Title: "Military Munitions Response Statistics, or, Why there's no longer any room for analog geophysical methods at the grown-ups table"

Abstract: "The new UXO detection systems and the publications in the DoD's Munitions Response Quality Assurance Process Planning Toolkit have fundamentally changed the paradigm in how, and why, we perform geophysical investigations for munitions response. This change, however, differs significantly from that which occurred when digital geophysical systems were first introduced to this industry some twenty-five years ago. This time around we know exactly how the new sensors work, and exactly what they can and cannot achieve in terms of production rates and detection performance. We also now have a full appreciation for the limitations of older systems and the short-comings of past work not performed under a rigorous quality management system. A survey of past efforts unfortunately shows the detection performance for analog methods was generally pretty poor across the board. Previous EM 61 and digital magnetometer surveys often suffered from uninformed, or mediocre data processing, poor quality control methods, or misguided threshold selections. Our industry was also prone to creating statistical tools to explain, or some would argue, to justify, the work being performed, rather than offering statistical methods to answer specific data quality objectives. Statistics can help address these issues. Statistics can inform answers to the question, "how good did we detect UXO or DMM in previous work?" if we treat remaining metallic sources as a population and apply sampling strategies similar to those used in political polls. Statistics also offers a few different ways to look through the QC&QA Seeding looking-glass to demonstrate how well our methods perform when put to the task of detecting UXO and DMM, for both analog as well as digital methods