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

August 11, 1981

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

SUBJECT: INTERIM REPORT ON THE WATERFORD STEAM ELECTRIC STATION UNIT 3

Dear Dr. Palladino:

During its 256th meeting, August 6-8, 1981, the Advisory Committee on Reactor Safeguards reviewed the application of Louisiana Power & Light Company (Applicant) for a license to operate the Waterford Steam Electric Station Unit 3 (Waterford-3). This project has been considered at Subcommittee meetings on June 18-19, 1981 in St. Charles Parish, Louisiana, and on August 5, 1981 in Washington, D.C. A tour of the facility was made by Subcommittee members on June 18, 1981. During its review, the Committee had the benefit of discussions with representatives of the Applicant and the NRC Staff. The Committee also had the benefit of the documents listed. The Committee commented on the construction permit application for this unit in its report dated January 17, 1973.

Waterford-3 is located on the bank of the Mississippi River near Taft, Louisiana in St. Charles Parish. The city of New Orleans is approximately 25 miles east-southeast from the plant site and Baton Rouge is approximately 50 miles north-northwest. The largest town within 10 miles of the site is Reserve, Louisiana, which had a population of approximately 7000 in 1977.

Waterford-3 uses a Combustion Engineering nuclear steam supply system with a rated power level of 3410 MWt. The architect-engineer is Ebasco Services, Inc. The containment is a free standing steel pressure vessel enclosed within a reinforced concrete shield building. The containment building, auxiliary building, fuel handling building, and ultimate heat sink are located on a common base mat, forming a self-contained nuclear island.

Louisiana Power & Light (LP&L) is a part of Middle South Utilities (MSU). Although Waterford-3 is the first nuclear plant to be operated by the Applicant, the MSU system has two operating nuclear plants, Arkansas Nuclear One Units 1 and 2, which are being operated by Arkansas Power and Light Company. Two additional plants in the MSU system, Grand Gulf Nuclear Station Units 1 and 2, are under construction by Mississippi Power and Light. MSU provides some technical services to support the nuclear units in its system.

The Applicant described the management, the operating organization, and the status of staffing. The NRC Staff has not completed its review of these matters, but reported its conclusion that the management and staffing at Waterford-3 is less well established than at other nuclear plants at a similar time during their construction and startup schedule. The LP&L management has not yet been successful in putting together the team of experienced and qualified personnel which we believe will be necessary to successfully operate the plant. Of particular concern is the lack of nuclear experience throughout the organization and the apparent lack of appreciation by high-level management of the magnitude of the project it is undertaking. We believe that an extraordinary effort will be required to prepare the LP&L management and staff for operation of the Waterford-3 plant. We also believe that a more concerted effort is needed to build an integrated organization of LP&L and contractor personnel for startup and operation of Waterford-3. We recommend that the adequacy of management and staffing be established prior to fuel loading. We will continue to review this matter with the Applicant and the NRC Staff.

The Applicant described the three safety review committees which will be a permanent part of the Waterford-3 organization. We believe that better use could be made of experts from sources other than the Applicant's organization and its contractors to provide professional experience in areas such as training, human factors engineering, and reactor safety. We recommend that the Applicant make a greater effort to include recognized experts, especially on its Safety Review Committee.

Although a sincere effort has been made to establish a comprehensive training program at Waterford-3, it has suffered from a lack of professional direction. We believe the Applicant should move as soon as possible to employ a highly qualified professional for the key position of training director and provide him with the resources needed to build an effective program.

Waterford-3 is located in a highly industrialized area with an unusually large concentration of sources of hazardous substances from nearby industries and transportation routes. We believe the Applicant has done a commendable job in analyzing these hazards and providing for protection of the plant by both equipment design and administrative procedures. The NRC Staff has not completed its review of this matter, but we believe it can be resolved satisfactorily.

The Waterford-3 control room makes extensive use of a computer system for monitoring and control of the plant, and for evaluating plant performance. We commend the initiative the Applicant has shown in this area and the continuing effort to integrate the control room equipment with operating procedures and human factors considerations.

Waterford-3 has a unique ultimate heat sink design. It is contained within the nuclear island and is protected from extreme environmental effects. It consists of two trains of wet and dry cooling towers. Sufficient water is stored on the nuclear island to meet the needs for shutdown decay heat removal. We believe the design is acceptable.

The Applicant has performed an analysis of total loss of AC power. The DC power supply is capable of supplying essential loads for at least two hours and the condensate supply is sufficient for a longer period. We recommend that the Applicant expand this analysis to consider the effect of loss of space cooling on essential electrical equipment and to also consider the effect of coolant leakage from the primary system. Evaluation of these matters is a generic issue. Studies for this plant need not be completed prior to startup.

We note that a number of items have been identified as Outstanding Issues in the NRC Staff Safety Evaluation Report dated July 1981. These include some TMI-2 Action Plan requirements. We believe these issues can be resolved in a manner satisfactory to the NRC Staff, subject to the concerns on instrumentation for detection of inadequate core cooling expressed in the ACRS letter to the Executive Director for Operations dated June 9, 1981.

The Committee believes that, contingent on the Applicant's attainment of an adequate level of management and staffing, if due consideration is given to the recommendations above, and subject to satisfactory completion of construction and preoperational testing, there is reasonable assurance that Waterford Steam Electric Station Unit 3 can be operated at power levels up to 3410 MWt without undue risk to the health and safety of the public.

We expect to report further on the adequacy of the staffing and management as progress is made toward improvement.

Sincerely,

J. Carson Mark
Chairman

References:

1. Louisiana Power & Light Company, "Waterford Steam Electric Station, Unit 3 Final Safety Analysis Report," with Amendments 1 through 20.

2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Waterford Steam Electric Station, Unit 3," Docket No. 50-382, USNRC Report NUREG-0787, July 1981.