

Rod Control System Load Resistor Kits

Background

In 1969, the first solid state rod control system was installed in a U.S. nuclear power plant. Over the years, some sites have reported issues with the power supplies used in these systems. Specifically, the Lambda power supplies in the rod control systems have failed internally without causing enough of a drop in output voltage to initiate the built-in power supply non-urgent alarm. Since each power supply in the system is redundant and auctioneered, the internal failure of a power supply remains undetected until the companion power supply malfunctions or loses its source of AC power. When this happens, the failed power supply is called upon to support the load. At this point, its output voltage drops and triggers the non-urgent alarm; however, the power cabinet printed circuit (PC) boards have lost their DC voltage, causing the control rods to drop and trip the plant.

Description

Failures of Lambda power supplies are described in Westinghouse Technical Bulletin NSID-TB-87-10. A similar failure can occur with other rod control system power supplies. Westinghouse is committed to maintaining and improving reliability of the operating rod control systems. Therefore, in response to this issue, Westinghouse has developed load resistor kits to negate the effects of internal failures of power supplies in solid state rod control systems.



Power Cabinet Load Resistor Kit 2A10018G01

Benefits

The load resistor kits draw small amounts of current from the power supplies. If an internal failure occurs in a power supply, the load resistor kit will cause output voltage of the power supply to drop low enough to activate the non-urgent alarm while the other power supply is supporting system load. The load resistor kit will improve plant reliability by preventing plant trips due to failures of the power supplies. Load resistor kits are available for each cabinet in the rod control system. Part number 2A10018G01 is for use in the power cabinet (one kit per power cabinet). One 4A49324G01 and one 4A49324G02 are required for the logic cabinet.

Part Number	Description	Notes
2A10018G01	Powercabinetload resistor kit	1 kit needed for each power cabinet
4A49324G01	Logic cabinet load resistor kit for PS1, PS2, PS3	1 kit needed for logic cabinet
4A49324G02	Logic cabinet load resistor kit for PS4, PS5, PS6	1 kit needed for logic cabinet