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

November 18, 1976

Honorable Marcus A. Rowden
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: SUPPLEMENTAL REPORT ON MIDLAND PLANT UNITS 1 AND 2

Dear Mr. Rowden:

In response to a request from Chairman D. M. Head of the Midland Atomic Safety and Licensing Board, the Advisory Committee on Reactor Safeguards has reviewed the record pertaining to the Midland Plant Units 1 and 2 as reported in its letter of June 18, 1970. The items listed below are those items referred to in its paragraph on "other problems related to large water reactors" which had been previously "identified by the Regulatory Staff and the ACRS," and which the Committee considered applicable to the Midland Plant. Following each item, the Committee has included an amplifying statement based on ACRS reports on other similar commercial nuclear reactor power plants which had been reviewed during the months prior to the Committee's review of the Midland Plant. Copies of the referenced ACRS reports are attached.

1. Separation of protection and control instrumentation - The Applicant proposed using signals from protection instruments for control purposes. The Committee believed that control and protection instrumentation should be separated to the fullest extent practicable, and recommended that the Applicant explore further the possibility of making safety instrumentation more nearly independent of control functions. (Three Mile Island, 1/17/68).

2. Vibration and loose parts monitoring - The Committee recommended that the Applicant study possible means of in-service monitoring for vibration or the presence of loose parts in the reactor pressure vessel as well as in other portions of the primary system, and implement such means as found practical and appropriate. (Palisades, 1/27/70).

3. Potential for axial xenon oscillations - The Applicant was continuing studies on the possible use of part-length rods for stabilizing potential xenon oscillations. Solid poison shims were to be added to the fuel elements if necessary to make the moderator temperature coefficient more negative at the beginning of core life. (Three Mile Island, 1/17/68).

4. The behavior of core-barrel check valves in normal operation - The Applicant had proposed core-barrel check valves between the hot leg and the cold leg to insure proper operation of the ECCS under all circumstances. Analytical studies had indicated that vibrations would not unseat these valves during normal operation. The Committee desired that this point be verified experimentally. (Three Mile Island, 1/17/68).

5. The potential consequences of fuel handling accidents - The Committee believed that further study was required with regard to potential releases of radioactivity in the unlikely event of gross damage to an irradiated subassembly during fuel handling and the possible need for a charcoal filtration system in the fuel handling building. The Committee recommended that this matter be resolved in a manner satisfactory to the Regulatory Staff. (Hutchinson Island, 3/12/70).

6. The effects of blowdown forces on core internals - The Committee recommended that the Regulatory Staff review the effects of blowdown forces on core internals and the development of appropriate load combinations and deformation limits. (Three Mile Island, 1/17/68).

7. Assurance that LOCA-related fuel rod failures will not interfere with ECCS function - The Committee desired to emphasize the importance of work to assure that fuel-rod failures in loss-of-coolant accidents will not affect significantly the ability of the ECCS to prevent clad melting. (Three Mile Island, 1/17/68).

8. The effect on pressure vessel integrity of ECCS induced thermal shock - The Committee recommended that the Regulatory Staff review analyses of possible effects, upon pressure-vessel integrity, arising from thermal shock induced by ECCS operation. (Oconee, 7/11/67).

9. Environmental qualification of vital equipment in containment - The Committee recommended that attention be given to the long-term ability of vital components, such as electrical equipment and cables, to withstand the environment of the containment in the unlikely event of a loss-of-coolant accident. (Palisades, 1/27/70).

10. Instrumentation to follow the course of an accident - This item related to the development of systems to control the buildup of hydrogen in the containment, and of instrumentation to monitor the course of events in the unlikely event of a loss-of-coolant accident. (Hutchinson Island, 3/12/70).

11. Improved quality assurance and in-service inspection of primary system - The Committee continued to emphasize the importance of quality assurance in fabrication of the primary system as well as inspection during service life, and recommended that the Applicant implement those improvements in quality practical with current technology. (Oconee, 7/11/67).

Sincerely yours,

Dade W. Moeller

Dade W. Moeller
Chairman

Attachments:

1. Request from Chairman D. M. Head, AS&LB, dated 10/14/76
[*] 2. Report on Midland Plant Units 1 & 2, dated 6/18/70 — [*] See pages 943-948, Vol. II
3. Report on Hutchinson Island Unit No. 1, dated 3/12/70 — See pages 790-793, Vol. II
4. Report on Palisades Plant, dated 1/27/70 — See pages 1188-1191, Vol. II
5. Report on Three Mile Island Nuclear Station Unit 1, dated 1/17/68 — See pages 1637-1639, Vol. III
6. Report on Oconee Nuclear Station, Units 1, 2, and 3, dated 7/11/67 — See pages 1154-1156, Vol. II