From: Diane Jackson NRR
To: Timothy Collins NRR
Date: Mon, Aug 28, 2000 5:50 PM
Subject: assumptions in study

Tim -

As we discussed earlier, you asked if their were any assumptions that I thought might be questioned later.

1) In the T/H we assumed 6 inches of space around the edge of the pool. Some plants have only 2 inches between the racks and the pool wall. however, it is usually only on parts of the pool. The upender is a alrge gap on one portion and the cask laydown area is (usually) an open space (sometimes there is a pedestal for the cask and therefore a wall next to the racks). And due to rereacking, most plants have a mix of rack designs that do not fit next tot he wall on all sides. For the anaylsis we had to choose one number for the distance between the wall and rack for the whole pool, so we estimated.

2) In the T/H analysis we assumed a full pool. NEI bases their calcs on current decomm. plants, none of which have a full pool since they shutdown prematurely. We choose a full pool, because we assume most plants will shutdown as planned and not have more racks than they need.

3) We never say anything about fire mitigation. The answer is we don't know what are acceptable methods, water quantities, flow rates, dispersion techiques, etc. to ensure fire mitgiation. Early in-house draft versions (it never made it to a published draft) discussed possible means for licensees to explore if they did not pass the generic analysis. We did not endorse any method.

4) Attached are the PRA assumptions that went into the 3-month study. The only one that strikes me is assuming a diesel-powered fire pump.

Diane

CC: GTH

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Appendix 1 Assumptions Made in the SFP PRA

Case One - The as-found spent fuel pool and spent fuel pool cooling systems

1. The spent fuel pool has one level, one temperature, and radiation monitors and alarms in the control room. The instrumentation is maintained in an operable state. Annunciators are in computers, which can track trends.

2. The certified fuel handlers are former senior reactor operators who know the facility, the surrounding community, and facility maintenance personnel well.

3. The site has operable two fire pumps (one diesel-driven and one electrically driven from offsite power).

4. There is limited makeup capability (with respect to volumetric flow) with the exception of fire pumps, which can provide makeup via 2.5 inch diameter hoses.

5. The certified fuel handlers enter the spent fuel pool area once or twice per shift (8 to 12 hour shifts).

6. The site is staffed during the day shift Monday through Thursday with maintenance people, health physics staff, QA/QC staff, fuel handlers, and administrative staff. On nights and weekends, there is a skeleton staff.

7. It is known to the site personnel (through guidance and/ or training) that backup sources to replenish pool inventory can be from the fire protection pumps or from offsite sources such as from fire engines.

8. The spent fuel pool water is clear and the fuel was observable. The control room monitors the spent fuel pool level via a camera that can zoom in on a measuring stick in the pool that can alert operators to level changes. The measuring stick is about three to four feet long.

9. There is little fire protection equipment in the spent fuel pool area and it all is manual.

10. Overhead cranes have stops to help prevent heavy loads from being moved over the spent fuel pool.

Assumptions Independent of Case One

1. An F4 to F5 tornado would be required if significant damage were to be possible to a PWR or BWR spent fuel pool.

2. An F2 to F5 tornado would be required for possible significant damage to a spent fuel pool support system.

3. Shipping cask handling is the dominant heavy load operation.

4. Spent fuel casks will be the only heavy load moved over the spent fuel pool with sufficient mass to significantly damage the pool.

5. Crane operators will follow safe load path procedures when moving heavy loads near the spent fuel pool.

6. Spent fuel pools are robust and will survive seismic events less than three times the safe shutdown earthquake (SSE)

7. The staff used generic loss of offsite power frequencies.

8. Pumps or valves are manually operated and aligned. Every action must be accomplished by a certified fuel handler.

9. The times available for operator actions for the three cases are based on calculations as described in Chapter 3.0.

10. The effects of recriticality were not considered in the risk evaluation. Its potential for impact on risk is considered to be very low.

11. One year after the last of the reactor fuel is transferred to the spent fuel pool there is no longer any day-to-day NRC onsite oversight. We did not attempt to quantify the effect of this assumption.

12. External flooding is assumed not to be a significant contributor to loss of spent fuel pool cooling.

13. The utility has removed the emergency diesel generators and other support systems such as residual heat removal and service water that could provide spent fuel pool cooling or makeup prior to the plant being decommissioned.

14. The spent fuel pool cooling system (sled mounted) and any support systems all run off the same electrical bus.

15. The utility has procedures for small leaks from the spent fuel pool or for loss of spent fuel pool cooling system.

16. The only significant Technical Specification applicable to spent fuel pools is the requirement for radiation monitors to be operable when fuel is being moved.

17. The evacuation is assumed to begin three hours prior to the release of fission products to the environment.

18. The highest action level of offsite warning for decommissioned plants is an alert.

19. The evacuation is assumed to begin three hours prior to the release of fission products to the environment.

20. Ninety five percent of the population within 10 miles of the site is assumed to evacuate at a speed of four miles per hour.