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MIDDLE SOUTH UTILITIES SYSTEM

April 9, 1984

W3P84-0416
3-A20.16

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

Dear Sir:

In accordance with 10CFR50.49(i), please find attached a Justification for Interim Operation for the Borg-Warner actuators for valves 1SI-V 1501B and 1SI-V 1503A. As discussed in the attached, we expect qualification to be complete by the time of commercial operation. We request that you review this JIO and provide your acceptance.

Very truly yours,

K W Cook

K. W. Cook
Nuclear Support & Licensing Manager

KWC/RMF/cb

cc: E. L. Blake, W. M. Stevenson, J. T. Collins, D. M. Crutchfield, J. Wilson, H. Garg, G. L. Constable



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JUSTIFICATION FOR INTERIM OPERATION

BORG-WARNER PNEUMATIC-HYDRAULIC ACTUATOR
MODEL PN 39400 FOR VALVES 1SI-V1501B AND 1SI-V1503A

SAFETY FUNCTION

The pneumatic-hydraulic actuators serve containment isolation valves in the Shutdown Cooling Line.

The isolation valves are normally closed and will be opened in the Shutdown Cooling Mode, and Long Term Recirculation Mode following a Small Line Break. In the Long Term Recirculation Mode the valves must open 16-24 hours after Small Line Break and remain open.

STATUS

According to Borg-Warner's original schedule, testing was to be completed by July and the test report was due in August 1983. However, the test was postponed due to problems experienced with the Fyrquel 220 hydraulic fluid. The results of hydraulic fluid evaluation testing at Borg-Warner showed that intensive hydrolization of the Fyrquel occurred at the aging temperatures of 300° F. Based on this evaluation, the Fyrquel was changed to PAO synthetic hydrocarbon hydraulic fluid which did not exhibit hydrolization reaction at the aging temperature.

Due to the change in fluids the testing was rescheduled for completion in February 1984. After successfully completing thermal aging, the piston seal rings failed during mechanical wear aging. The failure was attributed to the Buna-N material which was apparently incompatible with the hydraulic fluid.

Borg-Warner's current plan is to replace the PAO with a silicon based fluid which is compatible with the seal materials. The rebuilt Piston/Cylinder Assembly will be thermally and mechanically re-aged and testing will continue with the reassembled actuator.

JUSTIFICATION

We believe the following points provide reasonable assurance of qualification for the intended use of the actuators.

- All parts of the actuator except the hydraulic fluid successfully completed the 14-day aging test at 300° F.

- Testing performed by the manufacturer of the silicon-based hydraulic fluid has shown the fluid to remain serviceable at temperatures up to 400° F, which is far greater than the post-accident temperature expected to be seen by the actuator.

- Successful performance of the actuator for 14 days at 300° F provides confidence that it will perform its safety function (enter shutdown cooling within 24 hours) during post-accident conditions (which exceed 300° F for less than the first 100 seconds of the accident) at least until commercial operation.

SCHEDULE

The environmental qualification testing is ongoing and should be complete by commercial operation. The NRC will be notified if the testing schedule should slip beyond commercial operation.