



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

February 28, 1992

Docket Nos. 50-250  
and 50-251

Mr. J. H. Goldberg  
President - Nuclear Division  
Virginia Electric and Power Company  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

Dear Mr. Goldberg:

SUBJECT: TURKEY POINT UNITS 3 AND 4 - REQUEST FOR ADDITIONAL INFORMATION ON SWING BUS TRANSFER SCHEME (TAC NOS. M82839 AND M82840)

During our review of the Technical Specifications change request for the undervoltage relay setpoints at 480V Load Centers (Amendment Nos. 145 and 140 for Units 3 and 4, respectively), the staff noted that transfer schemes are being utilized to power 480V Load Centers (3H and 4H) from either redundant Class 1E buses (3C, 3D, 4C, and 4D) at Turkey Point Units 3 and 4. In addition, these swing buses (3H and 4H) could also be utilized to tie the redundant divisions (Trains A and B) together in the event an emergency diesel generator is not available.

The staff is concerned that an automatic transfer capability between redundant emergency buses could compromise the independence of redundant power sources. Additionally, the staff is concerned that such a scheme may be vulnerable to a single failure and fail to perform its intended emergency core cooling system (ECCS) functions (e.g., failure to transfer properly or a loss of the swing bus itself). To illustrate the staff's concern on the vulnerability of swing bus designs, several examples are discussed below.

A single failure of the dc control power in one division at Fermi 2 prevented an automatic transfer of the swing bus to its alternate ac power source, thus resulting in a loss of the capability of all low pressure coolant injection (LPCI) pumps to perform their intended ECCS design function.

An event occurred at R. E. Ginna where the swing safety injection pump auto transfer scheme did not function as designed during the steam generator tube rupture incident (SER/NUREG-0916). As a result, the licensee modified the shared SI pump transfer logic and design which incorporated a lockout design feature to prevent automatic transfer under a bus or load fault condition.

On January 28, 1988, H. B. Robinson Unit 2 reported that a single failure vulnerability (loss of dc control power) and swing bus operation could result in loss of two of the three safety injection pumps. Subsequently, Information Notice No. 88-55 was issued addressing this event.

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Mr. J. H. Goldberg

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In view of the fact that the Turkey Point, Units 3 and 4 FSAR contains no detailed explanation on the automatic transfer scheme, please provide the following information:

- (1) Describe the transfer logic of the above swing buses (3H and 4H), including how the train is selected initially and the conditions under which transfer to the other train is accomplished, and the time delays for achieving this transfer.
- (2) Explain how the swing bus transfer scheme between redundant safety trains satisfies Safety Guide 6 criteria (that is, such a design should not compromise the independence between redundant onsite power sources and should meet the single failure criterion).
- (3) Describe how this design incorporates features to prevent automatic transfer of a fault (bus or load) to the redundant bus on a subsequent undervoltage condition and explain whether the system is able to perform its safety function without the use of the swing bus.

This requirement affects fewer than 10 respondents and, therefore, is not subject to Office of Management and Budget review under P.L. 96-511.

If you have any questions, please call me at (301) 504-1471.

Sincerely,

/s/

Rajender Auluck, Sr. Project Manager  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

cc: See next page

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