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Intermittent Automotive Electrical and Electronic Diagnostics

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My research area examines a number of potential situations, diagnostic techniques, and case studies of intermittent automotive electrical problems. With the added complexity and interaction of numerous computerized systems on today's vehicles, special attention to testing methods and details can be extremely important for safety and reliability. The most elusive type of electrical problem is one that is intermittent - appearing and vanishing without any readily identifiable cause. This unfortunate scenario can be costly to repair, and in some cases compromise vehicle safety. These factors prompted my authoring of an electronic engine controls paper dealing with electronic throttle control diagnostics and a subsequent invitation to provide expert testimony before the United States House of Representatives Committee on Energy and Commerce in February of 2010. This hearing was instrumental in furthering a congressional investigation on the safety and reliability of vehicle electronics. The congressional investigation examined vehicle manufacturing practices for the purposes of public safety, and most recently provided a basis for establishing "brake override" manufacturing standards for all electronic throttle controlled vehicles sold in the United States.