

JUN 1 2 1973

Power Generation Group

P.O. Box 1260, Lynchburg, Va. 24505

Telephone: (804) 384-5111

June 7, 1973

Mr. Steven A. Varga, Chief
Light Water Reactors Branch 4
Division of Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Varga:

Earlier today, Messrs. Tokar and Meyer of the NRC asked several questions of B&W relating to BAW-1496, "BPRA Retainer Design Report", which was forwarded to you by my letter of June 2, 1973. The questions were directed primarily towards use of the retainer for holddown of modified orifice rod assemblies (MORA). This letter is being provided to formalize B&W's responses to these questions so that they may be used in support of licensing activities associated with retainer use.

The MORA used with primary neutron sources can be visualized by referring to Figure 3-1a of BAW-1496. The orifice rod assembly (ORA) spider is the same shape as that shown in Figure 3-1a. The MORA is produced from a standard ORA by removing the four Y-shaped arms of the spider and the eight orifice rods attached to these arms. In addition, the four orifice rods on the inner rod circle created by the remaining straight spider arms (on the fuel assembly diagonals in Figure 3-1a) are removed slightly below the spider. A short rod portion remains below the spider arm and the nut above the spider remains. In essence, the MORA is now a spider arrangement with four straight arms and four unmodified orifice rods at the outermost location on these arms. The nuts at the inner location on the straight arms are retained because they act as locating fixtures for the retainer as described on Page 3-2 of BAW-1496. The weight of the MORA is approximately eight pounds after modification as compared to fifteen pounds prior to modification.

The minimum holddown criteria for retainer use is that the margin to component lift must be greater than thirty pounds with the retainer in use. Analyses performed by B&W (taking into account the hydraulic forces acting on the MORA, the MORA weight, and the retainer holddown force) show that the net holddown on an MORA with a retainer installed is approximately thirty-five pounds in the Davis-Besse 1 reactor. Therefore, this design criteria is met.

7904200137

57-220

The fuel assembly growth criteria stated on Page E-2 of BAW-1496 is based on a fuel assembly design burnup used as a basis for the retainer design. Since the maximum burnup seen in one cycle of operation will be less than the burnup used as a design basis, the fuel assembly growth criteria is met. It should be noted that the retainer will be used for only one cycle of operation.

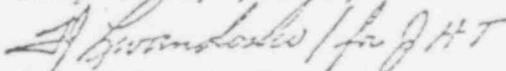
It is postulated that a retainer failure could cause release of a retainer and, possibly, an MORA into the reactor vessel. The neutronic and thermal-hydraulic consequences of this event are insignificant. Although interference with control rod motion is very unlikely, this concern has also been considered. Analyses of stuck-out control rod transients for B&W 177-FA plants have shown that these plants can be safely shut down in this event. Therefore, should interference with control rod motion occur, the plant could still be safely shut down.

The major concern associated with retainer failure is plant damage and potential outages for repair. This damage would be prevented by the Loose Parts Monitoring System (LPMS) which is provided on all B&W operating plants. The LPMS has the capability to detect a failed retainer in either the reactor vessel or steam generator. The importance of LPMS indications has been emphasized to plant operating staffs to preclude possible equipment damage in the unlikely event of retainer failure.

Even though the retainer is designed for only one cycle of operation, B&W will recommend to utilities using the retainer that surveillance inspections be made following retainer use to provide additional confirmation of acceptable operation. The results of these discussions will be provided to the NRC and definite plans will be provided as they are formulated.

We hope that this adequately answers the questions raised in the discussion today. Should any further information be required, please contact Mr. W. R. Gray (Ext. 2553) of my staff.

Very truly yours,



James H. Taylor
Manager, Licensing

JHT:dsf

Mr. Steven A. Varga

Page 3

June 7, 1978

cc: R. B. Borsum (B&W)
 L. B. Engle (NRC)
 H. Silver (NRC)
 M. Tokar (NRC)
 L. E. Roe (Toledo Edison)
 R. W. Heward (General Public Utilities)

bcc: J. S. Tulenko
 J. C. Deddens
 W. R. Gray
 G. O. Geissler
 K. O. Stein
 E. R. Kane
 B. J. Short
 G. A. Meyer
 M. W. Croft
 R. Berchin
 L. R. Pletke
 E. G. Ward
 W. R. Gibson
 R. E. Kosiba
 J. P. Jones
 G. M. Olds
 J. T. Janis

JUSTIFICATION FOR REMOVAL OF
ORIFICE ROD ASSEMBLIES IN
THREE MILE ISLAND UNIT 2, CYCLE 1

Babcock & Wilcox