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GMH 9/8/99

UNION OF CONCERNED SCIENTISTS

September 3, 1999

Chairman Grate J. Dicus
Commissioner Nils J. Diaz
Commissioner Edward Mgaffigan, Jr.
Commissioner Jeffrey S. Merrifield
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT INADEQUATELY MONITORED SPENT FUEL POOL TEMPERATURE AND OPERATOR RESPONSE TIMES AT PERMANENTLY CLOSED PLANTS

Dear Chairman and Commissioners:

According to the December 28, 1998, issue of *TVA Watts Happening* (enclosed), the spent fuel pool water temperature at Browns Ferry Unit 3 increased approximately 25°F over a two day period. This temperature increase was not detected by the instruments in the control room, which continued to indicate a temperature in the normal range of 85°F to 95°F throughout the heatup. A manual check (i.e., use of a thermometer) determined the spent fuel pool water temperature was actually 109°F.

TVA reported the spent fuel pool water heatup began after Fuel Pool Cooling Pump 3A was taken out of service and replaced by Fuel Pool Cooling Pump 3B. A check valve on the discharge side of Fuel Pool Cooling Pump 3A stuck in the open position. This failure allowed the cooled water leaving Fuel Pool heat Exchanger 3B to flow back through the idle pump to the suction side of the operating pump. Consequently, water was recycling through the heat exchanger instead of returning to the spent fuel pool.

It is apparent from the event narrative that the sensor being used to monitor spent fuel pool water temperature is located in the vicinity of the heat exchanger. This configuration explains why the control room indication remained constant even though the actual spent fuel pool water temperature rose nearly 25°F. From my prior experience on spent fuel pool issues, I know that this configuration is common.

While the actual safety significance of this event is minimal, the potential safety implications are very significant. This operating nuclear power plant experienced degraded cooling of irradiated fuel assemblies that remained undetected for two days (48 hours). The time-to-boil for spent fuel pools can be less than 48 hours under some routine conditions. Because it can take many hours to restore spent fuel pool cooling after the loss or degradation is known, few plants can afford to waste two days of their time-to-boil on merely detecting the problem. Clearly, a sensor that physically measured the temperature of the water *inside* the spent fuel pool would be much safer than one like that at Browns Ferry that monitors the temperature of water *outside* the spent fuel pool.

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This event is also significant from the standpoint of nuclear plants that have permanently shut down. I recently attended a workshop on risk-informing decommissioning regulations conducted in Gaithersburg, MD (ironically, it was a two-day workshop or the precise duration of the undetected spent fuel pool problem at Browns Ferry). Mr. Michael Meisner from the Maine Yankee plant and head of an NEI task force on decommissioning criticized the NRC staff because they had assumed the identification and correction of degraded spent fuel pool cooling conditions might last longer than a single shift (12 hours). Mr. Meisner was quite adamant that the NRC had absolutely no basis for assuming that a degraded condition might remain undetected for longer than a day. Clearly, this Browns Ferry event – which occurred at an operating plant receiving much more attention from far more workers than that proposed for permanently shutdown plants – demonstrates beyond any reasonable doubt that the staff's position is indeed justified and Mr. Meisner is simply wrong. The report on spent fuel pool problems presented to the Commission by the then-AEOD staff in November 1996 provides amply other events which prove that the Brown Ferry case was not an isolated one.

As UCS monitors the move towards risk-informed regulation, we continue to be troubled by industry initiatives, such as the extremely non-conservative and ill-advised approach now being contemplated by Maine Yankee management, which toss outor ignore reality. We hope that the NRC staff will be as diligent in guarding against these unwarranted erosions of safety margins as they have been thus far in the spent fuel pool issue at plants being decommissioned.

We also hope that the Commssion, as it guides the NRC down the road to risk-informed regulation, will consider all industry experience – drawing from both good and bad events – before rendering safety decisions.

