Waterborne Threat Interdiction Utilizing Underwater Impulse Generation

Protecting Our Waterside Infrastructure

Currently, on dams, ports and ships, there is little defense against a terrorist attack from beneath the water. Prime terrorist targets within our ports include facilities and ships that handle large quantities of liquefied natural gas (LNG) and liquefied petroleum gas (LPG). Attacks on these resources could produce enormous damage and result in extensive loss of life. Other high profile terrorist targets include petroleum tankers, port-side refineries and chemical plants, and off-loading terminals. Inland vulnerabilities exist at dams, locks, levees, and riverfront terminals.

While there are highly developed technologies for detecting and monitoring hostile intruders in restricted waters, there is currently no viable less-than-lethal way to stop a terrorist or a group of terrorists intent on delivering a powerful explosive charge to a vulnerable target from underwater.

Securing our Infrastructure

Western KY University developed an acoustic impulse generator that can be used for interdicting hostile underwater intruders and disrupting underwater threats to ports and our naval assets. The acoustic generator can launch a highly-collimated acoustic wave into the water with sufficient energy to deter or disable divers and destroy their underwater equipment from a great distance. Security personnel can thereby respond with less-than-lethal deterrents to imminent threats over large volumes of open water with the speed of sound (~1500 meters per second in water).

Moving Forward

Using a new electromagnetically driven acoustic impulse generator, the project has shown the ability to launch a highly collimated acoustic wave into the water with sufficient energy to deter or disable divers and their underwater equipment from significant stand-off ranges. Discussion is underway with potential users of this technology to determine future directions.

To learn more about this project, contact: Jay Robinson, Program Manager, at jay.robinson@hq.dhs.gov or Ewell Balltrip, NIHS, CEO at eballtrip@thenihs.org 2015-01.1pager