

**From:** Diane Jackson *NRL*  
**To:** Daniel Barss, Glenn Kelly *NRL*  
**Date:** Monday, March 05, 2001 03:51 PM  
**Subject:** international question on SDA#3

Glenn and Dan -

Attached is a question from an engineer at Koeberg power station. He asks at what SFP level would a general emergency be declared?

I have drafted a response. Please review it for accuracy and if you can add any additional information please do so.

Thanks,  
Diane

**CC:** GTH

*B/4*

**From:** "Sean Holohan" <Sean.Holohan@eskom.co.za>  
**To:** <nrcweb@nrc.gov>  
**Date:** Mon, Feb 19, 2001 10:46 AM  
**Subject:** e-mail message to Laurence I Kopp

Please can you pass the following on to Larry Kopp. I cannot get the message through to him at his e-mail address of LIK@nrc.gov

Thanks

Sean Holohan

Hi Larry

This is Sean Holohan from Koeberg, SA asking for more information again.

I have been studying the recent NRC (Oct 2000) technical study on SFP accidents at decommissioning plants, and would like to find out some information. Can you help with the following question, or can you suggest who I should ask? (I saw your name on the list inside the study)

In the technical study, SDA#3 says that SFP level instrumentation should include an alarm at the point that a general emergency is declared. Koeberg power station are about to install a new SFP level monitoring system, with the following alarms: High (19.45 m), Low (19.3 m) and Lo-Lo (18.00 m). Our cooling system suction is at 15.00 m, the bottom of the gates are at 13.25 m, and the top of the spent fuel racks is at 12.09 m.

Taking the above in to account, at what level would the NRC expect a typical US plant to have the general emergency alarm set point? Or would you base the set point on remaining time to uncover? We would like to install a similar alarm, and would like to take into account current international practice before we submit our proposals to our own Licensing Authority.

Thanks for the help

Sean K Holohan  
Principal Engineer  
Risk & Regulation Management  
Koeberg NPS, Eskom

Sean,

The NRC has not established any water levels to correspond to emergency action levels as of yet. The current alarms (high, lo, and lo-lo) on the spent fuel pool water level are intended to alert plant personnel to a potential problem. However, a change in a few feet of water would be premature to alert off-site authorities. The water level is typically maintained per technical specifications at 23 feet above the top of the fuel seated in the storage racks (the exact value is plant-specific). Even at the lo-lo alarm level there is more than an adequate amount of water for shielding purposes and there would still be large amount of time during most event sequences to identify and correct the problem before the fuel would be uncovered. The technical specification water level meets the assumptions of iodine decontamination factors following a fuel handling accident. It also shields and minimizes the general area dose when the storage racks are filled to their maximum capacity.

Alarms that would directly link water level to an emergency response action level, such as general emergency or alert would be at a much lower water level, such as 3 feet above the fuel. This would allow plant personnel time to take action to mitigate the cause of the loss of coolant. It is assumed that if plant personnel cannot terminate the loss of water between 23 feet above the fuel to some closer level above the fuel, that they will not be able to recover and the fuel will be uncovered. Current US operating plants do not have a water level that correspond to emergency action levels. The NRC included the alarm level in the study to compensate for changes in a plant when decommissioning, such as reduced plant personnel. As mentioned above, the NRC has not established any water levels to correspond to emergency action levels as of yet. We expect that this will be completed as part of our rulemaking process.

Diane Jackson  
Reactor Systems Engineer  
Plant System Branch  
301-415-8548  
DTJ@nrc.gov