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

January 16, 1984

Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON THE SHEARON HARRIS NUCLEAR POWER PLANT

During its 285th meeting, January 12-14, 1984, the Advisory Committee on Reactor Safeguards reviewed the application of Carolina Power & Light Company (CP&L) and the North Carolina Eastern Municipal Power Agency (the Applicants) for an operating license for the Shearon Harris Nuclear Power Plant. The Shearon Harris Nuclear Power Plant will be operated by CP&L which also operates three other nuclear units. The project was considered during an ACRS Subcommittee meeting in Apex, North Carolina on January 3-4, 1984. Members of the Subcommittee toured the facility on January 3, 1984. During its review, the Committee had the benefit of discussions with representatives and consultants of the Applicants, Westinghouse Electric Corporation, Ebasco Services, Inc., the NRC Staff, and a member of the public. The Committee also had the benefit of the documents referenced. The Committee commented on the application for a permit to construct the Shearon Harris Plant in reports dated March 8, 1972, January 17, 1973, and August 19, 1977. On October 11, 1977 the Committee provided a response to an inquiry regarding the resolution of ACRS Generic Items related to the Shearon Harris Nuclear Power Plant.

The Shearon Harris Nuclear Power Plant is located in Wake County, North Carolina, approximately 16 miles southwest of the nearest boundary of Raleigh, North Carolina. Originally the Shearon Harris Nuclear Power Plant was to comprise four units. However, only Unit 1 will be completed, with an estimated fuel load date of June 1985. Units 3 and 4 were cancelled on December 18, 1981 and Unit 2 was cancelled on December 21, 1983.

The Shearon Harris Nuclear Power Plant uses a three-loop Westinghouse nuclear steam supply system with a rated core power of 2775 MWt. The containment is a large, dry, reinforced concrete structure.

During the Committee's consideration of this plant, the control room design was reviewed. The Applicants informed us that they intend to perform an operational test of the control room emergency air recirculation system. As a part of this exercise, control room habitability during the recirculation mode will be evaluated. We wish to be kept informed.

The Shearon Harris Nuclear Power Plant uses Westinghouse D-4 steam generators. Steam generators of this design have experienced tube degradation related to flow-induced vibrations in the preheater region. Internal modifications have been developed by Westinghouse which include expanding some steam generator tubes and directing some of the main feedwater flow through the auxiliary feedwater nozzle. We expect to be kept informed regarding the operating experience of these steam generators.

The NRC Staff has previously identified management deficiences in CP&L's nuclear program. These deficiencies are enumerated in the report (May 1983) of the most recent Systematic Assessment of Licensee Performance (SALP) conducted by the NRC Staff to assess CP&L's nuclear operations for the period January 1982 - January 1983. CP&L has taken measures to improve management function and capability. These include restructuring of the corporate organization which will eventually result in a consolidation of CP&L's nuclear organization under one senior manager. The restructuring also provides for a corporate level executive to be located onsite, as a member of involved site management, to ensure greater access to resources and to enhance the ability to initiate new programs from the site. These efforts are expected to correct the past deficiencies. Members of the Region II Staff reported orally during the meeting that significant improvement in performance has been observed since the last SALP inspection. The Committee believes that written evidence of an improvement in CP&L's nuclear operations, which could, for example, be reported in the two scheduled SALP reviews prior to fuel load should be available prior to full power operation. We wish to be kept informed.

Subsequent to the meeting with the Applicants, we have received a letter from a member of the public which makes several allegations concerning quality assurance and other issues. We request that the NRC Staff investigate these allegations and provide a written report to the Committee.

The ACRS has on several occasions recommended that evaluations be made of the capability of light water nuclear power plants to be shut down safely in the event of an earthquake of greater severity and lower likelihood than the safe shutdown earthquake. In a letter dated January 11, 1983, the ACRS made recommendations concerning a possible broad approach to deal generically with the question of seismic margins. In the meantime, for the Shearon Harris Nuclear Power Plant, we recommend that, in addition to items already considered, specific attention be given to assurance of adequate seismic capability of the emergency AC power supplies, the DC power supplies, and small components such as actuators and instrument lines that are important to the accomplishment of safe shutdown and decay heat removal. We suggest also that specific attention be given to the adequacy of clearances between adjacent buildings.

During this review there was discussion of the reliability and the fracture resistance of the chilled water system. The Applicants and the NRC Staff

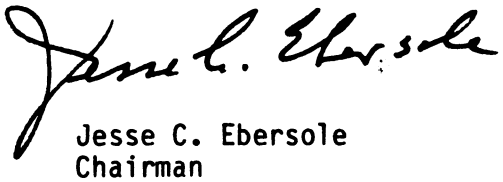
reported orally that the system is satisfactory in these respects. The ACRS would like to receive a detailed discussion of the chilled water system in a supplement to the Safety Evaluation Report.

One of the confirmatory issues concerning this application is "turbine missiles." Because of the nonoptimum orientation of the turbine relative to vital components in this plant, we recommend that a structured test program for evaluating overspeed protection of the turbine be prepared and submitted to the NRC Staff for review and approval before full power operation.

A number of items have been identified by the NRC Staff as Outstanding Issues. There is also a set of Confirmatory Issues that awaits additional documentation. We found no reason to believe that any of these issues will be especially difficult to resolve. We recommend that they be resolved in a manner satisfactory to the NRC Staff.

The ACRS 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 Shearon Harris Nuclear Power Plant can be operated at core power levels up to 2775 MWt without undue risk to the health and safety of the public.

Sincerely,



Jesse C. Ebersole
Chairman

References:

1. Carolina Power & Light Company, "Shearon Harris Nuclear Power Plant Units 1, 2, 3, and 4, Final Safety Analysis Report," Volumes 1-20 and Amendments 1-10
2. U. S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Shearon Harris Nuclear Power Plant, Units 1 and 2," USNRC Report NUREG-1038, dated November 1983
3. Letter from Wells Eddleman, Intervenor, Subject: Comments on the Shearon Harris Nuclear Power Plant to the Advisory Committee on Reactor Safeguards, dated January 13, 1984