TABLE 3
ELECTROMAGNETIC INTERFERENCE PROBLEMS IN DIGITAL SYSTEMS

Plant Name	Event Date	System/Component Affected	Cause and Symptoms Observed	References
Calvert Cliffs 1 *	11/9/95	Feedwater Regulating Valve Digital Controller (Fischer & Porter)	Digital feedwater controller failed, causing the control module output signal to ramp up and an increase in steam generator level. Failure attributed to electromagnetic interference. A comparison of the as-installed input, output, and power cabling found that it was not shielded in accordance with the vendor technical manual.	LER 95-005-01
Farley 1 *	1/13/95	Digital Electrohydraulic Control System	A spurious electrical perturbation caused both digital processing units and power supplies in the overspeed protection controllers to fail resulting in a turbine trip and reactor trip. Similar events occurred at Unit 2 on 12/18/94 and 12/25/94.	LERs 95-001-00, 94-004-00, and 94-003-00 Inspection Reports 94-31 and 95-03
South Texas 1	9/23/94	Toxic Gas Analyzer	An electrical transient caused an interruption of the computer program for the toxic gas analyzer, resulting in switching off the multiplier voltage, rendering the analyzer inoperable.	LER 94-016-00
D.C. Cook	3/3/94	Reactor Protection System (Foxboro SPEC 200 MICRO)	Electrical noise from output relays was transmitted via test hook-up wiring to the control card failure alarm circuit wiring during post installation testing. Caused the reactor protection control cards to detect a failure and revert to an "error standby" mode.	Inspection Report 94-09
Beaver Valley 2	11/4/93	EDG Load Sequencer	A voltage spike caused a microprocessor-based relay in the EDG load sequencer to fail resulting in a failure to load safety-related equipment onto the emergency bus during a surveillance test. Attributed to inadequate design control.	Information Notice 94-20 LER 93-012 Morning Rpt H-94-0043

* Non-safety related system

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Plant Name	Event Date	System/Component Affected	Cause and Symptoms Observed	References
Millstone 1	10/30/96	High range stack noble gas monitor (Kaman)	The high range stack noble gas monitor experienced several intermittent failures during testing of an automatic bus transfer device feeding the panel which provides the monitor's AC power. Failures were attributed to electromagnetic noise within the electronics enclosure. Licensee cited inadequate design in that the microprocessor-based system was installed with inadequate grounding and was susceptible to EMI/RFI contributors.	LER 96-054-01
Hatch 1	10/8/96	Reactor Protection System Power Supply	A microprocessor-based 600-volt supply breaker to a reactor protection system bus power supply motor generator set tripped due to electromagnetic interference generated from an electrical ground.	LER 96-012-00
ANO 1 *	6/22/96	Digital Main Feedwater Pump Control System (Lovejoy)	A main feedwater pump tripped on overspeed causing an automatic decrease in reactor power. Attributed to a control module memory corruption caused by electrical noise within the control system circuitry.	Inspection Report 96-04 Morning Rpt 4-96-0067
Pilgrim *	12/26/95	Reactor Recirculation Pump Speed Digital Controller (Foxboro SPEC 200 MICRO)	The display for the "B" recirculation controller temporarily went blank and displayed an error message as a result of an electrostatic discharge generated when an operator touched the controller.	Pilgrim problem report dated 12/26/95
Zion 1	11/13/95	Reactor Protection System (Eagle-21)	Eagle-21 EPT card failed due to an excessive voltage spike induced by an engineered safety feature relay.	Morning Rpt 3-95-0172 Event Notification 29592