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the southern electric system

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Reference: Vogtle Electric Generating Plant - Unit 2; 50-425
Layout Drawing Cable Tray Separation

On April 14, 1988, Georgia Power Company verbally notified the NRC of a potentially reportable condition involving electrical cable tray separation. Georgia Power Company has completed its reportability evaluation and has determined that a reportable condition as defined by the reporting requirements of 10CFR Parts 1 and 50.55(e) does exist. Based upon NRC guidance in NUREG-0302, Revision 1, and other NRC correspondence, Georgia Power Company is reporting this condition pursuant to the reporting requirements of 10CFR50.55(e). A summary of our evaluation for Unit 2 is attached.

This correspondence contains no proprietary information and may be placed in the NRC Public Document Room.

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EVALUATION OF A POTENTIALLY REPORTABLE CONDITION
LAYOUT DRAWING CABLE TRAY SEPARATION

Initial Report: On April 14, 1988, Mr. C. W. Hayes, the Vogtle Quality Assurance Manager, notified Mr. M. V. Sinkule of the USNRC-Region II, of a potentially reportable condition under 10CFR50.55(e). The potentially reportable item concerned inadequate electrical cable tray separation distances found both in the plant and specified on the associated engineering physical layout drawings.

Background Information: Georgia Power Company (GPC) Audit Finding Report, AFR-1045, identified five safety-related cable trays in the Unit 2 control building that were installed in violation of the electrical cable tray separation criteria. The associated engineering physical layout drawings specified these cable trays to be separated by less than the standard separation distance stated in Regulatory Guide (R.G.) 1.75. There were no cable tray covers or barriers shown on the associated drawings for these five cable trays.

Engineering Evaluation: The five safety-related cable trays identified in AFR-1045 were verified to be in violation of the electrical separation criteria as they were shown on the physical layout drawings. Specifically, the five cable trays were not separated from non-safety-related 4.16 kv cable trays by the standard R.G. 1.75 separation criteria of three feet horizontally and five feet vertically for open top electrical cable tray in general plant areas. In the cable spreading rooms, the standard separation requirements are one foot horizontally and three feet vertically.

Reduced separation distances are allowed by R.G. 1.75 if tray covers or other barriers are provided between the different separation groups, or if analysis based on testing has been performed to justify the reduced separation. Plant Vogtle has performed analyses of tests to justify reduced electrical separation distances in some situations as specified in FSAR section 8.3.1, and GPC letter GN-1434 to the NRC dated March 14, 1988. However, these tests and analyses are not applicable to separation of safety-related cable from 4.16 kv non-safety-related cable. For these five cable trays, tray covers or other barriers should have been specified on the layout drawings.

The root cause of failing to indicate cable tray covers or other barriers on the associated drawings was determined to be engineering oversight and inadequate verification of the drawings. The separation criteria for these cable trays are correctly stated in the project design criteria.

Broadness Review: A limited number of other cable tray physical layout drawings were reviewed, and no separation problems were found. However, a walkdown program has been instituted to perform a 100 percent inspection of the safety-related cable trays to ensure that tray-to-tray separation distances meet the required separation criteria. This walkdown will account for actual construction placement and any field modifications made to the cable tray.

Analysis of Safety Implications: With less than the appropriate minimum electrical separation distance, there is no basis for assuring that a fault in the 4.16 kv non-safety-related cables would not result in unacceptable damage to the nearby safety-related cables. An engineering evaluation to justify the loss of these safety-related cables, and any other discrepancies which could be found as a result of the walkdown has not been performed.

A loss of safety-related cables could potentially result in a significant deficiency that might adversely affect the safety of operations or could potentially create a substantial safety hazard. Therefore, GPC has concluded that this condition is reportable for Vogtle Unit 2 under 10CFR50.55(e) and 10CFR21.

Evaluation of Quality Assurance Program Breakdown: The root cause of this concern was engineering oversight and inadequate drawing verification in that the electrical separation criteria was not met for all cable trays shown on the physical layout drawings. The evaluation indicates that the oversight is limited to not specifying cable tray covers or other barriers for some cable trays that do not meet the standard separation requirements. The separation criteria for cable trays are correctly stated in the Design Criteria. Therefore, this condition is considered an isolated case and does not constitute a significant breakdown in the engineering quality assurance program. Bechtel Western Power Corporation is the architect/engineer responsible for this cable tray separation design.

Conclusion: It has been concluded that the physical layout drawings did not specify cable tray covers or other barriers for all required locations. As a result, certain safety-related cables could be damaged due to an electrical fault in non-safety-related cables. An engineering evaluation to justify the loss of the affected safety-related cables has not been performed, but the loss of safety-related cables could potentially result in a significant deficiency or substantial safety hazard. For this reason, and considering the extent of the walkdowns which will occur and the potential scope of the engineering evaluations to justify any discrepancies, this issue is considered to be reportable under the requirements of 10CFR50.55(e) and 10CFR21. Based on the guidance in NUREG-0302, Revision 1, concerning duplicate reporting of an event, Georgia Power Company is reporting this event per the criteria of 10CFR50.55(e).

Corrective Action: As discussed above, a 100 percent walkdown of all safety-related cable trays in Unit 2 will be conducted to ensure that any unacceptable separation distances are identified. If any are found, they will be documented and an engineering evaluation of the condition will be conducted. The walkdowns are currently scheduled to be complete by June 1, 1988. Any corrective action required as a result of the engineering evaluation will be completed commensurate with the Unit 2 construction schedule prior to fuel load.

A formal training session was also conducted with the appropriate engineering personnel to reinforce the need to identify tray barriers on the physical layout drawings.