UNION OF
CONCERNED
SCIENTISTS

May 14, 1999

Mr. Richard J. Laufer, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: ALLEGATIONS – SPENT FUEL POOL COOLING AT THE HARRIS NUCLEAR PLANT

Dear Mr. Laufer:

In reviewing material related to the license amendment request by Carolina Power & Light Company to activate spent fuel pools C and D at their Harris Nuclear Plant, I came across information which seems to indicate a deficiency in the current design and licensing bases of the plant. Since these potential problems affects the current configuration of the facility, I am making formal allegations outside of the ongoing licensing proceeding for the proposed amendment.

In Table 5 of CP&L calculation SF-0040 Rev. 0[1], "Spent Fuel Pools C and D Activation Project Thermal-Hydraulic Analysis," the third and fourth columns contain data for spent fuel pool A and B for various scenarios. Two of these scenarios involve the full core offload configuration which CP&L indicates could be reached as of September 22, 2001. The data table specifies that the spent fuel pool heat exchanger A and B thermal flow requirement and minimum flow requirement is 5,400 gallons per minute. Footnote (3) to Table 5 states that the maximum flow for spent fuel pool heat exchangers A and B is also 5,400 gallons per minute in order to prevent flow-induced vibration problems.

(a) It is highly unlikely, bordering on impossible, that the fuel pool cooling system for spent fuel pools A and B at Harris can supply precisely 5,400 gallons per minute to the heat exchangers. According to this data table, a lower flow rate means that the required heat load will not be removed from spent fuel pools A and B while a higher flow rate means that the heat exchangers will be operating outside their design limits with increased risk of damage.

(b) It is very less likely, but equally impossible, that the operators at the Harris Nuclear Plant could actually align the fuel pool cooling system to supply precisely 5,400 gallons per minute to the heat exchangers. The flow instrumentation used by the operators has an uncertainty

[1] This calculation was submitted as Exhibit 1 in CP&L's response dated May 5, 1999, to the Orange County Board of Commissioners' contentions in the licensing proceeding.

Washington Office: 1616 P Street NW Suite 310 • Washington DC 20036-1495 • 202-332-0900 • FAX: 202-332-0905
Cambridge Headquarters: Two Brattle Square • Cambridge MA 02238-9105 • 617-547-5552 • FAX: 617-864-9405
California Office: 2397 Shattuck Avenue Suite 203 • Berkeley CA 94704-1567 • 510-843-1872 • FAX: 510-843-3785

A11

range which is not zero. Thus, even if the flow instruments indicated that exactly 5,400 gallons per minute was being supplied to the heat exchangers, the actual flow rate would be higher or lower. As noted above, flow rates higher or lower than 5,400 gallons per minute have adverse consequences.

It is assumed that the information from Table 5 for spent fuel pools A and B apply to the existing Harris Nuclear Plant independent of the outcome of the pending licensing action regarding spent fuel pools C and D.

In addition, calculation SF-0040 has 31 other calculations attached, according to its table of contents. These calculations appear to deal with flow requirements to other heat exchangers.

The allegations:

(1) CP&L has improperly established the minimum and the maximum flow rate through spent fuel pool heat exchangers A and B for the full core offload configuration at the same value, which cannot be physically achieved at the plant.

(2) CP&L has improperly established the minimum and maximum flow rates for spent fuel pool heat exchangers A and B without accounting for flow instrumentation accuracy and uncertainty limitations.

(3) CP&L may have also improperly established minimum and maximum flow rates for safety-related components without accounting for flow instrumentation accuracy and uncertainty limitations. The 31 calculations rumored to be attached to calculation SF-0040 were, in fact, not attached to the calculation supplied in response to the Orange County Board of Commissioners' contentions. Thus, I am unable to determine whether CP&L's apparent oversight was limited to just spent fuel pool heat exchangers A and B.

I request that these allegations be handled in accordance with the NRC's allegation process and that I receive a formal response to these allegations following the NRC staff's evaluation.

Sincerely,

David A. Lochbaum
Nuclear Safety Engineer