

ORION™ ANTI-SUBMARINE WARFARE SONAR

Detecting threats in shallow waters

L3Harris' Orion™ variable depth sonar is an anti-submarine sonar for use on small vessels, typically less than 300 tons, such as Rigid Hull Inflatable Boats (RHIBs), small patrol boats, unmanned surface and subsurface vessels and crafts-of-opportunity.

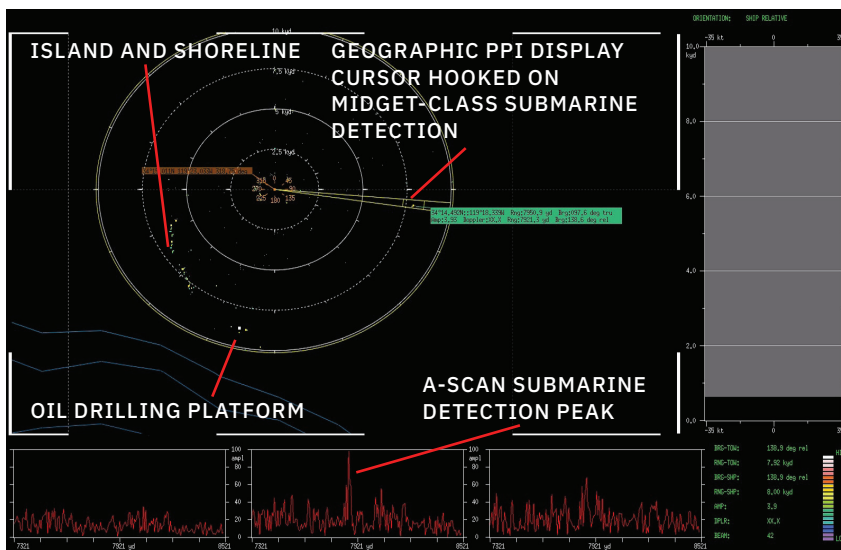
ORION FEATURES AND BENEFITS

Orion is used to detect midget-class submarines operating in very shallow water, down to 20 meters, presently considered an acoustic challenge. Its primary mission is active and passive surveillance in shallow ocean areas near land and transit zones.

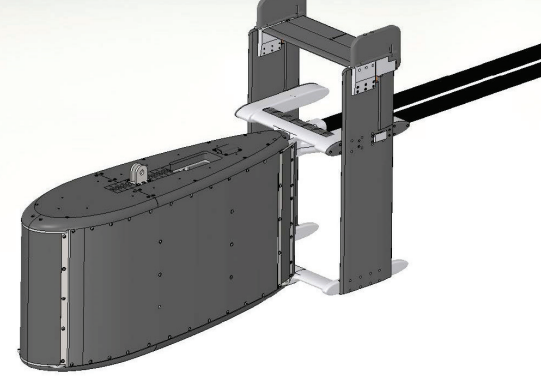
- > L3Harris' Orion has been optimized for operation in challenging shallow water environments to detect and track midget submarines with low target strengths.
- > Orion is a compact, lightweight sonar with a small deck footprint; it's easy to install and cross-deck onto almost all

small boats, manned or unmanned.

- > Orion largely uses COTS components, resulting in a low-cost, easy-to-maintain sonar system.
- > The system uses two parallel short receive arrays for instantaneous ambiguity resolution of the active signals and passive detections. This provides the signal discrimination performance of a much larger array in a compact, maneuverable package.
- > Orion's processing and display units use the latest open architecture technology, making manned, remote control, or automated operations efficient and effective.



USING PROVEN TECHNOLOGIES IN NEW WAYS RESULTS IN A LOW-COST, COMPACT SONAR SYSTEM WITH CONSISTENT DETECTION PERFORMANCE AGAINST MIDGET-CLASS SUBMARINES IN CHALLENGING SHALLOW WATERS

