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

October 18, 1983

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

Dear Dr. Palladino:

SUBJECT: ACRS INTERIM REPORT RELATED TO THE OPERATING LICENSE APPLICATION FOR THE LIMERICK GENERATING STATION, UNITS 1 AND 2

During its 282nd meeting, October 13-15, 1983, the Advisory Committee on Reactor Safeguards reviewed the application of the Philadelphia Electric Company (Applicant) for a license to operate the Limerick Generating Station, Units 1 and 2. There was a tour of the facility by members of the Subcommittee on the morning of October 7, 1983. A Subcommittee meeting was held in Pottstown, Pennsylvania on October 7 and 8, 1983 to consider this application. During its review the Committee had the benefit of discussions with representatives of the Applicant and the NRC Staff and an oral presentation by a member of the public before the Subcommittee. The Committee also had the benefit of the documents referenced. The Committee commented on the application for a permit to construct this Station in a report dated August 10, 1971.

The Limerick facility is located near the Schuylkill River about 1.7 miles southeast of the limits of the borough of Pottstown, Pennsylvania. The site is about 21 miles northwest of the nearest boundary of Philadelphia. The Limerick Generating Station uses BWR 4 boiling water reactors supplied by the General Electric Company. The pressure suppression containment system uses the General Electric Mark II design. The power rating of each unit is 3293 MWt. Bechtel Power Corporation is providing architectural, engineering, construction, and startup services. Construction on Unit 1 is about 90 percent complete, and construction on Unit 2 is about 30 percent complete.

The nuclear steam supply system and the containment system are almost identical to those of the Susquehanna Steam Electric Station which was reviewed for an operating license with an ACRS report issued on August 11, 1981.

Because of the uncertain schedule for Unit 2, the Committee does not believe it appropriate to report on Unit 2 at this time.

Our review included an evaluation of the management organization, the operational staff, and the training program for the operating and maintenance staff. The tour of the facility by ACRS members included the power

plant simulator and the teaching laboratories housed in the training center which is located near the Limerick site and used extensively in the training of plant personnel.

The Limerick Generating Station is the Applicant's second nuclear station. The Applicant operated Peach Bottom, Unit 1, a gas-cooled reactor, from 1967 to 1975 and has operated Peach Bottom, Units 2 and 3, which are boiling water reactors, since 1974. During our discussions, the Applicant demonstrated an extensive knowledge of the operation, design, and construction features of the plant. We conclude that the Applicant has the necessary technical and management capability to operate the Limerick Generating Station.

Stress-assisted corrosion cracking of primary system components has been observed in a number of operating General Electric nuclear steam supply systems. The materials being proposed for similar components in the Limerick Station are believed to be much improved. We recommend, however, in view of past experiences, that the Applicant develop and maintain a careful surveillance program to identify any factors encountered during plant operation which have the potential for materials damage.

The NRC Staff has not completed its review of the emergency planning for the Limerick Generating Station. We expect to review this subject in later meetings with the NRC Staff and the Applicant. We also plan to review the security plan for the Limerick Station.

In response to a request from the NRC Staff, the Applicant submitted a probabilistic risk assessment (PRA) in March 1981. A supplement to this report was submitted in April 1983 in the form of a severe accident risk assessment (SARA) report. In its meetings with the Applicant, the Committee reviewed a number of plant features that had been identified during the PRA and have been modified in order to reduce risk produced by certain hypothesized accidents. The NRC Staff Safety Evaluation Report for the Limerick Station does not make direct use of the information contained in the PRA and in SARA but rather follows the guidelines of the Standard Review Plan. The manner in which the NRC Staff will use the PRA and SARA is described in NRC Staff letters to the Atomic Safety and Licensing Board dated April 13 and May 24, 1983. In these documents the NRC Staff states that the PRA and SARA will be used to compare the risk presented by the Limerick Station with that from other nuclear power plant facilities. If this risk is found to be significantly greater than that associated with other such facilities, the NRC Staff will consider the need to recommend compensatory features. The NRC Staff's review of the PRA and SARA is continuing. We expect to review the PRA and SARA with respect to the methodology, results, and use in the Limerick licensing process. We believe that the demography of the site calls for a careful consideration of the results of the PRA and the SARA.

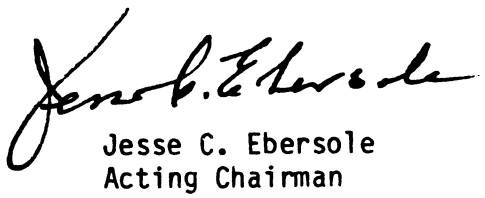
The Committee has, in several prior operating license reviews, noted the importance of assuring that the seismic contribution to risk is acceptably low, with allowance for lower frequency, more severe seismic events than that considered as the safe shutdown earthquake. This issue is addressed in the SARA report. We intend to explore it further in our continuing review.

We wish to consider further NRC Staff views concerning the failure modes and consequences of the main cooling towers during severe natural phenomena or explosions of materials transported by rail. Our concern is with the close proximity of emergency and residual heat removal service water piping and power supply conduits to the cooling tower basin.

We have not completed our review of the Limerick Generating Station. We do conclude that Unit 1 is well constructed and well managed. As indicated above, matters still to be reviewed are: emergency planning, plant security, margins against less probable but more severe seismic events than that considered as the safe shutdown earthquake, consequences of cooling tower failure, and the PRA and SARA. We will report on these matters in a subsequent letter. However, at this stage of our review, we believe that fuel loading and reactor operation at 5 percent power can be carried out without undue risk to the health and safety of the public.

Mr. J. J. Ray did not participate in the Committee's considerations regarding this matter.

Sincerely,



Jesse C. Ebersole
Acting Chairman

References:

1. Philadelphia Electric Company, "Final Safety Analysis Report, Limerick Generating Station, Units 1 and 2," Volumes 1-16, and Amendments 1-21
2. "Safety Evaluation Report Related to the Operation of Limerick Generating Station, Units 1 and 2," USNRC Report NUREG-0991, dated August, 1983
3. Philadelphia Electric Company, "Probabilistic Risk Assessment, Limerick Generating Station," Volumes 1 and 2, dated April, 1982 and PRA Proprietary Volumes, "System Level Fault Trees," dated April, 1982 and "Quantification of Limerick Event Tree Functions," dated June, 1982
4. Report prepared by NUS for Philadelphia Electric Company, "Severe Accident Risk Assessment, Limerick Generating Station," Volumes I-II, dated April, 1983