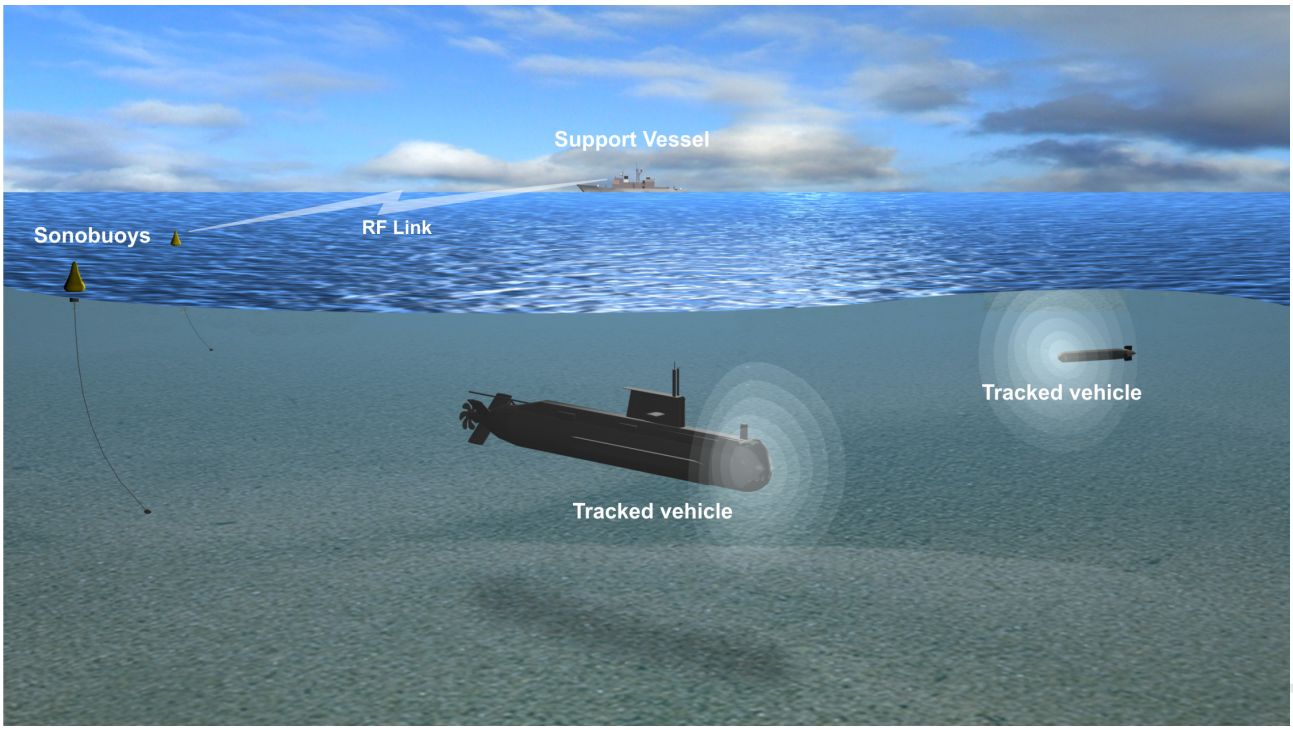
L-3 Nautronix

RANGES

MARITIME TEST & EVALUATION RANGES CAPABILITY



An example of an Underwater T&E Range

PRODUCT DESCRIPTION

L-3 Nautronix has significant experience in the design and installation of portable in-water Test and Evaluation (T&E) systems.

L-3 Nautronix T&E systems are capable of:

- High Speed Asset Tracking (e.g. torpedoes at current operational speeds)
- Undersea Positioning
- Vessel Signature measurement and Vulnerability Assessment

L-3 Nautronix supplies and supports the following maritime T&E Ranges for the RAN:

- The South Australian Acoustic Range (SAARS)
- Portable Acoustic Sonobuoy Range (PASOR)
- Relocatable Multi Influence Measurement Range (RMIMR)
- The RAN Shallow Water Portable Tracking Range (PTR)

L-3 Nautronix also provides and supports maritime T&E Ranges for allied navies, namely:

- The USN Deepwater Portable Acoustic Ranges (PAR and PUTR)
- Sonar Calibration range for the Royal Navy (STARTR)

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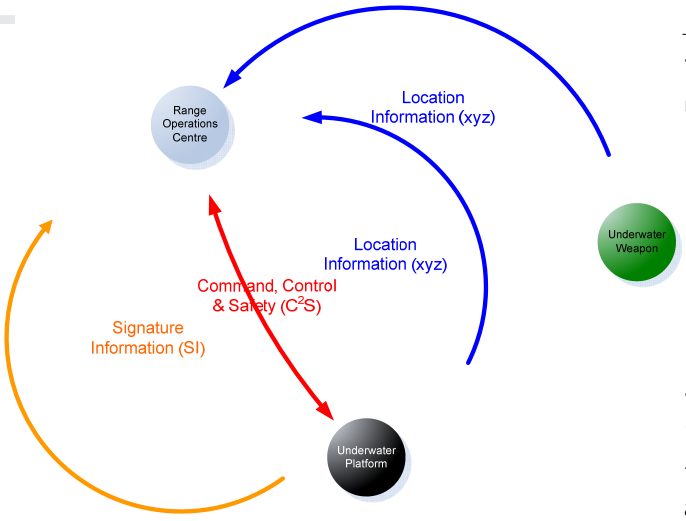
KEY FEATURES OF PORTABLE RANGES

L-3 Nautronix developed and pioneered the Portable Tracking Range to meet the demanding vehicle tracking requirements of both the Australian and United States Navies. The seabed transponder based system has proven to be highly successful, and in particular meets the tracking accuracy criteria provided by fixed systems. The transponder design has been successfully used for over 10 years in both the Defence and Oil and Gas Sectors for a wide range of applications.

Recent developments have seen the integration of GPS fitted sonobuoys into L-3 Nautronix T&E ranges, to improve the efficiency of T&E exercises. The integrated sonobuoy based signature measurement and tracking range provides a low cost, small, easily deployable solution which requires no seabed infrastructure and no recovery of in-water components. These systems are ideally suited for short term activities.



Information Exchange in Maritime T&E Ranges

L-3 Nautronix Sea Bed Transponder

INFORMATION ARCHITECTURE IN UNDERWATER T&E RANGE

There are three information exchange requirements in an underwater T&E range:

- Command, control and safety (C2S) on the range
- Location of the underwater vehicle (submarine, torpedo, diver etc) ("xyz" data)
- Where the platform signature is to be measured an information bearer is required ("Signature Information" (SI))

L-3 Nautronix direct sequence spread spectrum through water communications technology is key to these information exchanges. Its high Doppler tolerance facilitates tracking of high speed targets, and bandwidth and reliability allows the exchange of complex data. There are some situations (e.g. PASOR) where C2S and xyz information is on the same bearer.

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