

MASS

- Maritime Acoustic Scoring Simulation
- Automatic Scoring and Assessment
- Reduced Mission Costs
- Portable



The Maritime Acoustic Scoring Simulation (MASS) is a waterborne, portable, ship-deployable/recoverable range and training tool. MASS scores and analyzes live-fire surface gunnery exercises, air-to-ground weapons exercises, and other test and evaluation events.

The MASS concept is based on the recognition that a projectile will generate a detectable acoustic event when it impacts water. The characteristics of this type of acoustic event can be detected and accurately located with an in-water array of acoustic sensors and digital signal processing technology.

The MASS system consists of acoustics sensors, which are incorporated into six sensor buoys. When an acoustic event occurs the buoys triangulate the location of impact. Global-Positioning Satellite (GPS) receivers provide precise positioning data of the buoys and firing platforms. Upon impact detection, the buoys transmit data to the system controller unit located on the firing platform. The system controller calculates and displays the projectile's impact location in real-time allowing immediate feedback to the firing platform.

MASS

TECHNICAL SPECIFICATIONS

SYSTEM COMPONENTS

- Vessel base station comprising of standard laptop computer and radio transceiver
- Vessel based radio repeater
- Buoy operating array, typically 6 units
- Each buoy equipped with GPS, radio, hydrophone, radar reflector and flashing warning beacon

VESSEL BASED COMPONENT SPECIFICATIONS

Base Station (PC)

- Provides acoustic event location data in numerical and graphical form. Map overlays are optional
- Enclosed in a Pelican Case - size 52 cm x 43 cm x 20 cm
- 900 MHz spread spectrum radio, 1 watt RF power
- Has power outlet to use power from vessel (110/220V)
- 1/4 wave antenna contained in Pelican case

Repeater

- Size: Approximately 50 cm x 38 cm x 12 cm plus 57 cm long omni-directional antenna
- Operating Time: 72 hours on internal battery
- Weight: Approximately 17 kg
- Features: Mounting mast 1.5 m tall with multiple attachments to maximize effective RF range

BUOY SYSTEM SPECIFICATIONS

- RF range: Up to 20 000 m line of sight depending on conditions and repeater height; 900 MHz spread spectrum radio, 1 watt RF power
- System accuracy: 6 buoys in a field yields accuracy of impact location to less than 1m
- Buoy accuracy for reported time of arrival of acoustic event: 150 microsecond (equivalent to spatial resolution of 23 cm)
- Acoustic event detection range: Up to 5 000 m depending on conditions
- Buoy acoustic projector range: Up to 2 000 m depending on conditions
- Active operating time: 72 hours with fully charged battery pack
- Flotation collar: Diameter 61 cm, depth 20 cm. Material: Ionomer foam Colour: International Orange
- Hull: Diameter 15 cm, length 120 cm, Material: stainless steel. Weight 40 kg
- Antenna and Mast Extension: Diameter 5cm at widest,length 390cm assembled. Materials: marine grade aluminum and stainless steel Colour: international orange with barbershop wrapping of reflective tape. Weight: 3.1 kg
- Hydrophone: Diameter 14 cm, suspension cable length 6.6m.



Buoy Deployment

Test Fire

System Controller Display

Buoy Recovery