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

May 12, 1971

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON FORT ST. VRAIN NUCLEAR GENERATING STATION

Dear Dr. Seaborg:

At its one hundred thirty-third meeting on May 6-8, 1971, the Advisory Committee on Reactor Safeguards completed its review of the application by the Public Service Company of Colorado for an operating license for its Fort St. Vrain Nuclear Generating Station. This project was also considered at Subcommittee meetings on March 12-14, 1969 at the site and at various manufacturing facilities; July 16, 1970, and March 10, 1971, at the site; and May 4, 1971 in Bethesda, Maryland. During its review, the Committee had the benefit of discussions with representatives and consultants of the Public Service Company of Colorado, Gulf General Atomic, Inc., and the AEC Regulatory Staff, and of the documents listed below. The Committee reported the results of its construction permit review to you in a letter dated May 15, 1968.

The Fort St. Vrain Station is located about 35 miles north of Denver, Colorado. The high-temperature gas-cooled reactor is moderated with graphite and cooled with helium. The prestressed concrete reactor vessel, in which the entire primary system is contained, is the first of its kind in the United States.

Emergency on-site power for the plant is supplied by two diesel-generator sets, each capable of supplying the power needed for the engineered safety features and the safe shutdown cooling system. Each generator is driven by two diesel engines connected in tandem to the generator drive shaft. Since this arrangement has not been used previously in connection with a nuclear plant, the Committee believes that the applicant should provide data to demonstrate that the reliability of the system is comparable to that of on-site power systems provided in other nuclear plants. This reliability should be demonstrated to the satisfaction of the Regulatory Staff before a significant inventory of fission products has been accumulated from operation of the reactor.

The safe shutdown cooling system utilizes, for the most part, equipment that is used also in the normal operation of the plant, suitably modified or augmented to provide the redundancy and reliability appropriate to engineered safety features. The Committee believes that procedures should be developed to test periodically all valves and interlock circuits not used in normal operation. These tests should be made at least twice a year.

The applicant is making a complete audit of all circuit installations for the reactor trip, engineered safety features, and safe shutdown systems to determine conformance with the criteria relating to separation and to single failures. The applicant has stated that any deficiencies found have been or will be corrected prior to initial operation.

The applicant has identified electrical equipment which is required to operate during and following postulated accidents, and has determined the environmental conditions to which this equipment will be exposed. Test procedures have been developed, and tests are being made to provide assurance that this essential equipment will perform its functions. The results of these tests should be reviewed by the Regulatory Staff prior to operation of the plant.

It is recommended that the applicant study the applicability of neutron noise analysis to the detection of anomalous core behavior in the Fort St. Vrain reactor.

The applicant should review the instrumentation available to the operators to understand and determine the course of events occurring in the unlikely event of a severe accident. He should assure himself and the Regulatory Staff that appropriate diagnostic instrumentation will remain in its operating range during postulated accidents.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above, and subject to satisfactory completion of construction and preoperational testing, there is reasonable assurance that the Fort St. Vrain Nuclear Generating Station can be operated at power levels up to 842 MWt without undue risk to the health and safety of the public.

Sincerely yours,

/s/ Spencer H. Bush

Spencer H. Bush
Chairman

References attached.

References

1. Amendments Nos. 14 - 19 to the License Application of the Public Service Company of Colorado for the Fort St. Vrain Nuclear Generating Station