

## **Area Denial/Perimeter Defense Employing Non-Lethal Weapons**

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### **Abstract (Key words: non-lethal weapons operations and tactics: area denial and perimeter defense; force multiplier)**

Area denial and Perimeter security are often complicated by the nearby presence of public areas or waterways and private property. Recent terrorist attacks at Kosovo and elsewhere illustrate that separating innocent intruders from those that intend to do harm is an essential element in meeting security requirements. Non-lethal weapons are suited to dissuade and deny area access to intruders while minimizing injury to innocent trespassers as well as to intruders.

The Institute for Emerging Defense Technologies (IEDT) of the Pennsylvania State University was given the task (under US Navy contract) of using non-lethal means to design a concept of operations (CONOPS) for the security of a port facility against intruders. The CONOPS was designed to deter casual intrusion while delaying and disrupting hostile intruders. It is a force multiplier that will reduce the demands on local security forces. It follows a modular design to permit upgrading as new technologies become available

The present CONOPS can be adapted to many scenarios. Examples are the non-lethal perimeter defense for field deployments of military units on humanitarian missions or the security of critical facilities such as nuclear power plants or airports. New weapons such as the area denial system (ADS) and the proposed pulsed energy projectile (PEP) can be integrated into the existing CONOPS. Within this framework, innovative perimeter concepts such as the Penn State sensor fence, rapid response unmanned ground vehicles, and the application of continuous inference networks to fully or partially automate the arming and firing of non-lethal weapons or the summoning of security forces can be integrated into the CONOPS.

It is noted that the Penn State sensor fence offers intrusion detection and localization at a fraction of the cost of alternative perimeter sensors with far fewer false alarms and very little maintenance. This system can be added to any existing chain link fence.