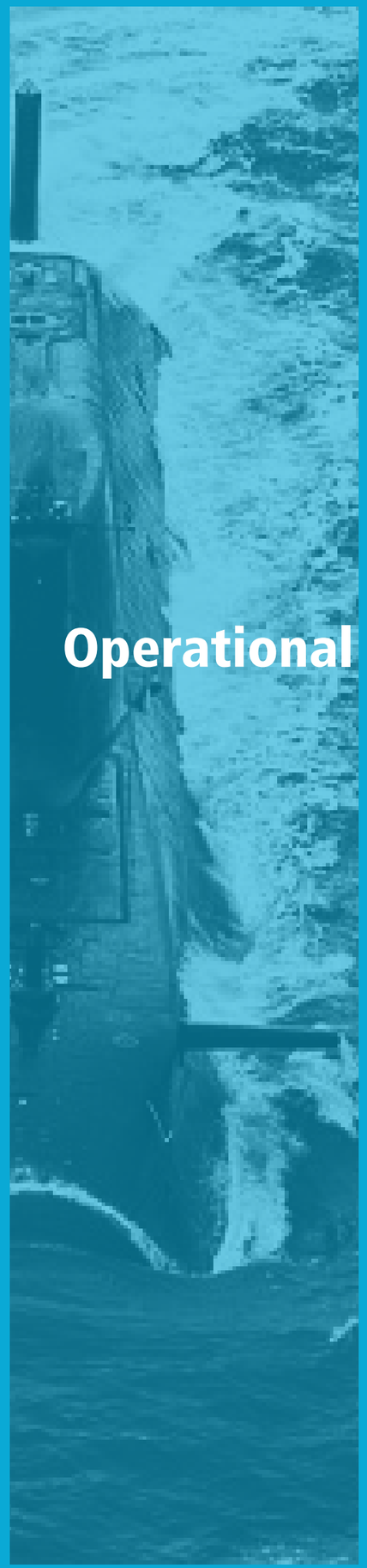
Subsurface Navigation

ECPINS for Submarines

www.osimaritime.com



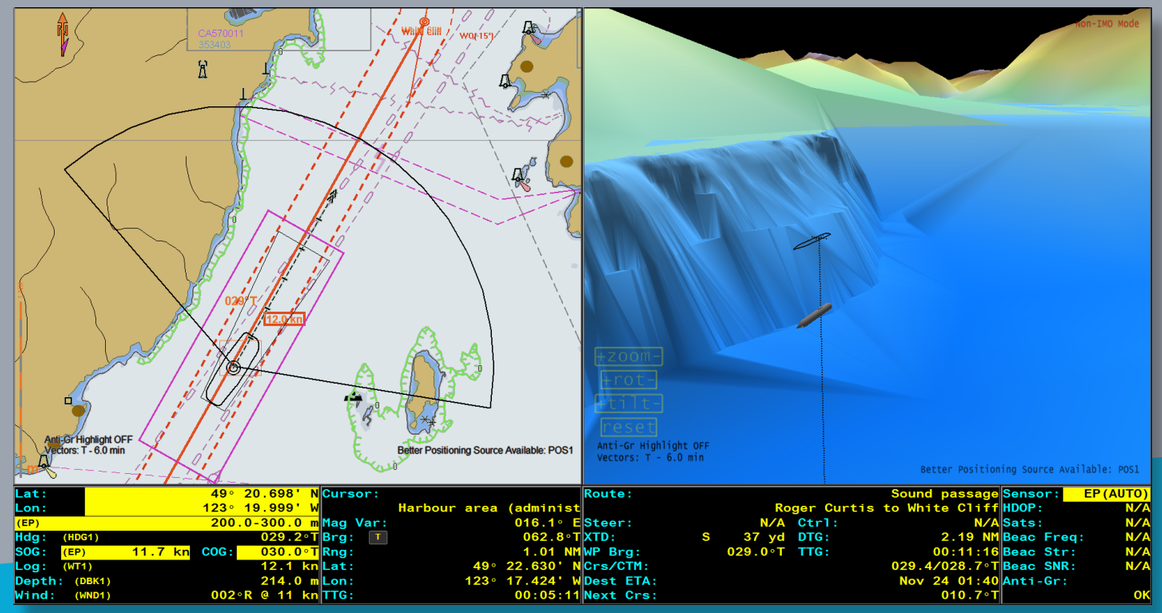
Operational Risk Management

Submarines manoeuvre through operationally challenging and diverse environments. Whether tasked to intercept an adversarial task group or to conduct Intelligence, Surveillance and Reconnaissance (ISR) collection activities, the strategic value of a proficient submarine capability cannot be understated.

