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DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards comments in response to SA Varga 810506 ltr re reactor safety study methodology applications program evaluation of Sequoyah 1.Based on plant design similarities, results applicaole to Cook Units 1 & 2.

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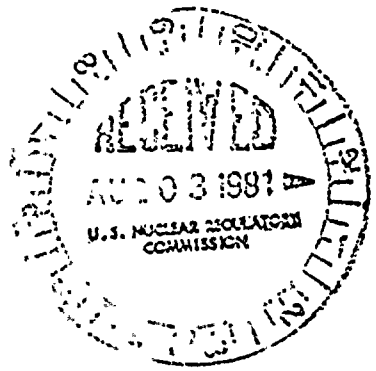
July 29, 1981
AEP:NRC:0570

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
RSSMAP Analysis of Sequoyah Unit No. 1 as it
Applies to the Donald C. Cook Nuclear Plant



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

Dear Mr. Denton:

This letter and its attachment respond to Mr. S. A. Varga's letter of May 6, 1981 concerning the Reactor Safety Study Methodology Applications Program (RSSMAP) evaluation of Sequoyah Unit No. 1. Based on Plant design similarities we believe that the results of the RSSMAP analysis are generally applicable to the Cook Plant. We have reviewed the conclusions of the Sequoyah RSSMAP with respect to their applicability to the Cook Plant and our comments are provided in the attachment to this letter.

Very truly yours,

R. S. Hunter
Vice President

cc: John E. Dolan - Columbus
R. W. Jurgensen
G. Charnoff
R. C. Callen
D. V. Shaller - Bridgman
Joe Williams, Jr.
Region III Resident Inspector at Cook Plant

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ATTACHMENT TO AEP:NRC:0570

1. 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 S_1HF and S_2HF). The probability of these sequences could be reduced by improved checking procedures and improved fault detection capabilities.

COMMENTS

The Cook Plant design includes three drains from the refueling cavity to the lower compartments (Sequoyah is reported in the RSSMAP to have two). The drain lines at Cook are blanked-off (not valved closed) during refueling operations and verified to be open and free of debris prior to criticality and during periodic containment inspections.

The presence of lower volume containment sprays at the Cook Plant would also effectively increase the time to sump "dry-out" in the unlikely event that the drains were to become blocked following a LOCA.

2. RSSMAP CONCLUSION

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

COMMENTS

The ECRS is an important function not only for the Cook Plant but for most plants and the conclusion of the RSSMAP study logically reflects this fact. The relative importance of ECRS as a dominant accident sequence and the quantification of the ECRS failure probability may be somewhat different depending on individual plant designs.

3. 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

The significant event "V" configuration in the Cook Plant is in the normal Residual Heat Removal (RHR) return line to the reactor coolant system. Both the inboard and outboard check valves are leak rate tested in accordance with plant technical specifications after each refueling outage, whenever the plant has been in COLD Shutdown

for 72 hours or more and if leakage testing has not been performed in the previous nine months, and prior to returning the valve to service following maintenance or replacement work on the valve. The maximum allowable leakage from any of these check valves is one gpm. This testing effectively reduces the probability of an event "V" sequence at the Cook Plant.

4. RSSMAP CONCLUSION

Unlike larger containments, core melting caused by failure of ECIS or ECRS fail the lower pressure, smaller ice condenser containment by over-pressure 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 noncondensible gases generated in the core meltdown accidents. (This result was similar to the RSS findings for the RSS BWR design).

COMMENTS

The design pressure of the Cook Plant containment is 12.0 psig. As reported in Attachment No. 3 to our AEP:NRC:00500E submittal dated July 2, 1981, the median limiting pressure capacity of the Cook Plant containment (based on actual material properties) is estimated to be 57.8 psig.

5. RSSMAP CONCLUSION

Sequence TMLB'-δ, 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 lower unavailability of on-site ac power.

COMMENTS

The RSSMAP states that the load sequencing feature at Sequoyah was estimated to result in a decrease of at least one order of magnitude in the failure probability of the diesel generators (DGs), when compared to Surry. The Cook DGs also utilize a load sequencing feature and a similar reduction in failure probability should apply to the Cook Plant as well.

6. RSSMAP CONCLUSION

Failure of the containment cooling system causing core meltdown following a small LOCA (the S_2C 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 reduced sump water temperature noted for Sequoyah should also apply to the Cook Plant. The heat capacity of the ice condenser itself should significantly reduce the likelihood of a sequence involving the "C" events.