

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

September 23, 1970

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

Subject: SUPPLEMENTAL REPORT ON MIDLAND PLANT UNITS 1 AND 2

Dear Dr. Seaborg:

At its 125th meeting, September 17-19, 1970, the Advisory Committee on Reactor Safeguards completed its review of amendments to the application by the Consumers Power Company to construct the Midland Plant Units 1 and 2. This project was the subject of a report to you dated June 18, 1970. The review was reopened in consideration of additional submittals by the applicant proposing an increase in the design pressure of the containment structure and the addition of a system of reboilers for the generation of steam to be exported to the Dow Chemical Company. These changes were considered at a Subcommittee meeting held in Washington, D. C. on September 14, 1970. The Committee had the benefit of discussion with representatives and consultants of the Consumers Power Company, Babcock and Wilcox Company, Bechtel Corporation, Dow Chemical Company, and the AEC Regulatory Staff. The Committee also had the benefit of the documents listed.

The applicant has revised downward his estimate of the free volume and internal surface area of the containment structure and has revised upward to 60 psig the calculated peak containment pressure reached in the unlikely event of a loss of coolant accident. The containment design pressure has been raised to 67 psig to provide a suitable margin above the peak accident pressure, and an increased number of prestressing tendons will be provided in the containment structure to accommodate the increased pressure. No changes in the structural design criteria are proposed. The Committee believes these changes are satisfactory.

In the earlier design the export steam was taken from the secondary side of the main steam generators and might contain traces of radioactive leakage from the primary system. The applicant now proposes to use this steam in a system of shell and tube reboilers to generate tertiary steam for export to the Dow Chemical Company. Secondary steam condensate from the reboilers is returned to the turbine condenser hot well while feed water for the tertiary side of the reboilers is supplied by condensate from the tertiary steam which is supplemented as required by

demineralized water from Lake Huron. Blowdown from the reboilers is normally routed to the Dow waste treatment system for disposal to the river but may be sent to the radwaste system of the nuclear plant if secondary to tertiary leakage is detected.

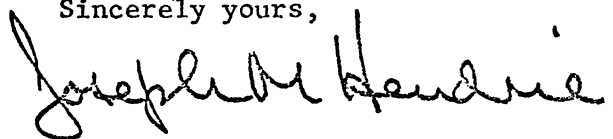
The applicant proposes to install monitoring and analytical facilities to determine the levels of radioactivity in the export steam as described in the June 18, 1970, letter; these include an on-line analyzer for gamma activity and sensitive low level beta counting equipment for analysis of samples of the condensed steam. The applicant expects that the tertiary steam delivered to Dow will contain no more radioactivity than the treated make-up water from Lake Huron. Recycling tertiary steam condensate may result in some slight concentration of naturally occurring radioactivity in the reboiler system but is not expected to effect the validity of the comparison between steam and make-up water radioactivity as a sensitive indication of leakage in the reboilers. If detectable leakage occurs, corrective action will be taken in the plant or delivery of export steam will be terminated.

The applicant agrees to demonstrate the analytical equipment and procedures in development programs to be carried forward during construction of the Midland Plant.

The Committee believes that the proposed system of reboilers will provide substantial additional assurance that leakage of primary system radioactivity into the export steam can be maintained at an extremely low and insignificant level and that the export steam can be maintained essentially at natural background levels. The detailed procedures for monitoring and control of the reboiler system should be developed during construction in a manner satisfactory to the Regulatory Staff. The Committee wishes to be kept informed.

The Committee believes that the above items can be resolved during construction and if due consideration is given to these items and to the items referred to in its June 18, 1970 report, the nuclear units proposed for the Midland Plant can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public.

Sincerely yours,



Joseph M. Hendrie
Chairman

References

- 1) Amendments 14-18 to the License Application