Abstract Submitted
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The Interaction of Explosively Generated Plasma with Explosives
DOUGLAS TASKER, Los Alamos Natl Lab, LANL TEAM — It has been shown
that the temperature of explosively generated plasma (EGP) is of the order of 1 eV
and plasma ejecta can be focused to achieve velocities as high as 25 km/s. These high
velocity plasma can readily penetrate a wide range of materials including metals.
Proof-of-principle tests were performed to determine if EGP could be used for explo-
sive ordnance demolition and other applications. The test goals were: to benignly
disable ordnance containing relatively sensitive high performance explosives (PBX-
9501); and to investigate the possibility of interrupting an ongoing detonation in a
powerful high explosive (again PBX-9501) with EGP. Experiments were performed
to establish the optimum sizes of plasma generators for the benign deactivation of
high explosives, i.e., the destruction of the ordnance without initiating a detonation
or comparable violent event. These experiments were followed by attempts to inter-
rupt an ongoing detonation by the destruction of the unreacted explosive in its path.
The results were encouraging. First, it was demonstrated that high explosives could
be destroyed without the initiation of a detonation or high order reaction. Second,
ongoing detonations were successfully interrupted with EGP. LA-UR-15-20612.