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November 10, 1999

Ms. Tanya Eaton
Project Officer
U. S. Nuclear Regulatory Commission
Division of Systems Analysis
MS OWFN 11-A-11
Washington, DC 20555-0001

Subject: Review of "DRAFT Technical Study of Spent Fuel Pool Accidents for Decommissioning Plants" Contract No. NRC-03-95-026, Task Order No. 246.

Dear Ms. Eaton:

Attached are additional comments dealing with the fire protection portion of the report entitled "DRAFT Technical Study of Spent Fuel Pool Accidents for Decommissioning Plants," dated June 1999.

Should you need any additional information, please do not hesitate to contact me at (301) 255-2279.

Sincerely,

Dr. Leonard W. Ward
Project Manager

Enclosure: As Stated

cc: D. Jackson, NRC, DSSA/SPLB
J. Meyer, SCIENTECH
P. Guymer, SCIENTECH

QA File 1022

Final Scientech comments for Fire Protection.

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Additional Comments

1. Almost every sequence on the event trees is recovered with REC-OSS at 0.05. This has the affect of reducing nearly all sequences by .05. There appears to be no justification for the basis for such a number or discussion of when or why it was applied. For example, after the 3XSSE seismic event, what offsite sources will be available to provide a 0.05 recovery? As it stands, almost all sequences are arbitrarily reduced by a factor of 20, which may alter the conclusions. This factor should be explained and supported by more evaluation and discussion. Also, REC-OSS in Table 3.1.2 could not be located.

2. Loss of cooling: The report states that the historical data is 3 loss of cooling events longer than 24 hours in 1000 RY and 1 event for 32 hours. It is believed that there is sufficient historical data to get a frequency for loss of cooling versus time, based on historical data. If one plots the frequency of events versus the time cooling was lost, one could then extrapolate to 52 hours or 127 hours and obtain a frequency, which could be higher than 1.5E-7. Statistics will suggest that the probability for loss of SPF cooling for longer than 32 hours (based on 0 events in 1000 RY) is about 5E-4. In these events, one assumes the plant staff tried to restore cooling by all means possible (at least we can say the plant staff acted in the same way and took the same actions as would the spent fuel pool staff of the future). Therefore, this historical data contains the same type of efforts (and shows them to fail) as the event tree analysis models. Increasing the recovery time by less that half (to 52 hours for case 2) will not reduce the probability 3.5 order of magnitude to 2.3E-7. It is recommended that this event be re-evaluated with consideration of possible dependencies and then compared to historical experience.

3. The entire results are driven by Human Error Probabilities. Because there was no detailed HRA discussed, one then assumes the HRA was a simple screening analysis. There are no criticisms of the HEP values used, but it is recommended that a sensitivity study be performed to show the impact of higher or lower HEP's. It appears that the HEP's will drive the results, which means if this work leads to a rule making or REG Guide, one may want to emphasize operator training and qualification. It is particularly important to note that, if the operator is more important than the equipment, then one may want to regulate the operator more than the equipment.
4. The study consists of a very robust job of covering all initiators, external and internal.

5. Seismic events are very site specific. It is not clear that the generic seismic analysis is appropriate. 3 times the SSE is far worse at Diablo Canyon than Byron and will have a more devastating affect on systems and offsite recovery at Diablo than Byron. It is also not clear that the assignment of a single IE frequency to all sites is correct.

6. It may be appropriate to use fire initiator frequencies from industrial experience, which are higher than those for the nuclear experience. For example, the nuclear industry has fire watches during welding and strict combustible control procedures that are not generally present in chemical facilities.

7. This entire study did not do much with dependencies, either equipment or human error.