Advanced Sensors to be Demonstrated at Former Camp San Luis Obispo

Berkeley UXO Discriminator (BUD)

BUD was designed to detect UXO in the 20 mm to 155 mm size range for depths between 0 and 1.5 m, and to characterize them in a depth range from 0 to 1.1 m. The system incorporates three orthogonal transmitters arranged in a 1-m cube, and eight pairs of differenced receivers. These receiver coil pairs are located on symmetry lines through the center of the system and each pair sees identical fields during the on-time of current pulses in the transmitter coils. The transmitter-receiver assembly together with the acquisition box and global positioning system (GPS) receiver is mounted on a small cart to assure system mobility. System positioning is provided by state-of-the-art Real Time Kinematic (RTK) GPS receiver. The survey data acquired by BUD is processed by software developed by LBNL, which is efficient and simple, and can be operated by relatively untrained personnel.

Man-Portable EMI and Magnetometer System (MSEMS)

MSEMS is comprised of a standard EM61-MK2 operated concurrently with a Geometrics Cs-vapor total-field magnetometer. Sampling of the two sensors is accomplished in an interleaved manner; the magnetometer is only sampled for a short time after the EM primary and secondary fields have died down. Both sensors sample at 75 Hz. The magnetometer is mounted 4 feet in front of the EM61-MK2 on a boom stabilized by an additional EM61 wheel. An RTK GPS antenna is mounted on the boom between the two sensors. Data are collected in a standard Allegro data logger.

NRL Cued EMI Array (TEMTADS)

The TEMTADS consists of twenty-five individual EMI sensors arranged in a 5 x 5 array. The center-to-center distance is 40 cm yielding a 2 m x 2 m array. Each individual sensor consists of a 35-cm square transmit coil surrounding a 25-cm receive coil. The TEMTADS is operated in a cued fashion. The array is parked over an anomaly of interest, the transmit coils are excited sequentially, and the response of all twenty-five receive coils is recorded. Thus, there are 625 (25 x 25) individual transmit/receive pairs recorded for each measurement. The induced field decay is recorded from 0.04 to 25 ms after turn-off of the excitation pulse. Array position and orientation is provided by a three-antenna GPS system.