HPM Transmitter Employment in a Naval Scenario

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Maritime surface surveillance supports different types of operations, such as embargo operations, counter-drug operations, fishing inspections, and surface warfare. Its aim is to establish and maintain a recognised surface picture. SURPASS (acronym for 'SURface Picture ASSessment') is a computer simulation model that describes the process of maritime surface surveillance in a sea area with several types of shipping.
On behalf of a Dutch national project on the use of Non-Lethal Weapons (NLW) in a naval scenario, the employment of a High Power Microwave (HPM) transmitter was implemented in SURPASS. With such a transmitter, a beam of HPM can be directed at a suspicious ship, so that functions like propulsion, navigation, and communication may fail, after which the ship can be seized. SURPASS enables analysing the effectiveness of the employment of an HPM transmitter against for example a drug transporting powerboat that does not respond to communication like Identification Friend or Foe (IFF). Beside this, insight can be gained into the amount of risk run by other shipping (the so-called 'collateral damage').
This presentation addresses the possible consequences of HPM transmitter employment against a suspicious powerboat. With SURPASS, sensitivity analyses were carried out on a base case scenario to assess the dependence of the effects of NLW employment on several input parameters (such as maximum transmitter power, employment ranges, and aiming error). In the base case scenario, surveillance is carried out by a frigate with or without an embarked helicopter, in a sea area with several types of ships (among which the powerboat). After detection of the powerboat the HPM transmitter may be employed in its direction. The transmitter is located either on the frigate or on the helicopter.
The results are compared to the results of a previous study, in which the employment of an HPM shell was implemented in SURPASS.

Keywords:

Maritime surface surveillance, SURPASS, HPM, shell, transmitter, collateral damage