UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

November 17, 1981

The Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: REPORT ON ST. LUCIE PLANT UNIT NO. 2

Dear Dr. Palladino:

During its 259th meeting, November 12-14, 1981, the Advisory Committee on Reactor Safeguards reviewed the application of the Florida Power and Light Company (the Applicant) for authorization to operate the St. Lucie Plant Unit No. 2. The project was considered at a Subcommittee meeting in West Palm Beach, Florida on October 30-31, 1981 and members of the Committee toured the facility on October 30, 1981. In its review the Committee had the benefit of discussions with representatives of the Applicant, Combustion Engineering, Inc., Ebasco Services, Inc., the NRC Staff, and members of the public. The Committee also had the benefit of the documents listed. The Committee commented on the construction permit application for St. Lucie Plant Unit No. 2 in a report dated December 12, 1974 to AEC Chairman Dixie Lee Ray.

St. Lucie Plant Unit No. 2 is located on Hutchinson Island adjacent to Unit No. 1, which went into commercial operation in December 1976. Both units use Combustion Engineering nuclear steam supply systems with a rated core power of 2560 MWt. The two units are nearly identical.

A number of items have been identified as Outstanding Issues, Confirmatory Issues, and License Conditions in the NRC Staff's Safety Evaluation Report dated October 1981. These include some TMI-2 Action Plan requirements. We believe these issues can be resolved in a manner satisfactory to the NRC Staff. We also recommend resolution of concerns on instrumentation for detection of inadequate core cooling expressed in the ACRS letter to the Executive Director for Operations dated June 9, 1981.

Discussion with the Florida Power and Light Company Staff indicated that emergency operating procedures for dealing with off-normal plant behavior that might develop during the operation of St. Lucie Plant Unit No. 2 are incomplete. We recommend that a concentrated effort be made by the Florida Power and Light Company staff to complete emergency operating procedures which take advantage of new information and approaches developed during the past two years. This matter should be resolved in a manner satisfactory to the NRC Staff. The Committee wishes to be kept informed.

At the time this site was initially approved, the population density was relatively low, and the projected increase during the life of the plant was not unusually large. Since that time, the growth in population has been much more rapid than predicted, and current estimates predict continued growth at relatively high rates. Although the present population and that predicted for the next several years are not a cause for concern, it now seems possible that the population density in portions of the surrounding area could reach a level, during the lifetime of the St. Lucie Plant, that might then warrant additional measures. We recommend that the Applicant and the NRC Staff periodically review the actual and projected population growth. If required as a result of these reviews, plans for appropriate preventive or remedial measures could then be made in a considered but timely manner.

We recommend that the Staff give due regard to the special nature of this site in evaluating the final emergency plan.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above, and subject to satisfactory completion of construction, staffing, and preoperational testing, there is reasonable assurance that the St. Lucie Plant Unit No. 2 can be operated at core power levels up to 2560 MWt without undue risk to the health and safety of the public.

Additional comments by Members H. W. Lewis and M. S. Plesset are presented below.

Sincerely yours,

J. Carson Mark
Chairman

Additional Comments by Members H. W. Lewis and M. S. Plesset

In the aftermath of the accident at Three Mile Island Unit 2, which dramatically emphasized the importance of instrumentation to follow the course of an accident, the NRC Staff has required applicants for an Operating License to demonstrate specific capability to detect the onset of inadequate core cooling. For PWRs this has come to mean in practice the provision, inter alia, of an instrument which can be called a water-level indicator for the pressure vessel. (Although the NRC Action Plan allows for alternatives, none appear to have been seriously contemplated.) A number of such devices have been accepted and/or proposed, some of which measure differential pressure, some average void fraction in a part of the pressure vessel, some cooling rate at a number of places in the vessel. All can give spurious response because of dynamic effects.

Many of these views have been previously expressed in the Committee letter of June 9, 1981.

We are concerned that, in the commendable eagerness to avoid a repetition of TMI, the NRC Staff is requiring ill-defined instrumentation without any clear picture of the contribution of that instrumentation to the prevention or mitigation of accidents - considerations which must necessarily be scenario dependent. If it were really true that core water level were the important parameter, then differential pressure indicators would appear to be preferable, provided the coolant is quiescent. If instead cooling capacity is important, then some form of heated wire or thermocouple would appear to be preferable. Since either may be acceptable, we are left with the inference that the NRC Staff has not really clarified the role of this instrumentation.

We believe that, before, not after requiring these instruments for all the new plants, the NRC Staff should develop a position regarding their utility. This position, which should be based upon accident analysis and risk assessment, would lead to a much clearer understanding of just what instrumentation, if any, is needed.

REFERENCES:

1. Florida Power and Light Company, "St. Lucie Plant, Unit No. 2 Final Safety Analysis Report," with Amendments 1 through 6.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of St. Lucie Plant, Unit No. 2," Docket No. 50-389, USNRC Report NUREG-0843, dated October 1981.
3. Letter from Betty Lou Wells to the Chairman of the Advisory Committee on Reactor Safeguards, dated October 28, 1981.
4. Written statement by Joette Lorian, Research Director for the Center for Nuclear Responsibility.