

E-BOMB

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ABSTRACT

The contemporary military rivalry is driven mostly by the continued military technical revolution. In particular, the weapons used on the longer term battlefield will play a crucial role in military affairs. Which weapons can play a key role within the future. Electromagnetic weapons seem to involve key elements for the longer term battlefield; they provide advantages over conventional weaponry by providing nonlethality, the advantage of attack at the speed of sunshine, fast engagement of multiple targets, potentially low operational cost, and wide-area coverage for offensive and defensive purposes. This thesis proposes hypothetical electromagnetic bombs (e-bomb) and classifies e-bombs into three isocategories depending on power sources. It also assesses the potential lethality effects on different targets based on a developed MATLAB Simulation Model. It also provides an understanding of the principles of High Altitude Electromagnetic Pulse (HEMP) and High Power Microwave (HPM) Weapons. In addition, a measure of effectiveness model is proposed to compare the hypothetical e-bomb, HEMP and HPM weapons. The strategic effects on military affairs will be assessed. Finally, this study will help the Turkish Armed Forces decide on investment in e-bomb research and development (R&D) to improve combat capabilities in the future battlefield. High Power Electromagnetic Pulse generation techniques and High Power Microwave technology have matured to the purpose where practical E-bombs (Electromagnetic bombs) are getting technically feasible, with new applications in both Strategic and Tactical Information Warfare. The development of conventional E-bomb devices allows their use in non-nuclear confrontations. This paper discusses aspects of the technology base, weapon delivery techniques and proposes a doctrinal foundation for the utilization of such devices in warhead and bomb applications.

Keywords- High Altitude Electromagnetic Pulse (HEMP), High Power Microwave (HPM) Weapons.

I. INTRODUCTION

Subsequent Pearl Harbor won't announce itself with a searing flash of nuclear light or with the plaintive wails of these dying of Ebola or its genetically engineered twin. you'll hear a pointy crack within the distance. By the time you mistakenly identify this sound as an innocent clap of thunder, the civilized world will become unhinged. Fluorescent lights and tv sets will glow eerily bright, despite being turned off. The aroma of ozone mixed with smoldering plastic will seep from outlet covers as electric wires arc and telephone lines melt. Your Palm Pilot and MP3 player will feel consider the touch, their batteries overloaded. Your computer, and each little bit of data thereon, are going to be toast. then you'll notice that the planet sounds different too. The background music of civilization, the whirl of internal combustion engines, will have stopped. Save a couple of diesels, engines will never start again. You, however, will remain unharmed, as you discover yourself thrust backward 200 years, to a time when electricity meant a lightning bolt fracturing the night sky. this is often not a hypothetical, son-of-Y2K scenario. it's a sensible assessment of the damage that would be inflicted by a replacement generation of weapons--E-bombs. Anyone who's been through a protracted power failure knows that it's a particularly trying experience. Within an hour of losing electricity, you develop a healthy appreciation of all the electrical devices you believe in life. a few hours later, you begin pacing around your house. After a couple of days without lights, electric heat or TV, your stress level shoots through the roof. But within the grand scheme of things, that's nothing. If an outage hits an entire city, and there aren't adequate emergency resources,

people may die from exposure, companies may suffer huge productivity losses and lots of dollars of food may spoil. If an influence outage hit on a way larger scale, it could pack up the electronic networks that keep governments and militaries running. We are utterly hooked in to power, and when it's gone, things get very bad, very fast. An electromagnetic bomb, or e-bomb, may be a weapon designed to require advantage of this dependency. But rather than simply isolating power in a neighborhood, an e-bomb would actually destroy most machines that use electricity.

II. LITERATURE REVIEW

1996 Carlo Koop Aspect of the technology base, weapon delivery techniques

2019 Bahman Zohuri Introduces the physics behind directed energy weapons

2020 Frank Sabath, Richard Hoad, D.V.Giri Addresses the issues relating to the effects of RF signals and the environment of electrical and electronic systems.

2018 Anil K Maini Provides a complete account of defence electronics and optronics.

III. BENEFITS OF E-BOMB

An electromagnetic pulse (EMP) is an intense burst of electromagnetic (EM) energy that causes, or are often wont to cause, damage. Though natural EMP is usually noticed as disturbances on the radio during lightening, far more powerful EMPs are generated by solar geo-magnetic storms. EMPs also can be generated, and artificially through nuclear explosions, or non-nuclear frequency weapons.¹ Electric and magnetic fields resulting from such intense EMPs induce damaging currents and voltage surges in electrical/electronic systems, burning out their sensitive components such as semi-conductors. An electromagnetic pulse (EMP) is an intense burst of electromagnetic (EM) energy that causes, or are often wont to cause, damage. Though natural EMP is usually noticed as disturbances on the radio during lightening, far more powerful EMPs are generated by solar geo-magnetic storms. EMPs also can be generated, and artificially through nuclear explosions, or non-nuclear frequency weapons. Electric and magnetic fields resulting from such intense EMPs induce damaging currents and voltage surges in electrical/electronic systems, burning out their sensitive components like semi-conductors. Electromagnetic bombs could even be usefully applied to OCA operations. Modern aircraft are densely filled with electronics, and unless properly hardened, are highly vulnerable targets for electromagnetic weapons

Electromagnetic bombs are often a way of both soft and hard electrical kill, subject to the lethality of the weapon and therefore the hardness of its target. A tough electrical kill by means of electromagnetic devices are getting to be achieved in those instances where such severe electrical damage is achieved against a target so on require the replacement of most if not all of its internal electronics. The central objective of Electronic Combat (EC) operations is that the command of the spectrum, achieved by soft and hard skill means against the opponent's electronic assets. The underlying objective of commanding the spectrum is to interrupt or substantially reduce the flow of data through the opponent's air defense system, air operations environment and between functional elements of weapon. During this context the power of electromagnetic bombs to realize kill against a good range of targets types allows their general applications to the task of inflicting attrition upon a opponent's electronic assets, be they specialized air defence assets or more general Command-Control-Communications and other military assets. The massed application of electromagnetic bombs within the opening phase of an electronic battle will allow much faster attainment of command of the spectrum, because it will inflict attrition upon electronic assets at a way faster rate than possible with conventional means.

IV. CONCLUSION

Electromagnetic bombs are Weapons of Electrical Mass Destruction with applications across a broad spectrum of targets, spanning both the strategic and tactical. As such their use offers a really high payoff in attacking the elemental information science and communication facilities of a target system. The massed application of those weapons will produce substantial paralysis in any target system, thus providing a decisive advantage within the conduct of Electronic Combat, Offensive Counter Air and Strategic Air Attack. Because E-bombs can cause hard electrical kills over larger areas than conventional explosive weapons of similar mass, they offer substantial economies in force size for a given level of inflicted damage, and are thus a potent force multiplier for appropriate target sets. The non-lethal nature of electromagnetic weapons makes their use far less politically damaging than that of conventional munitions, and thus broadens the range of military options available. E-bombs are often a reasonable force multiplier for military forces which are under post conflict pressures to scale back force sizes, increasing both their combat potential and political utility in resolving disputes. Given the doubtless high payoff deriving from the utilization of those devices, it's incumbent upon such military forces to understand both the offensive and defensive implications of this technology. It is also incumbent upon governments and personal industry to think about the implications of the proliferation of this technology, and take measures to safeguard their vital assets from possible future attack. Those who choose to not may become losers in any future wars.

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