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

October 16, 1975

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

Subject: REPORT ON THE STERLING POWER PROJECT NUCLEAR UNIT 1

Dear Mr. Anders:

During its 186th meeting, October 9-11, 1975, the Advisory Committee on Reactor Safeguards reviewed the application of Rochester Gas and Electric Corporation for a permit to construct the Sterling Power Project, Unit No. 1. On September 24, 1975, the site was visited and a Subcommittee meeting was held in Sterling, New York to review site-related matters. The "Standardized Nuclear Unit Power Plant System" (SNUPPS) to be utilized at the Sterling site, and at three other plant sites, was reviewed at Subcommittee meetings held at Washington, D. C. on August 19, 1975, and at Emporia, Kansas on September 26, 1975, and at the 185th and 186th meetings of the Committee. During its reviews, the Committee had the benefit of discussions with the Nuclear Regulatory Commission (NRC) Staff and representatives of the applicant, the Westinghouse Electric Corporation and the Bechtel Corporation. The Committee also had the benefit of the documents listed below.

The Sterling unit will be located on a 2800-acre site of partially wooded rural land located on the southeastern shore of Lake Ontario, approximately 7 miles southwest of Oswego, New York the nearest population center (1970 population: 23,844). The minimum exclusion area boundary distance from the center of the reactor building is 1190 meters. Part of the exclusion area extends into Lake Ontario. In the event the applicant is unable to gain control over those three acres of shore land within the exclusion zone which he does not now own, the minimum exclusion area boundary distance will be reduced to 945 meters. NRC Staff calculations indicate that the applicant can meet the siting dose guidelines at this reduced distance without additional engineered safety features.

less for 17x17 assemblies than for a 15x15 array, the Committee believes that the applicant should continue studies that are responsive to the Committee's September 10, 1973 report. If studies establish that significant further ECCS improvements can be achieved, consideration should be given to incorporating them into this unit.

The part of the exclusion zone which extends into Lake Ontario, including the points of intake and discharge of emergency service cooling water, will be under control of the United States Coast Guard. The Committee recommends that the NRC Staff and the applicant give particular attention to assure proper coordination between the applicant and the Coast Guard appropriate to protection of the emergency equipment.

The Committee believes that the applicant and the NRC Staff should continue to review the Sterling plant design for features that could reduce the possibility and consequences of sabotage.

The Committee recommends that the NRC Staff and the applicant review the design features that are intended to prevent the occurrence of damaging fires and to minimize the consequences to safety-related equipment should a fire occur. This matter should be resolved to the satisfaction of the NRC Staff. The Committee wishes to be kept informed.

Generic problems relating to large water reactors are 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 and the items mentioned in its Callaway letter, which are relevant to the Sterling application, can be resolved during construction and that if due consideration is given to the foregoing, the Sterling Power Project Nuclear Unit No. 1 can be constructed with reasonable assurance that it can be operated without undue risk to the health and safety of the public.

Sincerely yours,

W. Kerr
Chairman

The SNUPPS will utilize the RESAR-3 Consolidated Version, four-loop pressurized water nuclear reactor with a core power output of 3411 MW(t). This design is similar to that utilized at the Comanche Peak Steam Electric Station, Units 1 and 2, reported on by the Committee in its letter of October 18, 1974. The Committee's continuing review of the SNUPPS was reported on in its Callaway letter of September 17, 1975, and is further reported on in this letter. It is anticipated that the Committee's report on the remainder of its review of SNUPPS will be included in its report on the Tyrone application.

The NRC Staff has identified several items in its review of the Sterling application which are not yet completed. The Committee recommends that any outstanding issues which may develop in the course of completing these reviews be dealt with in a manner satisfactory to the NRC Staff. The Committee wishes to be kept informed on the resolution of the following items:

1. The emergency core cooling system evaluation in compliance with the Final Acceptance Criteria.

2. The analyses of the effects of anticipated transients without scram.

3. The evaluation of the plant design to meet the requirements of the new Appendix I of 10 CFR Part 50.

The RESAR-3 Consolidated Version nuclear design utilizes the Westinghouse 17x17 fuel assembly. Westinghouse has identified an integrated test program to confirm the safety margins associated with this design, which it plans to complete late this year. The RESAR-3 reactor core design has been calculated by Westinghouse to be stable against radial xenon oscillations. Westinghouse has agreed to verify this stability in a startup physics test for a 193 fuel assembly core similar to SNUPPS. The Committee will continue to review these matters as appropriate documentation is submitted.

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 for which construction permit requests are filed after January 7, 1972. The SNUPPS design is in this category. These units will use the 17x17 fuel assemblies similar to those to be used in Comanche Peak Steam Electric Station, Units 1 and 2. Although calculated peak clad temperatures in the event of a postulated LOCA are

REFERENCES

1. SNUPPS Preliminary Safety Analysis Report with Revisions 1 through 10 and the Sterling Site Addendum Report with Revisions 1 through 11.

2. RESAR-3 Consolidated Version, Westinghouse Reference Safety Analysis Report with Amendments 1 through 6.

3. Safety Evaluation Report, NUREG 75/082 related to the Construction of the Sterling Power Project, Nuclear Unit No. 1, Docket No. STN 50-485, September, 1975.

4. Resolution by the Town of Sterling Town Board, dated May 12, 1975.

5. Letter dated September 17, 1975, from Ms. Sue Reinert, Ecology Action of Oswego.