

Docket No. 50-10, 50-237,  
50-249 and 50-254

APR 24 1975

*[Handwritten signature]*

Commonwealth Edison Company  
ATTN: Mr. J. S. Abel  
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Boiling Water Reactors  
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Gentlemen:

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Our review of recent submittals regarding the reevaluation of emergency core cooling system (ECCS) performance in accordance with 10 CFR 50.46 indicates that certain additional information was required in order for us to complete our evaluation. This letter is to inform you of one part of the evaluations that have been submitted that has required additional information.

In performing the evaluation of single failures of ECCS equipment required by Appendix K to 10 CFR 50, Section I.D.1., the effects of a single failure or operator error that causes any manually-controlled, electrically-operated valve to move to a position that could adversely affect the ECCS must be considered. Therefore, please review your submittals regarding ECCS; and if this consideration has not been specifically reported in the past, your upcoming submittal must address this consideration. Include any proposed plant modifications and changes to the Technical Specifications that might be required to protect against any loss of safety function caused by this type of failure. A copy of Branch Technical Position EICSB 18 from the U.S. Nuclear Regulatory Commission's Standard Review Plan is attached to provide you with guidance.

This request for generic information was approved by GAO under a blanket clearance number E-180225 (R0072); this clearance expires July 31, 1977.

Sincerely,

Original signed by  
Dennis L. Ziemann

Dennis L. Ziemann, Chief  
Operating Reactors Branch #2  
Division of Reactor Licensing

Enclosure:  
Branch Technical Position EICSB 18

cc w/enclosure: See next page

ECCS  
(2)

OFFICE	RL:ORB #2	RL:ORB #2	RL:ORB #2	RL:ORB #2		
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BRANCH TECHNICAL POSITION EICSB 18  
APPLICATION OF THE SINGLE FAILURE CRITERION TO MANUALLY-CONTROLLED  
ELECTRICALLY-OPERATED VALVES

A. BACKGROUND

Where a single failure in an electrical system can result in loss of capability to perform a safety function, the effect on plant safety must be evaluated. This is necessary regardless of whether the loss of safety function is caused by a component failing to perform a requisite mechanical motion, or by a component performing an undesirable mechanical motion.

This position establishes the acceptability of disconnecting power to electrical components of a fluid system as one means of designing against a single failure that might cause an undesirable component action. These provisions are based on the assumption that the component is then equivalent to a similar component that is not designed for electrical operation, e.g., a valve that can be opened or closed only by direct manual operation of the valve. They are also based on the assumption that no single failure can both restore power to the electrical system and cause mechanical motion of the components served by the electrical system. The validity of these assumptions should be verified when applying this position.

B. BRANCH TECHNICAL POSITION

1. Failures in both the "fail to function" sense and the "undesirable function" sense of components in electrical systems of valves and other fluid system components should be considered in designing against a single failure, even though the valve or other fluid system component may not be called upon to function in a given safety operational sequence.
2. Where it is determined that failure of an electrical system component can cause undesired mechanical motion of a valve or other fluid system component and this motion results in loss of the system safety function, it is acceptable, in lieu of design changes that also may be acceptable, to disconnect power to the electric systems of the valve or other fluid system component. The plant technical specifications should include a list of all electrically-operated valves, and the required positions of these valves, to which the requirement for removal of electric power is applied in order to satisfy the single failure criterion.
3. Electrically-operated valves that are classified as "active" valves, i.e., are required to open or close in various safety system operational sequences, but are manually-controlled, should be operated from the main control room. Such valves may not be included among those valves from which power is removed in order to meet the single failure criterion unless: (a) electrical power can be restored to the valves from the main control room, (b) valve operation is not necessary for at least ten minutes following occurrence of the event requiring such operation, and (c) it is demonstrated

that there is reasonable assurance that all necessary operator actions will be performed within the time shown to be adequate by the analysis. The plant technical specifications should include a list of the required positions of manually-controlled, electrically-operated valves and should identify those valves to which the requirement for removal of electric power is applied in order to satisfy the single failure criterion.

4. When the single failure criterion is satisfied by removal of electrical power from valves described in (2) and (3), above, these valves should have redundant position indication in the main control room and the position indication system should, itself, meet the single failure criterion.
5. The phrase "electrically-operated valves" includes both valves operated directly by an electrical device (e.g., a motor-operated valve or a solenoid-operated valve) and those valves operated indirectly by an electrical device (e.g., an air-operated valve whose air supply is controlled by an electrical solenoid valve).

C. REFERENCES

1. Memorandum to R. C. DeYoung and V. A. Moore from V. Stello, October 1, 1973.