ADVANCEMENT OF PRECISION FIELD TESTING: A TWENTY YEAR PERSPECTIVE.

E. Rinehart[1], J. Thomsen[2]

[1.] *Defense Threat Reduction Agency, Test Division*
1680 Texas Street, SE, Kirtland AFB, NM 87117

[2.] *Applied Research and Associates, Shock Physics Division*
4300 San Mateo NE, Albuquerque, NM 87110

ABSTRACT

In 1988, the Chief of Test, Defense Nuclear Agency (DNA), Dr. Don Linger, sought to improve high explosives and weapon effects testing at White Sands Missile Range (WSMR), NM. The testing vision he had was to improve our understanding of weapon effects through both active and passive measurements in ways that would be directly applicable to the warfighter. Weapon effects of highest interest included: penetration, blast, fragmentation, and thermal effects in the near field, and acoustic and seismic effects in the far field. Three test sites were chosen on the northern part of WSMR: The Large Scale Test Bed (well-known within the MABS community because of the up to 4-kiloton High Explosive (HE) Ammonium Nitrate and Fuel Oil (ANFO) events which were conducted there), the Intermediate Test Bed (up to 20 tons HE) and the Precision, or small scale, Test Bed. The sites are still very active, with the addition of test infrastructure facilities and hardened, instrumented targets for both static and operational weapons tests. A key decision made early in the testing process was that all of our testing had high precision measurements as a requirement. In addition, the Precision Test Bed became the Phenomenology Test Bed, which supported a broader objective to become essentially an explosives field-testing laboratory for various types of reinforced concrete and rock. Initial efforts supported simulated nuclear weapons blast loads and effects testing, stressing component testing for code validation as a pretest effort supporting the last nuclear underground test. By 1993, the testing had migrated away from nuclear blast and shock effects to conventional weapons effects technology development needed to support development of simplified PC-based weaponeering codes, for example, the Integrated Munitions Effectiveness (IMEA) code intended for battlefield use. Since 1993, implementation of the testing and measurement vision led to the full-scale testing of conventional weapons against a broad array of targets using increasingly higher precision targeting and measurement techniques. Recently, testing has been supporting The Defense Threat Reduction Agency's (DTRA's) basic mission effort in combating Weapons of Mass Destruction (WMD).