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

February 6, 1971

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

Subject: REPORT ON NINE MILE POINT NUCLEAR STATION

Dear Dr. Seaborg:

During its 128th meeting, December 10-12, 1970, and its 130th meeting, February 4-6, 1971, the Advisory Committee on Reactor Safeguards reviewed the application of the Niagara Mohawk Power Corporation for an increase in the licensed power level of the Nine Mile Point Nuclear Station from 1538 MW(t) to 1850 MW(t). The application was also considered at subcommittee meetings held in Washington, D. C. on December 9, 1970, and February 2, 1971. During its review, the Committee had the benefit of discussions with representatives of Niagara Mohawk Power Corporation, the General Electric Company, the AEC Regulatory Staff, and their consultants, and of the documents listed. The Committee previously reported to you on this project on June 16, 1970.

The proposed increase in power level is based in part on favorable preoperational test results and initial operating experience, and on use of an improved heat transfer correlation for evaluation of core thermal performance. Also, the normal reactor operating pressure will be increased from 1000 to 1030 psig, and a number of minor modifications to the plant will be made.

The applicant intends to install one additional safety valve (for a total of 16) on the reactor coolant system so as to meet at 1850 MW(t) the same design criterion for pressure relief as was met at the original power level.

Two new reactor scram trips will be added, one based on turbine stop valve closure and the other based on turbine control valve high rate of closure. Both trips will be operative at all power levels above 45 percent of full power, and are provided to assure that safety limits within the core are not exceeded during a transient resulting from turbine trip with assumed failure of the steam bypass valves to open.

Performance of the emergency core spray cooling system has been re-evaluated for 1850 MW(t) operation. The applicant proposes to revise time settings on the emergency power system so as to reduce core spray initiation time from 60 seconds to 35 seconds. With this change, and in light of results from the Commission's FLECHT Program, the core spray system appears acceptable for the proposed higher power operation. However, the Committee believes the applicant should continue to seek refinement in the models for evaluation of peak clad temperatures reached during postulated loss of coolant accidents. Also, confirmatory analyses currently underway by the Regulatory Staff should continue to be pursued.

Doses calculated for design basis accidents have also been reexamined for 1850 MW(t) operation. The applicant proposes to reduce the allowable containment leak rate from 1.6 to 1.5 percent per day (at 22 psig test pressure) and to maintain unchanged the existing primary coolant activity limits. With these provisions, the calculated doses based on the higher power level are no higher than those originally calculated for the stretch power rating of 1779 MW(t), and are within the 10 CFR 100 guidelines.

Further study by the applicant has indicated that adequate integrity of the spent fuel pool may not be assured in the postulated event of dropping of a fuel cask into the pool. Some possible corrective measures have been identified, and the applicant states that appropriate modifications to the plant will be made. The Regulatory Staff should follow this matter and assure implementation on an appropriate time scale.

The applicant has developed improved plans for in-service inspection of the main steam lines both inside and outside of containment. For piping beyond the second isolation valve, two welds in each pipe will be completely inspected by ultrasonic testing each year, with every such weld being so inspected at least once per eight years. This program will be initiated at the next plant outage.

Analyses by the applicant indicate that the biological shield surrounding the reactor can withstand satisfactorily the effects of failure of a reactor vessel safe end. The Regulatory Staff agrees with this conclusion.

The applicant has studied improved leak detection methods for use within the containment, and plans to supplement the existing systems. In addition to the sump accumulation rate and dew point measurement

systems already in operation, he will install an atmospheric radioactivity monitoring system. This system will recirculate a portion of the containment atmosphere through an external loop and an air monitor. Installation is expected to be completed within a few months.

The Committee wishes to re-emphasize its belief that additional means for assuring continued reactor pressure vessel integrity, including possible improvement in access to the vessel surfaces for augmentation of in-service inspection, should be actively studied and implemented to the degree practical.

The applicant is actively studying means for control of buildup of hydrogen in the containment which might follow in the unlikely event of a loss of coolant accident. The Committee wishes to be kept informed of the resolution of this matter.

The applicant is continuing to study further means of preventing common failure modes from negating reactor scram action, and of design features to make tolerable the consequences of failure to scram during anticipated transients. The Committee wishes to be kept informed of the resolution of this matter.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above and in its reports of April 17, 1969 and June 16, 1970, there is reasonable assurance that the Nine Mile Point Nuclear Station can be operated at power levels up to 1850 MW(t) without undue risk to the health and safety of the public.

Sincerely yours,

Spencer H. Bush

Spencer H. Bush
Chairman

References - Nine Mile Point Nuclear Station

1. Niagara Mohawk Power Corporation Petition Requesting Amendment of License dated April 20, 1970, with Technical Supplement to Increase Power Level.

2. First through Fifth Addenda to Technical Supplement to Increase Power Level.

3. Niagara Mohawk Power Corporation letter dated November 23, 1970, forwarding corrections to Second Addendum to Technical Supplement to Petition to Increase Power Level.