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To: George Hubbard, Robert Palla
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Subject: Can we get early evacuation?

Enclosed is a write up approved by Mike Cheek on my thoughts on when evacuation could begin at decommissioning facilities one year after shutdown.

4/307

The warning that the public would receive following an event at a decommissioning spent fuel pool that leads to a zirconium cladding fire is dependent on event tree failure paths, not success paths. For most events, the long time it takes to drain or to heat up and boil off the spent fuel pool inventory provides ample opportunity for fuel handler intervention and success in restoring inventory and/or cooling to the spent fuel pool. Exceptions are for seismic events, heavy load drops, aircraft impact, tornado missile, and loss of off-site power from events initiated by severe weather. For seismic events that have ground motions in excess of 1.2 g spectral acceleration, clearly all people in the effected area would be aware that there was a significant problem. The staff expects that the proper authorities would be informed promptly of serious structural problems at the decommissioning facility. However, the expectation is that the infrastructure of the surrounding area would be so damaged that evacuation, even with full EP, would be problematic. For heavy load drops, the fuel handlers would be right there when the drop occurred. The pool inventory is projected to be lost rapidly. It is expected that with procedures that detail the SFP water level at which a general emergency is to be declared that the proper authorities would be informed promptly. For aircraft impact or tornado missiles that lead to SFP catastrophic failure, it is expected that the pool would drain rapidly and the proper authorities would be quickly informed. The forementioned events involve rapid depletion of pool inventory. Loss of off-site power from events initiated by severe weather is a very slow event. The failure path for this event involves the inability of fuel handlers to get off-site resources to help provide make up to the pool. The weather is assumed to drain regional resources or limit their access to the facility. In addition the probability of off-site power recovery is reduced compared to plant-centered loss of off-site power events. For this event the staff assumes that if it is difficult for off-site resources to reach the facility or regional resources are engaged in other efforts, then it is probable that it would be difficult given the severe weather aftermath to evacuate people from the area.

The rest of the events (loss of off-site power from plant centered and grid related events, loss of pool cooling events, loss of inventory events, internal fire) take a long time to go from event initiation to a zirconium cladding fire. The expected frequencies for each of these sequences is very low due to the high probability assigned to fuel handler recovery. The failure paths leading to a zirconium fire involve failure to acquire off-site resources to provide pool makeup. The periods available for recovery are so long that the dominant reason that recovery is not provided in the failure paths is that there was a general breakdown in the overall facility organization. For these sequences the failure to acquire off-site resources implies there also is a failure to contact regional authorities and declare a general emergency when the SFP level drops beyond the proceduralized limit.