

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|-----------------------------|---|---------------------------------|
| In the Matter of |) | |
| COMMONWEALTH EDISON COMPANY |) | Docket Nos. 50-254 |
| |) | 50-265 |
| (Quad Cities Station, |) | (Spent Fuel Pool Modifications) |
| Units 1 and 2) |) | |

AFFIDAVIT OF HORACE K. SHAW
ON INTERVENOR'S CONTENTION ON
FUEL CHANNEL BOWING

I. INTRODUCTION

I, Horace K. Shaw, do state as follows: I am employed by the United States Nuclear Regulatory Commission, as a Senior Mechanical Engineer, Operating Reactors Assessment Branch Division of Licensing, Division of Nuclear Reactor Regulation.

This affidavit presents the results of the NRC Staff's review of the licensee's recent work regarding fuel channel deformation during service. This testimony updates the testimony I filed on the same subject in the Dresden Station, Units 2 and 3 spent fuel pool modification proceeding.

II. DESCRIPTION

My earlier testimony concluded that the concern raised regarding interference between walls of fuel assemblies and storage locations within the then proposed Dresden spent fuel racks would not represent a safety problem.

1. With an assumed maximum total deformation (bow plus bulge) of 0.500" in a channel side, the interference between walls of a deformed fuel assembly and the minimum-dimensioned storage space in the spent fuel rack will not cause the fuel assembly to become stuck.

2. None of the total deformation measurements taken from 1736 channel sides exceeded 0.500". Only 15 measurements were greater than 0.300". The two greatest numbers were 0.43" (once) and 0.39" (once).

3. Improved heat treatment and fabrication procedures were adopted to build new channels. This will result in more dimensional stability for fuel assembly channel walls.

4. A screening process eliminating channels with large total deformation from further service has since been implemented at both Dresden and Quad Cities Stations.

5. An operating procedure describing actions to be taken in case a fuel assembly is stuck in a storage location has been implemented.

Since then, 745 and 724 additional channel sides were measured at the Dresden and Quad Cities Nuclear Stations, respectively. The greatest total deformations found were 0.445" (once) and 0.455" (once) at Dresden, and 0.462" (once) at Quad Cities. No other measurements were above 0.400".

New evidence indicated that irradiation is not the only cause for channel growth. In addition to the fast neutron flux gradient, the non-uniform metallurgical properties in channel sides may be the major factor in causing the deformation. Current fabrication procedure eliminates this possibility, and guarantees more dimensional stability.

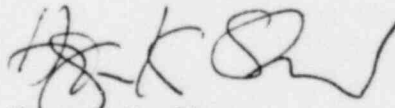
Dresden and Quad-Cities Stations, have both adopted a screening process by which channels with total deformation greater than 0.300" will not be reinserted into the reactor core and they will not be subjected to further irradiation. Procedures describing actions to be taken when a fuel assembly is stuck in a storage location have been implemented.

III. CONCLUSION

The bases for the original conclusions in the Dresden case are reinforced by the subsequent studies. It is the opinion of the NRC Staff that no safety concerns result from the possibility of interference developed between walls of fuel assemblies and storage cells in the spent fuel racks.

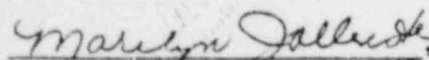
Based on the foregoing considerations, the NRC Staff concludes that the issue of fuel channel bowing in the Quad Cities spent fuel storage racks modification is not of any safety concern, and therefore does not constitute a significant risk to the health and safety of the public. It is the NRC Staff's position that the proposed contention of Intervenorors dealing with this subject is non-meritorious.

The above statements and opinions are true and correct to the best of my knowledge and belief.



Horace K. Shaw
Senior Mechanical Engineer
Operating Reactors Assessment Branch

Subscribed and sworn to before me
this 30th day of March, 1982.

 Notary Public
My Commission Expires: July 1, 1982