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

April 12, 1978

Honorable Joseph M. Hendrie
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: REPORT ON ARKANSAS NUCLEAR ONE, UNIT 2 NUCLEAR POWER PLANT

Dear Dr. Hendrie:

During its 216th meeting, April 6 and 7, 1978, the Advisory Committee on Reactor Safeguards completed its review of the application of Arkansas Power and Light Company (Applicant) for a permit to operate the Arkansas Nuclear One, Unit 2 Nuclear Power Plant (ANO-2). The application was also considered at the 214th ACRS meeting, February 9-11, 1978, and was reviewed at Subcommittee meetings on June 24, 1977 in Russellville, Arkansas and February 2 and March 20, 1978 in Washington, DC. Subcommittee meetings were also held on February 28, 1975 and May 20, 1977 in Windsor, Connecticut and on June 30, 1977 and March 20, 1978 in Washington, DC to review the Combustion Engineering designed Core Protection Calculator System (CPCS) which will be employed on ANO-2. A tour of the ANO-2 facility was made by Subcommittee members on June 24, 1977. During its review, the Committee had the benefit of discussions with representatives and consultants of the Applicant, Combustion Engineering, Inc. (CE), Bechtel Corporation, and the Nuclear Regulatory Commission (NRC) Staff. The Committee also had the benefit of the documents listed.

ANO-2 is the second nuclear unit constructed on the Arkansas Nuclear One site which is located on the Arkansas River in Pope County, Arkansas about six miles from the city of Russellville. The two units differ in that Unit 1 utilizes a Babcock and Wilcox Nuclear Steam Supply System (NSSS) which was licensed on May 21, 1974 to operate at 2568 MWt, while Unit 2 is a CE NSSS for which a license to operate at 2815 MWt is sought. The Committee reported on the construction permit application for ANO-2 in its letter of February 10, 1972.

The ANO-2 NSSS is similar to the Calvert Cliffs 1 and 2 and St. Lucie 1 nuclear units which are now operating; however, ANO-2 will be the first reactor to use CE 16 x 16 fuel assemblies. The NRC Staff concluded that the Applicant has acceptably established the basis for this new fuel design. The Committee agrees with this conclusion. The NRC Staff will require that the

Applicant conduct a surveillance program on the new fuel as it is removed from the core. The Committee wishes to be kept informed of the results of this program (Generic Item IIB-2 in ACRS Report, "Status of Generic Items Relating to Light-Water Reactors: Report No. 6," dated November 15, 1977).

The Applicant proposes to make use of the CPCS as part of the reactor protection system. The CPCS consists of four redundant digital computers which acquire data from plant process sensors and from two redundant, computer-based control element assembly calculators which provide control rod position information. This application of the CPCS will mark the first use in a United States power reactor of an online digital computer as part of the reactor protection system. The Applicant has developed an extensive series of tests for determining proper operation of both the hardware and the software that make up the system. The NRC Staff has concluded that, subject to resolution of several issues which appear to have available solutions, the CPCS is acceptable (Generic Item IIB-1 in ACRS Report, "Status of Generic Items Relating to Light-Water Reactors: Report No. 6," dated November 15, 1977).

The NRC Staff has identified six CPCS and a number of other safety related items which remain outstanding. These matters should be resolved in a manner satisfactory to the NRC Staff. The Committee wishes to be kept informed.

Various generic problems are discussed in the Committee's report, "Status of Generic Items Relating to Light-Water Reactors: Report No. 6," dated November 15, 1977. Those problems relevant to the Arkansas Nuclear One, Unit 2 Nuclear Power Plant should be dealt with by the NRC Staff and the Applicant as solutions are found. The relevant items are: II-1, 2, 3, 4, 5B, 6, 7, 10; IIA-2, 3, 4; IIC-1, 3A, 3B, 4, 5, 6; IID-2.

The Advisory Committee on Reactor Safeguards believes that, if due consideration is given to the items mentioned above, and subject to satisfactory completion of construction and preoperational testing, there is reasonable assurance that the Arkansas Nuclear One, Unit 2 Nuclear Power Plant can be operated at core power levels up to 2815 MWt without undue risk to the health and safety of the public.

Sincerely yours,

Stephen Lawroski

Stephen Lawroski
Chairman

Additional Comments by Member William Kerr

I urge the NRC Staff to reconsider its decision to require the Applicant to disconnect the data links from the Core Protection Calculator System to the Plant Computer following initial startup and subsequent refueling startups. The additional information which can be provided by the use of these links could enhance the reliability of both the protection system and of plant control. I find the Staff's arguments against the use of these links unconvincing.

REFERENCES:

1. U.S. Nuclear Regulatory Commission, "Supplement No. 1 to the Safety Evaluation Report (USNRC Report NUREG-0308) by the Office of Nuclear Reactor Regulation in the Matter of Arkansas Power and Light Company Operation of Arkansas Nuclear One, Unit 2," Docket No. 50-368, March 6, 1978.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report by the Office of Nuclear Reactor Regulation Related to the Arkansas Power and Light Company Operation of Arkansas Nuclear One, Unit 2 Nuclear Power Plant, Docket No. 50-368," USNRC Report NUREG-0308, November, 1977.
3. Arkansas Power and Light Company (AP&L Co.), "Arkansas Nuclear One, Unit 2 Nuclear Power Plant Final Safety Analysis Report" with Amendments 1-44.
4. Letter from D. H. Williams, Manager of Licensing, AP&L Co., to J. F. Stolz, Chief, Light Water Reactors Branch No. 1, concerning seismic qualification of a process protective cabinet, dated January 24, 1978.
5. Letter from D. H. Williams, Manager of Licensing, AP&L Co., to E. M. Howard, Director, Office of Inspection and Enforcement (I&E), Region IV, concerning cracking of pump support columns for low pressure safety injection pumps, dated January 16, 1978.
6. Letter from D. A. Rueter, Director of Technical and Environmental Services (TES), AP&L Co., to E. M. Howard, Director, Office of I&E, Region IV, concerning emergency feedwater pump piping, dated November 18, 1977.
7. Letter from D. A. Rueter, Director of TES, AP&L Co., to E. M. Howard, Director, Office of I&E, Region IV, concerning valve motor operators, dated November 7, 1977.
8. Letter from D. A. Rueter, Director of TES, AP&L Co., to E. M. Howard, Director, Office of I&E, Region IV, concerning control room emergency chillers, dated October 17, 1977.
9. Letter from D. A. Rueter, Director of TES, AP&L Co., to E. M. Howard, Director, Office of I&E, Region IV, concerning high pressure safety injection pump flow rates, dated September 30, 1977.