Sincerely,

David A. Lochbaum
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Enclosure: as stated

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TVA WATTS HAPPENING

Watts Bar Industry Affairs
Published: *December 28, 1998*
http://knxwbngfp3/ Operating Experience

TVA Operating Experience

Watts Bar

Corrective Action Program - When a PER description of condition is revised, SPP-3.1 "Corrective Action Program" states "the revised PER shall be processed the same as a new PER." When a new PER is initiated, Operations receives a report for operability review. Engineering identified that when a PER description of condition is revised, Operations does not receive a report for operability review contrary to SPP-3.1 requirements.

Browns Ferry

Spent Fuel Pool Temperature Increase - Unit 3 fuel pool temperature increased approximately 25 degrees F over a two day period after swapping from 3A fuel pool cooling pump to 3B fuel pool cooling pump. This temperature increase was not detected by the normal control room monitoring temperature element which continued to indicate a temperature in the normal range of 85 to 95 degrees F. A manual reading taken locally determined pool temperature to be 109 degrees F. Investigation determined that the 3B fuel pool cooling heat exchanger outlet was being short cycled through the out of service 3A fuel pool cooling pump due to the pump discharge check valve being stuck in the open position. After the stuck check valve was successfully closed, indicated fuel pool temperature rose to 121 degrees F and a lowering temperature tend was noted.

Sequoyah

Emergency Operating Procedure Deficiency - It was identified that procedure ECA-0.0 "Loss of All AC Power" contains a step which checks for steam generator tube rupture coincident with the loss of power. The step is impossible to execute on Unit 2 due to the fact that none of the Rad Monitors and recorders referenced in the step have power available if the shutdown boards are deenergized.

Industry Operating Experience

Plant Trips	NSSS	Description
Seabrook	W-4-LP	Unit 1 experienced an automatic reactor trip from 100% power due to a 345 kV breaker opening. The breaker opening resulted in a turbine trip followed by the reactor trip. The cause is being investigated. A Pressurizer PORV opened and reseated. One 4160 volt bus did not auto transfer to the reserve auxiliary transformer as designed. (NRC Event Report 35185)

Operating in a Plant Configuration not Described in the FSAR - The Cycle 16 operation at Oyster Creek reached end-of-full-power one month prior to the refueling outage. A safety review was performed in support of the removal of the high-pressure (HP) and intermediate-pressure (IP) feedwater heaters from service to compensate for decreasing reactivity during the coastdown operation. Isolating the extraction steam to the feedwater heaters at a predetermined power level reduces feedwater temperature. The reduced feedwater temperature will increase core inlet subcooling, adding positive reactivity and increasing core thermal power. This process actually decreases overall plant efficiency, however, the net result is an increase in electrical generation when compared to leaving the feedwater heaters in service during coastdown. The safety review documented the effects of reducing the final feedwater temperature at rated thermal power. The decreased feedwater temperature has the potential to affect analyzed plant transients and accidents, potentially impacting the margins to safety limits. The colder feedwater may also affect the feedwater nozzle and other components of the reactor vessel and internals. As part of the effort to support coastdown operation with HP and IP extraction steam removed a review of previous operating history was performed. That review identified an instance during cycle 15 where operation at rated power had occurred with the HP feedwater heaters OOS and feedwater temperature reduced without the required core related analysis to support the operation. This constituted operation in an unanalyzed condition. Procedural controls for reactor operation with feedwater heaters out-of-service (OOS) identified power restrictions based on concerns related to turbine imbalance. The procedures allowed for rated power operation under certain feedwater heater OOS configurations. No consideration was given for core transient/accident analyses required to justify rated power operation under these conditions. **Ensure that operations are within established FSAR and Licensing Basis parameters.** INPO Network OE9513

Worker Injured in Fall - At St. Lucie, a 3-man crew reported to the Unit 1 turbine building mezzanine deck to disassemble a 15-foot high scaffold. One of the workers was climbing a scaffold ladder in preparation for disassembly. The worker was approximately 12 feet off the ground, and in the process of securing his lanyard to the ladder, when he lost his grip and fell. The worker was transported to the on-site medical facility where he exhibited signs of confusion and disorientation. An ambulance was summoned and the individual was transported to a local hospital for observation and treatment. A later report indicated that x-rays revealed a cracked clavicle, a shoulder separation and that the individual had sustained