ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

DEC 11 1973

Honorable Dixy Lee Ray
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON BEAVER VALLEY POWER STATION, UNIT NO. 2

Dear Dr. Ray:

At its 164th meeting, December 6-8, 1973, the Advisory Committee on Reactor Safeguards completed its review of the application by the Duquesne Light Company, the Ohio Edison Company, the Cleveland Electric Illuminating Company, the Pennsylvania Power Company, and the Toledo Edison Company, for authorization to construct the Beaver Valley Power Station Unit No. 2. This project had been considered previously at a Subcommittee meeting on November 23, 1973 and Committee members visited the site on November 24, 1973. During its review, the Committee had the benefit of discussions with the representatives of the Duquesne Light Company and their consultants, Westinghouse Electric Corporation, Stone and Webster Engineering Corporation and the AEC Regulatory Staff. The Committee also had the benefit of the documents listed below.

The site for the Beaver Valley Station is in Beaver County, Pennsylvania on the south bank of the Ohio River, five miles from East Liverpool, Ohio, and about 25 miles northwest of Pittsburgh, Pennsylvania. The site is shared with Unit 1 and is adjacent to the Shippingport Atomic Power Station. Of the approximately 18,000 persons included within a five mile radius of the plant, about 5,300 live within the Borough of Midland, 1.5 miles to the northwest of the site. The low population zone radius is 3.6 miles.

The Beaver Valley Power Station Unit No. 2 employs a 3-loop pressurized water reactor of 2652 MW(t) rated power which will use 17x17 fuel assemblies. The 17x17 fuel is identical to that to be used in Catawba Units 1 and 2, recently reviewed by the Committee. While details of the proposed design are available, complete analyses of the performance of this fuel arrangement are not yet available from the Applicant, and the AEC Regulatory Staff has not completed their review. The Committee has been informed that performance analyses and reviews will be carried out during the next year in connection with operating license applications for other nuclear units. The 17x17 fuel-rod array offers the advantage of lower linear heat generation rates, with resulting lower fuel and cladding temperatures. The ACRS reserves judgment concerning the final design until the required performance information is presented and has been adequately reviewed and approved.

A suitable preoperational vibration testing program should be employed for the primary system. Also, attention should be given to the development and utilization of instrumentation for in-service monitoring for excessive vibration in addition to monitoring for loose parts in the primary system.

The Committee recommended in its report of September 10, 1973, on acceptance criteria for ECCS, that significantly improved ECCS capability should be provided for reactors filing for construction permits after January 7, 1972. The Beaver Valley Unit No. 2 is in this category. The Committee expects that the 17x17 fuel-rod array will be capable of reducing the potential for high clad temperatures in postulated loss-of-coolant accidents. The Committee also believes that the addition of an upper head injection system to the ECCS may prove to be a significant further improvement and, if studies show this to be true, the inclusion of such a system would be a desirable addition to this plant.

The containment for Beaver Valley Unit No. 2, like that of Unit No. 1, is a subatmospheric design incorporating a steel-lined reinforced concrete vessel and a Supplementary Leak Collection and Release System to better control potential leakage. Evaluation is continuing of the containment peak

pressure and subcompartment differential pressure during accident conditions. This evaluation should be resolved in a manner satisfactory to the Regulatory Staff.

The Committee recommends that further attention be given by the Applicant and the Regulatory Staff to those provisions of Regulatory Guide 1.17 which address design features to prevent or mitigate the consequences of acts of sabotage.

Generic problems relating to large water reactors have been identified by the Regulatory Staff and the ACRS and discussed in the Committee's report dated December 18, 1972. Those problems, and additional generic problems identified in more recent ACRS reports, should be dealt with appropriately by the Regulatory Staff and the Applicant.

The ACRS believes that the above items can be resolved during construction and that, if due consideration is given to these items, the Beaver Valley Power Station Unit No. 2 can be constructed with reasonable assurance that it can be operated without undue risk to the health and safety of the public.

Sincerely yours,

H. G. Mangelsdorf

H. G. Mangelsdorf
Chairman

References Attached

References

1. Preliminary Safety Analysis Report for Beaver Valley Power Station Unit 2 (PSAR) and Amendment No. 1 to the PSAR, November 6, 1972

2. Amendments Nos. 2 through 11 to the PSAR; February 27, 1973 through October 19, 1973

3. Safety Evaluation Report by the Directorate of Licensing, U. S. Atomic Energy Commission (DRL), in the Matter of Beaver Valley Power Station Unit 2, dated November 9, 1973

4. Letter, dated May 25, 1973, DRL to Duquesne Light Company stating DRL positions regarding various safety related topics and requesting additional information required to complete the Beaver Valley Unit 2 review

5. Letter, dated June 15, 1973, DRL to Duquesne Light Company stating DRL positions regarding various safety related topics and requesting additional information required to complete the Beaver Valley Unit 2 review