

## **Steve Ferguson**

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## **Biography**

Steven G. Ferguson is Executive V.P. at Washington Laboratories, Ltd (WLL) and has been working in EMC, Safety, MIL-STD, Nuclear, Energy and related compliance engineering and test for over 35 years at test laboratories and manufacturers. His work includes designing products, developing procedures, performing tests and advising developers on routes and techniques for attaining product compliance. He has been directly involved with EMC design and compliance evaluation for many systems including several power plants (facilities and equipment qualification), hospitals, presidential aircraft, the Space Shuttle and Hubble Space Telescope. He presents various courses on EMI/EMC compliance including EMC for Nuclear Power Facilities, Architectural Shielding and a hands-on course MIL-STD-461 testing at the WLL facility in Maryland and on-site for multiple government and industrial clients. His work also includes EMC, Environmental and Safety evaluations for commercial, military and medical devices and training of hundreds of personnel on test and evaluation techniques. He has authored several papers on equipment qualification and evaluation techniques with presentations at many conferences. He is a member of the TR-102323 Working Group and supported preparation of Revision 4.

## **Abstract - Reverse Engineering – EMC Equipment Qualification Pitfalls**

Reverse engineering is used throughout the electronics industry as a means to maintain form, fit and function compatibility for updated equipment used in I&C systems throughout Nuclear power generation facilities. Understanding the EMC design presents a complex problem as part of the reverse engineering process - how did the original design attain compatibility. Design documentation may provide EMC control components but seldom defines structural details contributing to control, so the reverse engineer lacks adequate information. This presentation explores the EMC design process and the major effects of seemingly benign attributes from component selection, circuit board and wiring layout and EMC control attained by design and incidental (parasitic) elements. The presentation goal is to provide a basic introduction on Electromagnetic Compatibility design techniques that need consideration as an integral part of reverse engineering.