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W3P85-3130

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Director of Nuclear Reactor Regulation  
Attention: Mr. G.W. Knighton, Chief  
Licensing Branch No. 3  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: Waterford 3 SES  
Docket No. 50-382  
Environmental Qualification -  
Borg-Warner Actuators

REFERENCE: LP&L Letter W3P85-1188, dated May 16, 1985

Dear Sir:

LP&L committed in the referenced letter to provide formal notification of the successful completion of the qualification of the Borg-Warner actuators. This letter provides such formal notification.

The Borg-Warner test specimen successfully completed the qualification test program. An analysis pursuant to 10 CFR 50.49 has been completed, and the analysis demonstrates that the presently installed actuators are qualified for the function required. The final test report is expected to be finalized shortly, and the final test report is not expected to change significantly since the test program was managed by LP&L. The following provides additional information pertinent to the analysis of record.

During the prior testing of the Borg-Warner test specimen actuator several equipment anomalies resulted that were determined to be uniquely attributable to the inherent elements of the test program. Subsequently, LP&L recommended several design changes to the test actuator design which would further enhance the environmental survivability of the test specimen. These design changes were implemented for the test specimen, and included the following:

- o A check valve was added to the hydraulic reservoir vent to limit ingress of chemical spray and other contaminants into the hydraulic fluids.
- o The motor/pump coupling was secured by indenting the motor shaft and adding one (1) additional set screw.

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- o The solenoid valve and other electrical conduit pathways were sealed.
- o O-rings were added to the solenoid valve assembly as a secondary seal.
- o The hydraulic filter size was increased to reduce the potential for clogging.
- o All terminal blocks were removed and replaced with qualified splice materials.

The above design changes have been implemented for the installed valve actuators at Waterford 3 with the exception of the pump/motor coupling/set screw, the solenoid valve o-rings, and the larger filter.

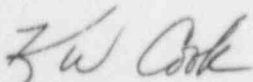
The pump/motor coupling/set screw was not implemented on the installed actuators because during the fabrication of the test actuator, the sealing surface on the test actuator was identified as being abnormal. The specification allowed  $\pm .005$  in. The sealing surface was within the allowable tolerance but was  $+.005$  in. on one side and  $-.005$  in. on the other. This condition provided the necessary incline for the forces to decouple the coupling. The pump/motor coupling for the installed actuators has been verified to be acceptable.

The o-rings, used for secondary sealing, were not available for use during reconfiguration of the installed actuators due to the extensive machining required to implement the design change. The present installed actuators include conduit sealing with RTV 106 potting. Though the present configuration provides adequate moisture sealing, o-rings will be installed at the first refueling outage.

The change to a larger filter was not implemented on the installed actuators due to the unavailability of the part and the extensive machining required to implement the design change. This modification is an enhancement, and it will be installed at the first refueling outage.

This analysis meets the criteria of 10 CFR 50.49, paragraph (f)(2).

Please feel free to contact me or Robert J. Murillo if you have any questions.



K.W. Cook  
Nuclear Support & Licensing Manager

KWC/RJM/pcl

cc: B.W. Churchill, W.M. Stevenson, R.D. Martin, J. Wilson, T.A. Flipppo