

DETECTION, SCREENING, AND CLASSIFICATION OF UXO WITH THE ULTRATEM EMI SYSTEM: MARSHALL SPACE FLIGHT CENTER (MSFC)- 003

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The UltraTEM sensors are dynamic advanced geophysical classification (AGC) sensors which acquire high resolution dynamic AGC data at production rates comparable with traditional DGM arrays while simultaneously providing the ability to screen or classify targets. The UltraTEM Classifier is a 5 transmitter and 11 receiver cube EMI array designed for “one-pass” classification performance, while the person portable UltraTEM Screener is a 1 transmitter, 6 receiver cube EMI array designed for detection and informed source selection (ISS). At MSFC-003, the UltraTEM Classifier and UltraTEM Screener were deployed as part of the Interim Measures implementation. The MSFC-003 site features a range of munitions types with the potential for chemically configurable UXO, areas of very high target densities, infrastructure and subsurface utilities, and a variable magnetic geology across the site. These factors combine to create a challenging AGC problem. The UltraTEM Classifier was used to collect approximately 25 acres of full-coverage grid data. In areas that were inaccessible to the Classifier towed array, the person-portable UltraTEM Screener was used to survey an additional 3 acres for which cued target locations were selected via ISS for subsequent cued surveying with a MetalMapper 2x2 sensor. In areas where RTK GPS was not available, the UltraTEM screener used the Kaarta Stencil for positioning. These data were then used for anomaly detection, inversion, and screening or classification. In this presentation, we provide details of the data collection, processing steps, and classification results.