

PORTABLE TRACKING RANGE

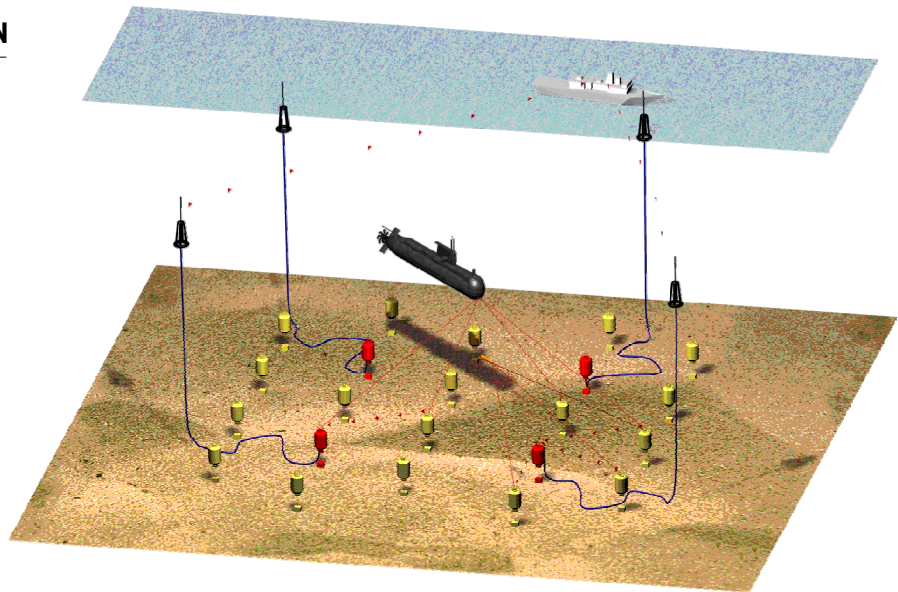
PRODUCT DESCRIPTION

L-3 Nautronix develops sophisticated solutions to measure and communicate data through water. It specialises in applications involving underwater test and evaluation and through-water communications.

The L-3 Nautronix Portable Tracking Range (PTR) has been developed from fixed systems and deep water systems to meet the need for weapon training, testing and evaluation in shallow littoral waters. It can be deployed to facilitate training in areas more representative of the threat environment.

PTR systems have been used by the Royal Australian Navy (RAN) and the United States Navy (USN). The PTR supports:

- Exercise weapon firings
- Platform certification and verification
- Torpedo Self Defence
- ASW experimentation



PTR Typical Layout

The PTR utilises acoustic digital spread spectrum technology to provide efficient through-water communications. This provides a robust sub-sea communications network in demanding shallow water environments, negotiating multi-path and environmental noise effects, while maximising exercise area coverage.

FEATURES

- Each cell can cover an exercise area of up to 6 x 7 nm (11 x 13 km)*
- Operates in depths of 50 to 400 m*
- Tracking maintained using sparse ping detection tracking algorithms
- Simultaneously tracks six items in an acoustic multi-path environment at speeds up to 65 knots
- Provides real-time status of target items (weapons, ships, submarines, etc.) on range
- No range infrastructure on the surface within the training area
- Deployment and recovery in Sea States up to and including Sea State 3
- Operational in Sea States up to and including Sea State 5
- Long life transponders with one million ping relay capability (per Transponder) - Systems include standby and sleep modes to extend life
- Integrated Acoustic Through Water Telemetry for robust long-range communications

* Deeper water options with greater coverage available.



L-3 Nautronix

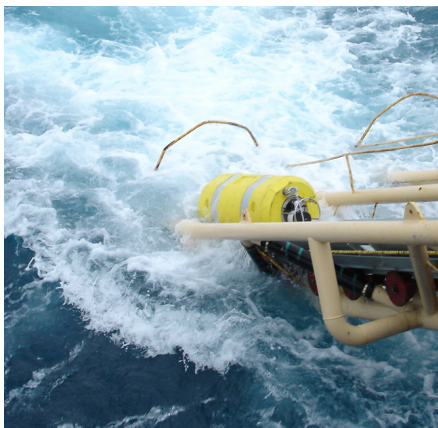
PTR

PORTABLE TRACKING RANGE

SYSTEM COMPONENTS

The PTR system comprises the following major components:

- **Range Operations Centre:** containing the electronics, communications, and operator workstations to allow management of the range and tracking activities.
- **Communications equipment:** normally fitted onto the support vessel's masts.
- **Transponders:** deployed to the seabed. They detect the pings; timestamp the detection; and acoustically telemeter the information to a Hub. The Transponders are fitted with Floatation and an acoustic release to allow them to be easily recovered post-exercise.
- **Hubs:** deployed to the seabed they detect pings and Transponder telemetry. This information is then relayed to surface communication buoys via a cable modem.**
- **Communications Buoys:** RF relay buoys cabled to each hub to transfer the telemetry to the support vessel.**
- **Storage Handling Units:** store the Transponders and Hubs for the system.
- **Power Flat Rack:** provides the electrical power to drive the system.
- **Constant Tension Winch:** is used in the deployment and recovery of the seabed communications cable.**
- **Knuckle-boom Crane:** deploys and recovers the in-water equipment.



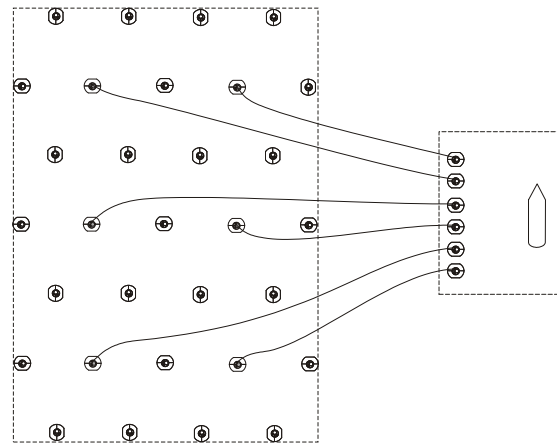
PTR Transponder being deployed

SYSTEM OPERATIONS

The PTR system can be operated from a vessel of opportunity with adequate deck space and a Dynamic Positioning system.

A PTR system is deployed through a series of Transponder 'cells' laid out over the exercise area.

Depending on water depth and environmental conditions the cells will be laid in a 2 by 3 grid as pictured below.



PTR Cell Arrangements

The PTR cells can be laid in a pattern that suits the exercise requirements. The cell arrangement allows each transponder to communicate with its central Hub, for both command and control and telemetry communications.

Whilst an exercise is in progress, the pings will be detected by the Transponders and relayed to the nearest Hub. The Hub will then transfer this telemetry to the Range Operations Centre for real-time tracking of the targets.

** Developments are currently underway to use station keeping buoys instead of hubs and seabed cables at the surface.

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