Internet Applications for Predicting Blast Damage
Vehicle-born Improvised Explosive Device Experiments Provide Critical Data for Analytical Tools that Assist in Post-attack Forensic Assessments

Researchers at the U.S. Army Engineer Research and Development Center (Vicksburg, Mississippi), in collaboration with the U.S. Army National Ground Intelligence Center (NGIC; Charlottesville, Virginia), Army Research Laboratory (Adelphi, Maryland), U.S. Army Tank Automotive Research Development and Engineering Center (Warren, Michigan), and Naval Surface Warfare Center (Indian Head, Maryland), conducted the Forensic Encyclopedia Program projects, IRON WARRIOR and RED DWARF, consisting of a series of experiments designed to provide critical data for updates/improvements to software comparative analysis tools, such as the CALDERA Post Blast Crater Collection and Analysis tool and the VIPER Tool, a vehicle-born improvised explosive device (VBIED) Post-Blast Evolution Results tool, used to assess likely-to-encounter threats in the form of VBIED attack scenarios. The analysis tools are used to assist in post-attack forensic assessments and enable force protection evaluators and planners to estimate impacts from VBIED threats. Accurate analysis of VBIED attacks is of high importance in assisting Service members and senior decision makers to mitigate future threats and identify threat techniques, tactics, and planning trends. The use of fast-running analysis tools to assist with the rapid assessment of VBIED attacks enhances the Department of Defense's ability to quickly emplace systems and policies to mitigate the effects of subsequent VBIED attacks, especially those that might employ similar tactics. Data from the IRON WARRIOR experiment series was also used for improvements to algorithms, such as CALDERA and VIPER to predict responses such as cratering, fragmentation, and blast damage due to VBIED attack scenarios. These tools help assess the protective capabilities and vulnerabilities of civilian and military facilities when faced with a threat scenario and provide designers and planners the ability to develop protection options to mitigate these vulnerabilities.

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