INSERT A

As discussed in more detail in Appendix 2, the results of the risk analysis depends on assumptions on the design and operational characteristics of the SFP facility. The inputs that have the potential to significantly influence the results are summarized below.

- The modeled system configuration is described in Section 3.2. The assumed availability of a diesel powered fire pump is an important element in the conclusion that fuel uncovery frequency is low for the loss of offsite power initiating events and the internal fire initiating event. The assumption of the availability of a redundant fuel pool cooling pump is not as important since the modeling of the recovery of the failed system includes repair of the failed pump, not just the startup of the redundant pump. Finally, multiple sources of makeup water is assumed for the fire pumps. This lessens the concern for possible dependencies between initiating events (e.g., severe weather events, high wind events, or seismic events) and the availability of makeup water supply (e.g., fragility of the fire water supply tank).

- Credit is taken for industry/NEI commitments as described in Section 3.2. Without this credit, the risk is estimated to be more than an order of magnitude higher. Specifically,

    - DIC #1 is credited for lowering the risk from cask drop accidents.

    - DICs # 2, 3, 4, and 8 are credited for the high probability of recovery of loss of cooling (including events initiated by loss of power or fire) and loss of inventory scenarios. In order to take full credit for these commitments, additional assumptions concerning how these commitments will be implemented have been made. These include: procedures and training are explicit in giving guidance on the capability of the fuel pool makeup system, and when it becomes essential to supplement with alternate higher volume sources; procedures and training are sufficiently clear in giving guidance on early preparation for using the alternate makeup sources; and walkdowns are performed on a regular (once per shift) basis and the operators document the observations in a log. The later is important to compensate for potential failures to the instrumentation monitoring the status of the pool.

    - DIC # 5 is credited for the high probability of early identification and diagnosis (from the control room) of the loss of cooling or loss of inventory.

    - DICs # 6,7, and 9 are credited with lowering the initiating event frequency for the loss of inventory event from its historical levels. In addition, these commitments were used justify the assumption that a large non-catastrophic leak rate is limited to approximately 60 gpm, and the assumption that the leak is self limiting after a drop in level of 15 feet. These assumptions may be non-conservative on a plant-specific basis depending on SFP configuration and specific commitments on configuration control.

    - DIC # 10 is credited for the equipment availabilities and reliabilities used in the analysis. In addition, if there are specific administrative procedures to control the out of service duration for the diesel fire pump, the relatively high unavailability for this pump (of 0.18) could be lowered.

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- Initiating event frequencies for the loss of cooling, loss of inventory, and loss of offsite power are based on generic data. In addition, the probability of power recovery is also based on generic information. Site specific differences would proportionately affect the risk from these initiating events.

INSERT B

It should be noted that there were two recent events involving a loss of cooling at SFPs. The first, occurring in December 1998 at Browns Ferry Unit 3, involved a temperature increase of approximately 25°F over a two day period. This incident, caused by the short cycling of cooling water through a stuck-open check valve, was not detected by the control room indicators due to a design flaw in the indicators. In the second event, occurring in January 2000, the SFP temperature increased by approximately 40 to 50°F at the Duane Arnold Unit 1 plant. The incident, which was undetected for approximately two and a half days, was caused by operator failure to restore the SFP cooling system heat sink following maintenance activities. At this plant, there was no alarm for high fuel pool temperature, although temperature indicators are available in the control room. Since the conditional probability of fuel uncovery is low given a loss of cooling initiating event, the addition of these two recent events to the database will not affect the conclusion that the risk from these events is low. However, the recent events further illustrate the importance of industry commitments, particularly DIC # 5 which requires temperature instrumentation and alarms in the control room. In addition, the staff assumption that walkdowns are performed on a regular (once per shift) basis, with the operator documenting the observations in a log, is also an important element to keep the risk low, since the walkdowns compensate for potential failures to the control room instrumentation.