

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

June 5, 1981

TELEPHONE: AREA 704
373-4083

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: McGuire Nuclear Station
Docket Nos. 50-369, 50-370



Dear Mr. Denton:

The following comments are provided in response to Mr. Robert L. Tedesco's letter of May 26, 1981 concerning the conclusions of the Reactor Safety Study Methodology Applications Program evaluation of Sequoyah Unit 1.

Duke Power Company supports the use of probabilistic analysis as an aid in evaluating the level of safety associated with nuclear power plants, and particularly in the application of available resources for improving safety where they can be of the most benefit. However, reasonable application of these techniques requires a meaningful standard for comparison. Considering the level of details in the Sequoyah RSSMAP Study, we do not believe that studies such as the Sequoyah RSSMAP provide a good de facto standard. Therefore, we do not feel that the comparison of McGuire to the conclusions reached in RSSMAP is particularly appropriate in identifying necessary corrective actions. Nevertheless, we have reviewed each of the conclusions contained in pages 4-8 and 4-9 of the Sequoyah RSSMAP report with respect to the McGuire plant, and our assessment is provided in the attachment to this letter.

Very truly yours,

William O. Parker, Jr.
William O. Parker, Jr.

GAC:pw
Attachment

cc: Ms. M. J. Graham
Resident Inspector
McGuire Nuclear Station

Mr. James P. O'Reilly, Director
U.S. Nuclear Regulatory Commission
Region II

Boo's 1/1

P

8106090333

McGUIRE NUCLEAR STATION

ASSESSMENT OF SEQUOYAH RSSMAP CONCLUSIONS WITH RESPECT TO McGUIRE NUCLEAR STATION

RSSMAP CONCLUSION

An important accident sequence occurring for the Sequoyah plant results from the potential for blockage or closure of the drains between the upper and lower compartments. This causes a common-mode failure of the ECRS and CSRS when the sump runs dry (sequences S₁HF and S₂HF). The probability of these sequences could be reduced by improved checking procedures and improved fault detection capabilities.

COMMENTS

The McGuire containment differs from that of Sequoyah in this respect. At McGuire there are six drain lines, rather than two. Any two of the drain lines provide sufficient flow path between the compartments for successful ECR and CSR. Therefore, there is a significantly lower likelihood that failure of recirculation for McGuire will result from blockage of the drain lines. In addition, sufficient administrative controls exist to provide assurance against the common-mode failure due to leaving the drain line valves closed following refueling. These controls include the following:

Each drain line contains one valve which is normally locked open.

Double verification that each of the valves is open is performed following refueling operations.

Confirmation of the above double verification is required by the precritical valve alignment verification procedure.

These lines are checked for indications of blockage during performance of the periodic surveillance procedure.

RSSMAP CONCLUSION

Failure of the ECRS alone caused by component failures other than the drains also results in some important accident sequences.

COMMENTS

This conclusion is not surprising for most plants in light of the importance of ECRS function during LOCA accidents. A detailed analysis would be required to quantify the ECRS failure probability, to identify important contributors to its failure probability, and to investigate the system's importance in dominant accident sequences.

RSSMAP CONCLUSION

Sequence V, in which check valve failures cause the high-pressure primary coolant to fail the low-pressure piping outside containment, remains an important sequence for Sequoyah. This sequence could be improved by a more strategic testing procedure of the check valves over the limited testing capability which now exists.

COMMENTS

For McGuire periodic leak testing to verify the integrity of both the inboard and outboard check valves in the LPIS is performed, as required by the Technical Specifications. Thus, the likelihood of occurrence of the Event V sequence at McGuire is significantly lower than that reported in the Sequoyah RSSMAP report, which is apparently based on monitoring the leakage of the outboard check valve only.

RSSMAP CONCLUSION

Unlike larger containments, core melting caused by failure of ECIS or ECRS fail the lower pressure, smaller ice condenser containment by overpressure even though the containment cooling system continues to operate properly. The analysis of accident processes by Battelle Columbus Laboratories revealed that the smaller containment pressure and volume design would not withstand the pressure exerted by the noncondensable gases generated in the core melt-down accidents. (This result was similar to the RSS findings for the RSS BWR design.)

COMMENTS

As documented in previous communications with NRC (refer to my letters of November 17, 1980 and February 17, 1981 to Harold R. Denton), Duke Power Company has expended a significant effort in examining the causes and effects of generation of noncondensable gases during reactor accidents. Those letters also provide details of measures which have been taken for prevention and mitigation of such events. In addition, the McGuire containment has been evaluated to have a substantially higher functional capability (67.5 psig for McGuire versus 30 psig reported for Sequoyah).

RSSMAP CONCLUSION

Sequence TMLB '1-6, which was important for the Surry plant as analyzed in the RSS, does not appear to be as significant to risk for Sequoyah due to the lower unavailability of on-site ac power.

COMMENTS

A detailed review of the McGuire system would be required to comment on the applicability of this conclusion to McGuire; however, since this conclusion pertains to a positive feature of the Sequoyah plant, a detailed evaluation of McGuire is not deemed necessary.

RSSMAP CONCLUSION

Failure of the containment cooling system causing core meltdown following a small LOCA (the S₂C sequence in the RSS) does not appear to lead to core meltdown at Sequoyah due to the difference in sump water temperature at the time of containment failure.

COMMENTS

The containment heat removal capability and presence of the ice condenser are expected to result in a similar conclusion for McGuire.