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

June 11, 1975

Honorable William A. Anders
Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: REPORT ON WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR POWER STATIONS WNP 1 and 4

Dear Mr. Anders:

At its 182nd meeting, June 5-7, 1975, the Advisory Committee on Reactor Safeguards completed its review of the application of the Washington Public Power Supply System for permission to construct the Washington Nuclear Power (WNP) Stations 1 and 4. These plants were previously considered at a Subcommittee meeting on May 16, at Richland, Washington, and the site was visited on May 15, 1975. During its review the Committee had the benefit of discussions with representatives of Washington Public Power Supply System and consultants, the Babcock and Wilcox Company (B&W), and the NRC Staff. The Committee also had the benefit of the documents listed.

The WNP Station site is located on the Energy Research and Development Administration's Hanford Reservation in Benton County, Washington, eight miles north of Richland, Washington, the nearest population center (1970 population 26,290). The exclusion radius is 6400 feet. The low population zone is four miles in radius. In 1970 there were 38 residents within the low population zone. The Fast Flux Test Facility and WPPSS Hanford-2 (WNP-2) Reactor are the only installations within the low population zone.

The safe shutdown earthquake is 0.25g horizontal acceleration at the foundations. The operating basis earthquake is 0.125g.

For shutdown heat removal the plant has two sources of water, the operating water supply from a river intake on the Columbia River, which is not Seismic Category I, and Seismic Category I spray ponds designed to provide a 30 day emergency water supply for each unit.

The nuclear steam supply system supplied by B&W is identical in design to that of Bellefonte Nuclear Plant,Units 1 and 2, previously reported on in the ACRS letter of July 16,1974. The design operating power is 3600 MW(t). The reactor core will use 205 B&W Mark C (17x17) fuel assemblies. The Committee recommended in its report of January 7, 1972, on Interim Acceptance Criteria for ECCS, that significantly improved ECCS capability should be provided for reactors for which construction permit applications were filed after January 7, 1972. This position was repeated in its report of September 10, 1973, on Acceptance Criteria for ECCS. The Mark C fuel assemblies are responsive to this recommendation. The new fuel assemblies will be operated at lower linear heat generation rates and are expected to yield greater thermal margins for fuel design limits and improved safety margins in the analyses of the loss of coolant accidents. An extensive program has been initiated for determining the mechanical and thermal/hydraulic characteristics of the new fuel assemblies. A program of control rod tests also is proposed, including testing of trip times and control rod wear. Should modifications become necessary as a result of the control rod tests, retesting of the entire control rod drive would be undertaken. While many of the details of the proposed design are available, complete analyses of the performance of the Mark C fuel are not yet available, and the NRC Staff has not completed its review. The Committee reserves judgment concerning the final design until the required performance information is presented and has been reviewed. The Committee recommends that the applicant continue studies directed at further improvement in the capability and reliability of the ECCS. The Committee wishes to be kept informed.

The NRC Staff has determined that the ECCS performance evaluation for WNP Stations 1 and 4 meets the Interim Acceptance Criteria of June 1971. In addition the Applicant's ECCS performance evaluation, using an approved B&W model, to show compliance with the Final Acceptance Criteria of 10CFR50.46 and Appendix K, must be reviewed and approved by the NRC Staff. The Committee wishes to be kept informed.

The applicant proposes to utilize a new reactor protection system designated as RPS-II. The system, a hybrid using both analog and digital techniques, represents an evolution from the analog system, RPS-I, currently in use in the Oconee reactors. The applicant has proposed a series of environmental, reliability, and in situ tests for qualification of this system prior to

its use in Bellefonte Units 1 and 2, the lead plant. This matter should be resolved in a manner satisfactory to the NRC Staff.

A problem considered to be generic by the ACRS is the environmental and seismic qualifications of Class I instrumentation and electrical equipment. An important aspect is that of defining what represents an acceptable aging procedure for multi-component systems. This issue should be resolved by the applicant and the NRC Staff. The Committee wishes to be kept informed.

A question has arisen concerning loads on the vessel support structure for certain postulated loss-of-coolant accidents in pressurized water reactors. This matter should be resolved for the WNP 1&4 Plants, in a manner satisfactory to the NRC Staff.

Generic problems relating to large water reactors have been identified by the NRC Staff and the ACRS and discussed in the Committee's report dated March 12, 1975. These problems should be dealt with appropriately by the NRC Staff and the applicant.

The Advisory Committee on Reactor Safeguards believes that the items mentioned above can be resolved during construction and that, if due consideration is given to the foregoing, the Washington Public Power Supply System Plants WNP 1 and 4, can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public.

Sincerely yours,

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William Kerr
Chairman

References Attached.

References

1. Preliminary Safety Analysis Report, Washington Nuclear Projects 1 and 4. (Including Amendments 1 thru 17).

2. "Safety Evaluation of the Washington Nuclear Projects 1 and 4", NUREG - 75/036, Docket Nos. 50-460, 50-513, May, 1975, ONRR, U. S. Nuclear Regulatory Commission, Washington, D. C.

3. WPPSS Letter dated May 14, 1975, J. J. Stein to Angelo Giambusso, DRL, ONRR, USNRC, Subject: WPPSS Nuclear Projects Nos. 1 and 4, On-site Meteorological data.

4. Supplement 1 to the Safety Evaluation Report, Letter from Voss A. Moore, Asst. Dir. for Light Water Reactors, Group 2 Division of Reactor Licensing, USNRC to Dr. William Kerr, Chairman ACRS dated June 2, 1975.