performed at the request and by the support of WOG. Although the report scope is for "decommissioning nuclear power plants", a limited number of comments are provided herein by WOG members.

This review is limited to PRA model, and does not address the areas of thermal hydraulics, criticality, consequences, and seismic expert-opinion.

I. General Comments

1. Potential implications to other plant risk areas

Although the scope of this report is for decommissioning plants, its methods and conclusions may later conceivably used to make points about other plant risk areas. Thus it is important that inadvertent conservatisms should be avoided in this report. Two potential impact areas are:

- Implications on risk of potential SFP accidents at operating plants, since the pool configuration and initiating events are the same. Especially, the seismic risk should be stated as a screening goal in terms of a HCLPF value (as done in the report), but not as a frequency to be added to the plant risk.

- Implications on other slowly developing events at operating plants (such as those that may occur during shutdown). HRA modeling in the report attempts to address HEPs during long time windows available (up to 133-hour time frames). These time windows are drastically different from those much shorter time frames (in terms of minutes to a few hours) used in at-power events. Due credit for manual actions must be given whenever justified, and artificial limitations on HEPs must be avoided. Especially, the dependence model in THERP is very limiting and expert opinion driven; it must be expanded, based on PSFs applicable to the operator actions in question.

Thus, the models (especially HRA) and conclusions of the report may conservatively bound, or have inadvertent implications in other plant operation risk areas (such as plant shutdown risk).

2. Acceptance criteria for seismic risk

The report requires that

"In order to demonstrate acceptably low seismic risk, those central and eastern sites for which the three times SSE values exceed 0.5g and the two West Coast sites would have to perform additional plant specific analyses to demonstrate HCLPF for their spent fuel pools at three times SSE and two times SSE values of ground acceleration, respectively."

Recognizing the expert-opinion based nature of a seismic model assumptions, a flexibility should be allowed in drawing a line in the sand: suppose one of the plants referred to has a SFP HCLPF value of 2.7 times the SSE (at a eastern site); is the risk of this plant unacceptable? Should the plant rebuild its SFP? It should be pointed out that the seismic analysis is a screening criteria, not a firm goal, and that those plants that may be outside the screening values can evaluate and demonstrate the acceptability of their plant-specific risk.

3. Presentation of risk results

The report calculates the generic frequency of events leading to zirconium fires at decommissioning plants to be less than $3x10^{-6}$ per year for a plant that implements the design and operational characteristics assumed in the risk assessment performed by the NRC staff. Both this value, and the major uncertainty associated with it is driven by the initiating event frequency of an assumed seismic event, with a HCLPF value of 3 times the plant SSE (two times for West coast). The total contribution of the remaining events is negligible compared to the seismic initiating event.

It would be a fair representation of the studied risk to state the results in the following way:

The generic frequency of events leading to zirconium fires at decommissioning plants to be at the order of 10^{-7} per year, excluding the risk from seismic events. An adequate level of protection for seismic events is suggested as a SFP HCLPF value at the order of 3 times the plant SSE (at the order of two times the plant SSE for Westcoast).

4. Duration of risk-state

As stated in the study, the zircaloy fire risk exists during a time period:

"After a decay period that precludes fuel heat up to zirconium fire conditions, no significant risk remains from storage of the spent fuel. Preliminary calculations (see Appendix 1) show this time will vary depending on fuel burn up, SFP storage configuration and loading pattern of the assemblies, and could occur at a period as long as five years from plant shutdown".

The fact that the studied risk exists only for a time period of 1 to 5 years, depending upon the facility, is important: it may allow treatment of extremely low frequency initiating events with more tolerance, based on their integrated risk over a short time period being small. This concept reinforces comment 2 above for a more flexible acceptance threshold for very-low frequency seismic events.

5. Recovery using off-site sources

The HEPs used for the operator action "Operator Recovery Using Off-Site Sources" are too conservative, if examined in the following perspective:

The study looks at this recovery action as an extension of other in-house recovery actions and limits the credit for it, given that the other actions have failed. However, the decision to provide inventory from off-site sources (such as bring in a fire truck full of water) is a very simple, obvious, inexpensive, and prudent administrative action which is independent

of other on-going technical initiatives and repairs by the plant crew. It is almost inconceivable that a plant manager, seeing the dropping water SFP level, and seeing that the repairs are not being completed after two or three days of activities, will not refill the SFP from an off-site source long before it becomes necessary to do so. With the administrative and ultimate responsibility for the site upon his shoulders, and no downside to this prudent action, the probability of performing "provide inventory from off-site sources" is very high. Its failure probability is very low; lower than 0.001. If such a HEP is used for this action, the frequency of the generic frequency of events leading to zirconium fires at decommissioning plants to be less than $1x10^{7}$ per year (excluding seismic events and sabotage); this is a more realistic frequency for the actual risk.

It is possible to formalize in writing, such a action to be performed by administrative means, independent of the technical and repair procedures to improve its credibility in the eyes of the HRA analysts.

II. Specific Comments

Page 14, IDC#3. Is it realistic to assume "good communication" with off-site emergency organizations once the plant is shutdown and "forgotten?"

Page 17, IDC#6,7,9,10. Will commitments lead to practices different (better) than current? If not, use historic data.

Page 19, top. A recent event, January 2000, is cited as occurring during shutdown, when SFP monitoring should be a priority. The recentness and conditions under which this even occurred would seem reason NOT to lower most IE frequencies based on the IDCs.

Page 20, top. Thorough adherence to IDC#2,5,8,10 would not seem as crucial to establishing a low frequency of fuel uncovery as that for loss of pool cooling since it is stated on the previous page that most of the events are not applicable to a decommissioned facility.

Page 22, middle. How was the factor of 100 by which the failure rate for heavy load drops was reduced for single-failure-proof systems estimated?

Page A2a-59, top. HEP-MKUP-START-L – is this a typo that should be HEP-MKUP-START-E to correspond to the table below?

III. Summary

This study has a noble goal in attempting to streamline the risk-informed acceptance of the SFP accident risk at decommissioning nuclear power plants. Its generic model basically concludes that the risk is very small; exists for a short time period (one to five years) and is driven by extremely low frequency seismic events during that time period. As mentioned in the introduction, comments in limited areas are provided. In the areas that are not reviewed, if expert comments arise in the future, they may be communicated to the NRC.