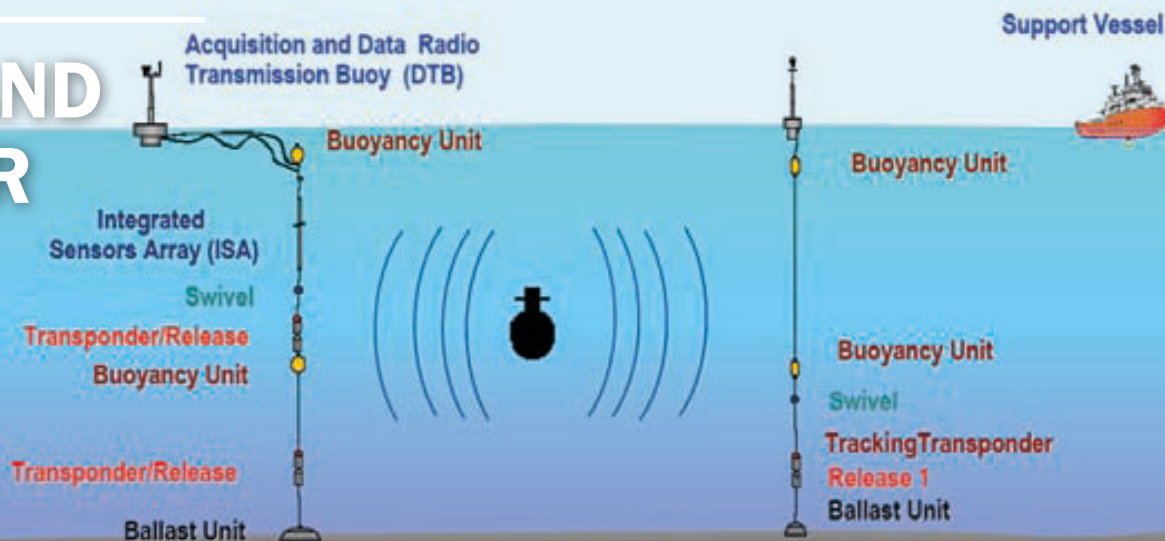


PTR AND PANOR



PORTABLE ACOUSTIC RANGERS

PTR DESCRIPTION

The PTR is a mobile three-dimensional (3-D) underwater portable tracking range used for testing modern underwater weapons in different environmental conditions. It is able to track three underwater objects simultaneously (in real time) both in shallow and deep waters and is capable of offline analysis of the trajectories.

The PTR system consists of a minimum of 3 and a maximum of 20 retrievable surface buoys connected to underwater hydrophone hung beneath the buoys and providing simultaneous tracking of surface and underwater mobile targets including artificial targets. The buoys carry UHF transceivers and a GPS link to transmit data between the buoy and the parent surface vessel. Each vehicle to be tracked has to be fitted with an acoustic transmitter.

PTR is in service with Italian Navy and is continuously used in configuration with Black Shark and MU90 launches. The tracking range acoustic technology is based on a long baseline system with SFSK (Space Frequency Shift Keying) acoustic signalling suitable for high-speed vehicle tracking and for very shallow waters operation. Signalling is accomplished using 40-bit coded transmissions with up to eight operating frequencies available. The mobile 3-D underwater tracking range can be arranged

in different configurations to meet specific requirements and can be laid down in different water depths, from 25m up to 350m. The PTR has an accuracy better than 5 m in the horizontal plane and 1 m in the vertical one.

STATUS

PTR is in service with Italian Navy and is continuously used in configuration with Black Shark and MU90 launches.

PANOR DESCRIPTION

The PANOR (Portable Acoustic NOise Range) system is a transportable acoustic noise range facility, used to measure and analyse underwater radiated noise from surface/submarine vessels.

PURPOSE

The system's primary purpose is to obtain the underwater acoustic characteristics of a vessel in order to determine the probability of its detection by mines and passive sonars and to point out possible malfunctions of vessel equipment. This is achieved by performing the measurements during several predetermined runs inside a proper range area.

PTR AND PANOR

SYSTEM COMPONENTS

- Integrated Sensors Array, included in the Wet End Subsystem composed by two distinct moored components:

- A mooring;
- B mooring

- Vessel Navigation Subsystem
- Support Vessel Subsystem
- Ground based Data Centre Facility

FUNCTIONING

The Vertical Acoustic Array, included in the A mooring, accomplishes the task of acquiring the acoustic radiated noise from the surface/submarine vessels under trial.

The acoustic signals are then pre-processed, digitalized and radio transmitted by the Acquisition and Processing Subsystem located in the A Mooring Acquisition and Data Radio Transmission Buoy to the Support Vessel Subsystem, where the SVS, the digitised signals are collected, pre analysed and processed together with the time referred tracking data of the Under Test Vessel.

The stored data are transferred to the ground based Data Centre Facility for further analyses, like:

- Third-octave analysis
- LOFAR analysis
- DEMON analysis
- Transient analysis

Data Centre Facility tools support the storage of the relevant acoustic characteristics in the data bank.

TECHNICAL DETAILS

- Integrated Sensors Array composition:
 - 27 pre-amplified hydrophones, narrow band;
 - 2 pre-amplified hydrophones, wide band, located at both ends of the array;
 - 3 auxiliary sensors (one depthometer, for array depth measurement , and 2 inclinometers, to array inclination measurement).
- Main characteristics:
 - Array length: 45 mt
 - Outer diameter: 60 mm
 - Operating depth: up to 200 mt
 - Survival depth: up to 500 mt

STATUS

In service with Italian Navy, it is currently used for the operational noise measurements of different types of vessels. It is available for loan to Navies, upon specific request.

