

SDA No 1 - Design at least as capable as assumed in report	Most likely achieved at all plants since modeled design was very spartan
SDA No 2 - Walkdowns at least once per shift. Know time available to makeup inventory.	Found this to be what was happening at the four plants I visited. During stakeholder meetings, industry representatives indicated they had procedures that required walkdowns. No reason to believe (especially after the Dresden event) that operators are not walking down the SFPs. The NRC staff should confirm that all decommissioning plants have fuel handlers walking down the pools at least twice a day and preferably three times a day.
SDA No 3 - Control room instrumentation will directly monitor SFP temperature and water level. Alarm associated with level at which call in off-site resources.	Walkdowns should catch events where control room instrumentation does not portray an accurate picture of the SFP water level situation.
SDA No 4 - Licensee assures no drain paths more than 15 feet below surface of SFP	Normally only would be a small line, if goes to the bottom of the pool (e.g., 1-2 inch line). Alarms and walkdowns should alert fuel handlers to diversion of SFP inventory. Should not be too risk significant because this was checked for operating reactors. Not sure if checked for decommissioning plants. NRC should confirm.
SDA No 5 - Perform load drop consequence analysis or have single failure proof crane	See IDC No 1. Very important for non-single failure proof cranes. Mitigated by the actual number and frequency of heavy load lifts being performed at decommissioning plants today.
SDA No 6 - Successfully complete seismic check list.	Very important. If list not checked and verified, then could be a vulnerability that would lower the capacity of the SFP significantly. At this time we see no reason to believe that such vulnerabilities exist. Mitigated for plants with no vulnerabilities by the fact that the required large earthquake to severely damage the pool would destroy the infrastructure of the surrounding area including roads, bridges, and buildings. Therefore, formal EP not effective in these cases.
SDA No 7 - Maintain program to surveil and monitor Boraflex in high-density SFP racks	Very slow acting problem. Operator rounds should detect pool heat up if instrumentation does not.

B/73

ISSUE	CONCLUSION ABOUT EFFECT OF ISSUE ON EP AT CURRENT DECOMMISSIONING SITES
IDC No 1 - Cask drop analyses or single failure proof crane for handling heavy loads	<p>One of dominant contributors to risk. Lack of full EP mitigated if newest fuel in SFP is at least 2 - 5 years old. Based on capability to make ad-hoc evacuation of surrounding area if time available. Still have land interdiction.</p> <p>Downside - non-single failure proof cranes may have upwards of two orders of magnitude higher frequency of heavy load drops compared to single failure proof (SF proof) cranes. For 100 lifts a year, a non SF proof crane has about a 1E-5 per year chance of having a catastrophic heavy load drop compared to about 1E-7 for single failure proof crane.</p>
IDC No 2 - Procedures to bring off- and on-site resources to bear	<p>At four sites found fuel handlers knowledgeable about whom to contact off-site. Time available on most situations is so long, fuel handler can delay response for long time and still have time to recover.</p> <p>Downside - History says that a licensee will tend to try and do what ever it can before calling in offsite resources or using drastic measures (e.g., Davis Besse loss of feedwater event). Delay in bringing in offsite resources could make recovery less probable without clear point at which offsite resources MUST be called in.</p>
IDC No 3 - Procedures to communicate during severe weather and seismic events	<p>Currently have some capabilities at four plants for severe weather events. May lose this with going to dedicated SFP control rooms versus operating reactor control rooms that have radio as well as phone lines. Time available is significant and probably would not be risk significant.</p>
IDC No 4 - Offsite resource plan in place	<p>Time available on mitigatable events is so long that this should not have a major effect on risk.</p> <p>Downside - I have no idea how long it takes to get in portable heat exchangers or other equipment that might be needed. Not sure if this is available in 24 hours or 72 hours or more.</p>

<p>IDC No 5 - SFP instrumentation including readouts and alarms for SFP temperature, water level, and radiation</p>	<p>Boil off and slow drain down events are so slow that having two or more walkdowns per day should provide adequate assurance in the near term that inventory is not being lost.</p> <p>Downside - Walkdowns may not be required. None of these instruments needs to be operable (with exception of radiation alarm if moving fuel.)</p>
<p>IDC No 6 - SFP seal design results in limited leakage on seal failure</p>	<p>Could be a problem if an older plant has a seal design where the failure of the seal (e.g., around one of the weir doors) had the capability of failing in a manner that allowed rapid draining of the pool. No information on this.</p>
<p>IDC No 7 - Procedures to reduce drain down risk including siphon protection and pump controls [DID THE SFP TASK FORCE ON SUSQUEHANNA CHECK ON THIS FOR DECOMMISSIONING PLANTS?]</p>	<p>Would still be a slow event in most cases and should be caught by walkdowns. Could be a problem is the plant has large pipes deep into the SFP. No operating plants are supposed to have such pipes. Not sure if decommissioning plants do.</p>
<p>IDC No 8 - Onsite restoration plan to repair SFP cooling systems or makeup water to the SFP. No need to enter SFP area.</p>	<p>Need to not enter SFP area only important if got within three feet (or lower) of uncovering the spent fuel. Frequency of this should be low. External inventory addition not deemed to be useful in our analysis (based on how modeled) for large seismic and heavy load drop events, which are the dominant events. External addition does not help you in the event of severe weather either. I am not aware that the effect of adding cold water to exposed hot fuel has been studied for spent fuel pools.</p>
<p>IDC No 9 - Procedures to control plant evolutions with potential to rapidly drain SFP</p>	<p>See IDC No 1. This could have a large effect for plants that are moving heavy objects over the spent fuel pool or surrounding area. Lack of extra controls and lack of a single failure proof crane could increase the risk from heavy load drops by a fraction where the numerator is 10 or 100 and the denominator is number of heavy load lifts per year accomplished divided by 50 (the assumed number of lifts in the report.)</p>
<p>IDC No 10 - Test alternative pool makeup capability and keep functional</p>	<p>Probably already being done because most times this capability is the fire water system which must be tested per insurance requirements. Volumetric flow rate may be low, but boiloff rate is slow too. For loss of inventory events, the rate of loss will determine the efficacy of the fire water pumps.</p>