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

August 19, 1976

Honorable Marcus A. Rowden
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: REPORT ON THE SHIPPINGPORT ATOMIC POWER STATION LIGHT WATER BREEDER REACTOR

Dear Mr. Rowden:

At its 196th meeting, August 12-14, 1976, the Advisory Committee on Reactor Safeguards reviewed the Energy Research and Development Administration (ERDA) proposal to install a light water breeder reactor (LWBR) core, and to make numerous modifications, in the Shippingport Atomic Power Station. It is proposed to operate the LWBR core for about three years. A Subcommittee meeting and site visit was held on July 21, 1976. The Committee had the benefit of discussions with representatives of the Westinghouse Electric Corporation (Bettis), the Division of Naval Reactors of ERDA, Duquesne Light Company, the Nuclear Regulatory Commission (NRC) Staff, and of the documents listed. The Committee reported previously on the Shippingport Atomic Power Station at its 2nd meeting, November 1-3, 1957, its 30th meeting, December 7, 1960, and its 60th meeting, December 10-12, 1964.

The proposed LWBR oxide fuel core consists of thorium-232 and uranium-233 and is designed to have a net conversion ratio slightly greater than 1.0, compared to the conventional pressurized water reactor with a conversion ratio less than 1.0. The LWBR core will operate at less than one-half the power density of the preceding core.

The Committee recognizes that the Shippingport Atomic Power Station is the oldest operating commercial reactor. It was designed and built in accordance with the stringent requirements imposed by the Naval Reactors Program at a time prior to the issuance of 10 CFR Part 50. The Committee also recognizes that it is not possible to demonstrate strict compliance with all current safety criteria being applied to new plant construction.

Substantial modifications have been made to the Shippingport Atomic Power Station emergency core cooling system, and safety-related improvements have been made in many other portions of the plant.

The ACRS concurs with the NRC Staff recommendations regarding installation of diverse trip signals for initiation of safety injection, and the installation of a chlorine monitor in the control room.

With regard to lockout of the pressurizer surge line isolation valve, which is being re-examined by the NRC Staff and will be discussed in a supplemental Staff report, the ACRS position regarding valve lockout has been cited previously (e.g., ACRS Report on Trojan Nuclear Station, dated November 20, 1974, and Item IIC-1 of ACRS Report No. 4 on Status of Generic Items Relating to Light-Water Reactors, dated April 16, 1976).

The Committee believes it to be acceptable for the Shippingport Atomic Power Station to operate with the Light Water Breeder Reactor core as proposed.

Sincerely yours,

Dade W. Moeller

Dade W. Moeller
Chairman

Additional Remarks by Mr. H. S. Isbin

In the review of this project the Committee was informed that a Division of Naval Reactors' representative monitors the operations of the reactor. The concept of a federal monitor on a watch standing basis with the authority to shut the reactor down appears to me to be a carryover of the initial operating procedures of the Shippingport Atomic Power Station of some twenty years ago. In my opinion, a federal monitor would not enhance safety within the present system of licensing commercial nuclear power reactors. The evolution of the independent federal agency, the Nuclear Regulatory Commission, with its full complement of technical and experienced personnel to set Technical Specifications for operations, to carry out inspections and enforcements, and to require rigid qualifications for the licensee's operators, now constitutes the authority for thorough and effective monitoring of nuclear power operations.

References:

1. Nuclear Regulatory Commission (NRC) Staff's Safety Evaluation Report for the Light Water Breeder Reactor (LWBR), dated July 1976.
2. Shippingport Atomic Power Station Safety Analysis Report for the LWBR, Volumes 1 through 10.
3. Letters, dated January 19, January 27, January 30, February 9, April 27, July 7, and August 9, 1976, Division of Naval Reactors of the Energy Research and Development Administration to the Division of Reactor Licensing of the NRC, forwarding supplementary information related to the LWBR review.