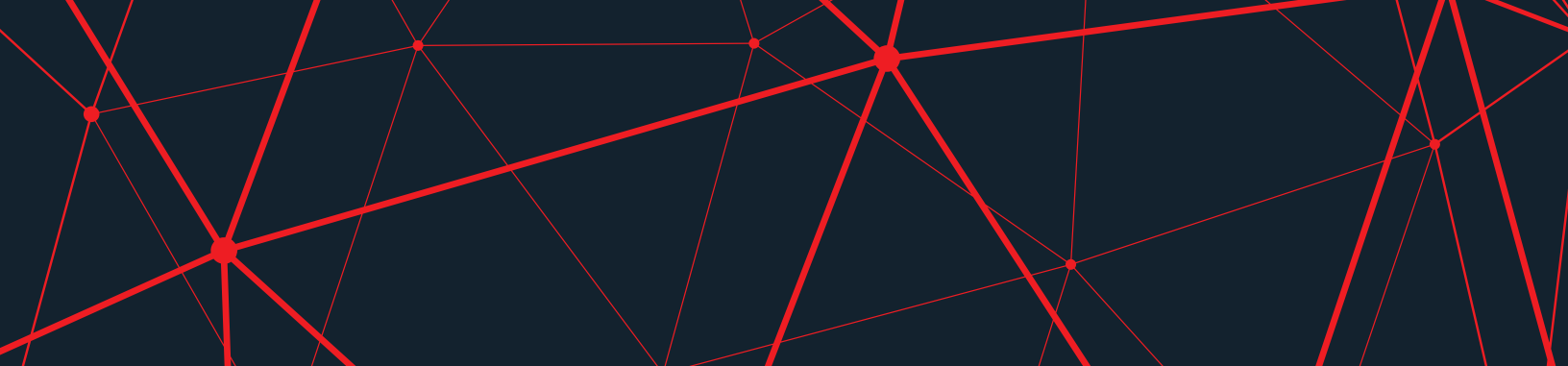


Key Features

- > Detects midget-class submarines in shallow waters
- > Small, lightweight and can easily be outfitted on almost any small craft
- > Modern processing and display capabilities allow easy operation with minimal training
- > Affordable initial cost and low-cost operation ensure a cost-effective solution for years to come

Sonar Processing

- > Active processing: State-of-the-art, comprehensive range of single- and multi-pulse, FM and CW processing for detection and automatic tracking.
- > Passive processing: Analysis and tracking suite comprises full 100 Hz to 3,200 Hz continuous wideband coverage, broadband, DEMON and narrowband analyzers, torpedo alert and tracking functions.
- > Playback mode: Playback is seamlessly integrated into passive and active operation, making mission data available for post-analysis and operator training.
- > Built-in test: Power-up, continuous background and operator-initiated test modes combine to boost system availability and expand operational readiness.



SPECIFICATIONS

Operating Modes	Active, passive, test and playback
Source Level	210 dB/1μPa @ 1 m (omnidirectional)
Operating Depth	> 65 ft. (> 20 m)
Survival Speed	28 knots
Size	Tow Body: 52 in. x 16 in. x 29 in. (1.3 m x .4 m x .74 m)
	Inboard Electronics: Amp: 30 in. x 17 in. x 25 in. (.76 m x .43 m x .64 m)
	Processor: 19 in. x 13 in. x 3.5 in. (.48 m x .33 m x .09 m)
Weight	Tow Body: 450 lb. (204 kg)
	Inboard Electronics: Amp: 250 lb. (113 kg)
	Processor: 25 lb. (11 kg)
Platforms	Small surface crafts, USVs, large USVs
Receive Array	Length: 70 ft. (21 m), 2.2 in. dia.
	Weight: 150 lb. each, 300 lb. total (68 kg each, 136 kg total)
Deployment	Customized to each platform

ORION PROCESSING

Active	
Active Band	300 Hz
Processing	CW and FM
Pulse Lengths	Range-dependent 0.313-to-2.5s max
FM Bandwidth	100 Hz and 300 Hz
Tracking	Auto and operator-initiated
Displays	PPI, bearing range, Doppler range, FM A-scan, geographic overlay
Range Scale	5, 10, 20 and 40 kyd
Passive	
Passive Band	Continuous 100-to-3,200 Hz
Processing	Broadband, narrowband, ALI, DEMON and tracking
Displays	Broadband, narrowband, ALI and DEMON, torpedo alert
Tracking	BTR, BFI, NALI, DEMON and LOFAR

DISPLAYS AND OPERATOR INTERFACES

- > State-of-the-art workstation-based operator machine interface: Trackball, point-and-click control; pull-down menu function and parameter selection allows easy access to key information.
- > Displays: A strategic balance of multifunction displays, built on a modern OpenGL framework, offer flexible search, classification and geographic formats. High-resolution color monitors capture details in the real-time processed sonar data.
- > Built-in operator aids: To simplify operation and planning, Orion recommends settings, and provides automated detection estimation and data history recall.
- > COTS hardware: Orion incorporates a modular, expandable open architecture to accommodate future technology.



ORION AND HANDLING SYSTEM
OUTFITTED ON AN 11-METER RHIB



MIDGET-CLASS SUBMARINE
USED IN SEA TEST

L3Harris_sht_Orion

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