While achieving the operational aim remains central to the submarine's priorities, the Command must concurrently manage mission priorities in alignment with the safety of the submarine and crew.

Submarines are unique seagoing platforms in that their normal state of operation allows the platform to manoeuvre through the water at various keel depths. This freedom of manoeuvre offers both tactical advantage and risk in equal measure; demanding that the submarine crew must proactively shift focus between safety, remaining undetected and achieving operational aims as the tactical environment shifts.

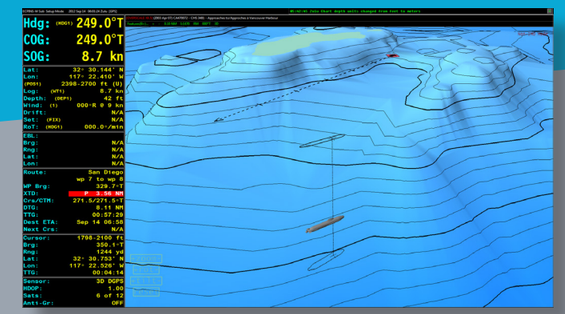
Submarines will often be required to operate in confined waters and be either depth restricted or limited in manoeuvre due to a combination of subsurface navigation hazards and movements of surface vessels. Additionally, the crew must contend with limited positional resources which are typically intermittently available when the platform can safely expose its sensors above the water surface.



ECPINS: The OSI Advantage

ECPINS delivers the OSI Maritime Systems (OSI) submarine navigation advantage; a robust Warship Electronic Chart Display and Information System (WECDIS) that merges procedural compliance with NATO STANAG 4564 with doctrinal Submarine Navigation standards in accordance with the widely used UK Royal Navy's Admiralty Manual of Navigation (BR 45).

ECPINS extends beyond the scope of a standard WECDIS, merging OSI's proprietary chart engine with an enhanced suite of digitised Submarine Navigation processes including, but not limited to:



Display and Fusion of Additional Military Layers (AMLs)

ECPINS is designed on the foundation of OSI's powerful chart engine, allowing users of the product to install, process, load and fuse a variety of: general ENC and specialised charts and navigation products, including AMLs for Contour Line Bathymetry, Submarine Exercise Areas and Bottoming charts.

The ECPINS interface enables the navigator to interact with the chart database during the construction of dived navigation charts and overlays for the various submarine duck depths; significantly reducing workload and optimising the navigation plot for safe and sustained operations in confined waters.

Digital Pool of Errors

Construction, expansion and reduction of Pool of Errors (POE) in accordance with governing BR 45 doctrine is digitised by the ECPINS software. This aids the navigator in maintaining an accurate compilation of the Fix, Log, Gyro and Set errors associated with the submarine's Estimated Position when operating without access to GNSS reception, and without having to manually reconstruct the error ellipses as the submarine alters course and speed. It also allows 'what if' scenarios to help inform the Command of safe navigation options in the dynamic under-sea environment.

Bottom Contour Fixing techniques

ECPINS simplifies two complex navigation techniques: Contour Advancement and Line of Soundings fixing techniques, allowing the operator to establish the submarine's position independent of GNSS or Inertial Navigation Systems. These fixing techniques enables the navigator to safely reduce the POE without resort to external sources. The navigator can also monitor INS accuracy, when dived and relying on inertial navigation systems for positional information, particularly when considering the catastrophic risk associated with vertical deflection and gravity disturbance.

A typical ECPINS software package for submarines consists of ECPINS and these modules:

Sub-specific capabilities in ECPINS

- Safety Contour: Dived depth dependent
- Simultaneous position display
- Vessel templates
- Auto dead reckoning with/without set & drift
- Set & drift calculation methods
- Periscope bearing continuous display
- LOPs by periscope bearing and range
- Peri Brg & Peri Rng for fixin
- Secure Mode
- Controlled access (user accounts)
- Waterspace management areas & moving havens
- Tides & currents integration
- Depth contour creation
- Limiting danger line creation
- High-density sub-specific chart display

Worldwide Support, Service and Installation Network

OSI is dedicated to providing customers with support, starting with in-country Certified Support Partner delivering Level 2 customer support, service, and installation.

Offering 24/7 support tailored to the Customer's needs, provides the peace of mind that there is a certified technician standing ready to support their queries in their local shipyard.

OSI Maritime Systems

www.osimaritime.com
info@osimaritime.com

400-4585 Canada Way
Burnaby, BC, V5G 4L6
Canada

Telephone:+1 778-373-4600
Fax:+1 778-373-0027