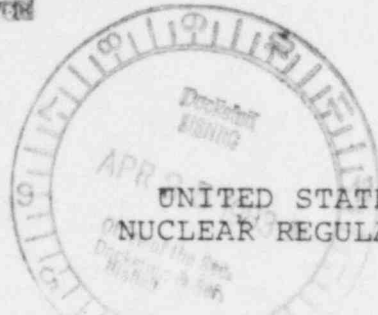


RELATED CORRESPONDENCE



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
COMMONWEALTH EDISON COMPANY)	Docket No. 50-454-OLA
)	50-455-OLA
(Byron Station, Units 1 and 2))	

TESTIMONY OF LAWRENCE D. BUTTERFIELD
CONCERNING STEAM GENERATOR
TUBE INTEGRITY
(COMMONWEALTH EDISON'S POSITION WITH RESPECT
TO THE FLOW-INDUCED VIBRATION PHENOMENON)

Submitted on behalf of
the Applicant, Commonwealth Edison
Company, in Response to DAARE/SAFE
Contention 9c and League Contention 22

April 21, 1983

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SUMMARY

The testimony of Lawrence D. Butterfield, Jr. addresses the position of Commonwealth Edison with respect to Westinghouse Electric Corporation's proposed modifications to the Byron steam generators. The proposed modifications would minimize tube wear due to flow-induced vibration.

Mr. Butterfield is Chairman of the Steering Committee for the Counterflow Steam Generator Owners' Review Group. This group is reviewing and evaluating the modifications proposed by Westinghouse for the D4 and D5 steam generators. Mr. Butterfield describes the nature of the modifications to be incorporated into the Byron steam generators, indicates the schedule for implementation of the modifications and offers his opinion concerning their efficacy. On this latter point, Mr. Butterfield states that the steam generator tubes, if modified as proposed by Westinghouse, will not experience significant tube wear due to the flow-induced vibration phenomenon.

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- Q.1. State your name, address and present occupation.
- A.1. My name is Lawrence D. Butterfield, Jr. My business address is P.O. Box 767, Chicago, Illinois 60690. I am employed by Commonwealth Edison Company as a Section Engineer in the Station Nuclear Engineering Department.
- Q.2. State your educational background and professional work experience.
- A.2. I graduated from the University of Florida in 1960, with a Bachelors Degree in Electrical Engineering. Upon graduation, I worked for the Nuclear Engineering Department of the University of Florida, where I eventually became the supervisor of the University of Florida Training Reactor and held an NRC Senior Reactor Operator's license. During my six years of

employment with the University of Florida, I received a Master of Science Degree in Nuclear Engineering. Since coming to Illinois, I have become a registered Professional Engineer.

In 1966, I joined Commonwealth Edison as a member of the Technical Staff at Dresden Station. Since that time, I have had assignments at Dresden during the startup of Units 2 and 3 and as the Administrative Assistant to the Superintendent. Other company assignments have included positions in the Nuclear Fuel Services Department where fuel management and plant transient analyses are reviewed or performed, two and a half years in the Nuclear Licensing Department, and two years as the Zion Project Engineer in the Station Nuclear Engineering Department.

While I was the Zion Project Engineer, I was heavily involved in the review of the repair of a Zion Station Steam Generator which was damaged on the primary side due to a loose part. I was involved in reviewing the techniques used to repair the steam generator, evaluating the adequacy of the repair, and developing the presentation to the NRC to justify the return of the unit to power.

My present position is to direct the activities of a group of engineers responsible for improving the productivity of the operating nuclear units and to address specific problems for which there is expertise in the group.

A Counterflow Steam Generator Owners' Review Group has been formed by several utilities with D4/D5 steam generators to provide a broad based technical review of the proposed modifications to the preheater section of the steam generators to resolve the flow-induced vibration problem. Technical consultants are joining with members of the utilities to form the Technical Review Committee. I, as Chairman of the Steering Committee, monitor the progress of the Technical Review Committee and report to other members of the Steering Committee. I have attended and participated in all meetings of the Technical Review Committee. It is also my responsibility, as Commonwealth Edison's Representative, to report to the Company's management my evaluation and assessment of the technical adequacy of the modifications proposed by Westinghouse.

Q.3. Has Westinghouse recommended a modification to the Byron Plant for the purpose of minimizing tube wear

in the preheater section of the steam generators due to flow-induced vibration?

A.3. Yes. Westinghouse has recommended that Commonwealth Edison expand selected tubes in the preheater region and operate the units with about 10 percent of the feedwater flow entering the steam generator through the auxiliary feedwater nozzle. Approximately 100 tubes will be expanded at several of the tube support baffles in the preheater section. The 10 percent bypass flow to the auxiliary feedwater nozzle will be accomplished by fully opening the presently existing feedwater preheater bypass valve during power operation.

Q.4. What is the basis for your judgment that the 10 percent bypass flow can be accomplished by "fully opening" the feedwater preheater bypass valve?

A.4. The feedwater piping system has been analyzed by both Westinghouse and our Architect - Engineer and both sets of calculations agree that 10 percent bypass flow can be achieved by fully opening the feedwater preheater bypass valve. The feedwater flows will be monitored early in plant operation to assure that the design requirements are met.

Q.5. Has a schedule been established for installing the modifications to the preheater sections of the Byron steam generators.

A.5. Yes.

Q.6. What is that schedule?

A.6. The tube expansion process is scheduled to start in mid-July prior to startup of the Byron Station. Changes to the control circuitry of the feedwater preheater bypass valve and the installation of a feedwater bypass line flowmeter will also occur concurrent with the tube expansion program.

Q.7. Do you have an opinion as to whether the Westinghouse proposed modifications will minimize successfully tube wear due to flow-induced vibration?

A.7. Yes.

Q.8. What is that opinion?

A.8. Based on Westinghouse calculations and experimental data presented to Commonwealth Edison and the Counterflow Steam Generator Owners' Review Group, I believe that the Westinghouse recommended modifications will reduce flow-induced vibration in the

preheater sections of the Byron steam generators to a point where tube wear will not be significant.