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TOLEDO EDISON

LOWELL E. ROE
Vice President
Facilities Development
(419) 259-5242

Director of Nuclear Reactor Regulation
Attention: Mr. Robert L. Baer, Chief
Light Water Reactors Branch No. 2
Division of Project Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Baer:

This letter is in response to an oral request from your NRC Licensing Project Manager, Mr. Robert Benedict, to evaluate the reliability of proposed main steam non-return valves and feedwater control valves for the Davis-Besse Nuclear Power Station, Units 2 & 3. This submittal is intended to be used as additional basis for the applicant's position with regard to open Safety Evaluation Report Item No. 1, namely, that specifying the subject valves to Quality Group D requirements provides the necessary degree of design and manufacturing control to assure the performance of their intended function.

We have obtained a component failure summary from Southwest Research Institute through the Nuclear Plant Reliability Data System (NPRDS) for valves similar to the main steam non-return valves (check valve with pneumatic operator (assist to open) in 20 to 39.99 inch size range) and the main feedwater control valve (globe valve with pneumatic operator in 12 to 19.99 inch size range). Of the 31 similar check valves reported in the failure summary, none have failed to close during the NPRDS report period which represents a cumulative 472,000 hours of in-service operation. Of the 24 similar globe valves with pneumatic operators recorded in the NPRDS summary, only one has failed to close during the report period which represents a cumulative 149,000 hours of in-service valve operation and gives a mean failure rate of 6.7 failures per million hours. The one control valve failed to close fully because debris from a previous pump failure lodged in the valve. This type of failure could not be precluded by raising the quality group of the valve. Comparing these operating statistics with hydraulically operated globe valves in the size range of 20 to 39.99 inches, NPRDS reports a mean failure (to close) rate of 11.5 failures per million in-service hours. Also, for pneumatic operated globe valves in the size range of 20 to 39.99 inches, NPRDS reports a mean failure rate (all modes) of 8.87 failures per million in-service hours. These two types and sizes of valves are typical of main steam isolation valves being used in nuclear service. We can therefore conclude, that valves of the size and type proposed for feedwater control and main steam non-return service are at least as reliable as valves being used for main steam isolation in the nuclear industry.

The safety function of the main steam non-return valves and feedwater control valves is limited to their capability to close for the purpose of terminating flow during a main steam line break accident concurrent with the respective containment isolation valve failure to close. This safety function is redundant to the safety grade isolation valves and is initiated by redundant safety grade logic. Note that the feedwater control valves are backed up further with motor operated gate valves which have a close signal from a separate safety grade channel. These gate valves have a mean failure to close rate of 3.61 failures per million in-service hours. Therefore, the probability of failure of both valves is $(6.7/10^6 \times 3.61/10^6)$ $2.4/10^{11}$.

The requirements of Quality Group B address the pressure boundary capability only, and have no effect on the valve's operability. Operability is primarily dependent upon the logic system and actuator of the valve. The equipment specification will require assurance of operability for these severe service Quality Group D valves, since the same specification requirements apply to the actuator of either a Quality Group B or D severe service valve; the reliability to function is independent of the Quality Group designation.

The Toledo Edison Company continues to maintain that Quality Group D design and manufacture of the main steam non-return valves and feedwater control valves will provide reliability of these components commensurate with the importance of the safety function to be performed. We have found that this position is not inconsistant with that of others in the nuclear industry with a similar design to Davis-Besse Units 2 and 3, and has been acknowledged by the NRC as evidenced by the following quote from NRC Standard Review Plan 15.1.5 - Section 2 Acceptance Criteria 3i - Revision 1:
"If in addition a single malfunction or failure of an active component is postulated, credit may be taken for the use of a backup non-safety grade component to mitigate the consequences of the break".

Your prompt attention to resolution of the disagreement between the NRC staff position and the current regulatory requirements is needed to assure continued Construction Permit application review activities for Davis-Besse Units 2 & 3. This resolution is required to allow our design engineers to proceed with reduced risk of rework and updating to contradictory regulatory requirements.

Very truly yours,

Lowell E. Roe

LER:FRM