



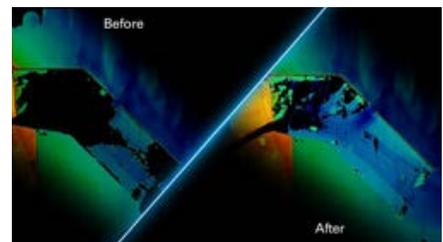
CZMIL Nova

Airborne Bathymetric Lidar

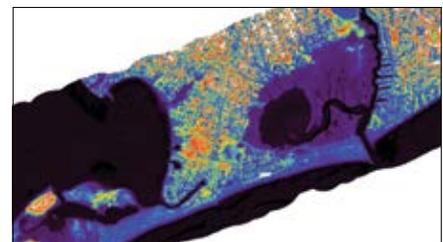
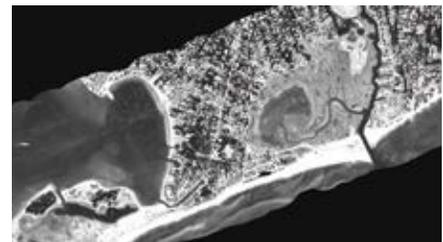
The most productive airborne system for seamless topography and bathymetry in real-world water quality conditions

Optech CZMIL Nova is an innovative airborne coastal zone mapping system that produces simultaneous high-resolution 3D data and imagery of the beach and shallow water seafloor, including coastal topography, benthic classification and water column characterization. CZMIL Nova performs particularly well in shallow, turbid waters. Its bathymetric lidar is integrated with a hyperspectral imaging system and digital metric camera. Optech HydroFusion, a powerful end-to-end software suite, handles all three sensors—from mission planning through to fused lidar and imagery data sets.

- » Only system tested against military specs such as shock & vibration and validated by US and foreign government agencies
- » Best seamless topo/bathy capability in clear waters up to 75 m and unmatched results in turbid waters
- » The CZMIL Nova is optimized for weight and size, and can be mounted in aircraft as small as a Piper Navajo
- » Best operational productivity with all in one HydroFusion workflow and data fusion software Optech CZMIL Nova was designed by Teledyne Optech for the U.S. Government under the auspices of the U.S. Army Corps of Engineers (USACE) and the Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX). It was built and tested by Optech with the assistance of the University of Southern Mississippi (USM).



Turbid Water Performance



(Top) Pseudo reflectance image; (bottom) colored elevation image both generated in HydroFusion.

Collected June 2018 in Massachusetts by JALBTCX as part of the National Coastal Mapping Program.



- » Coastal management
- » Beach/coastal erosion monitoring
- » Aquatic ecosystems management
- » Underwater object detection
- » Harbor and navigation channel inspection
- » Nautical charting
- » Rapid environmental assessment
- » Turbid waters

CZMIL Nova

Technical Specifications



KEY FEATURES

- » Accurate and seamless topography and water depth measurements
- » Short laser pulse widths enable true shallow water bathymetry
- » Circular scan pattern provides two 'looks' per target, for optimal object detection
- » Web-based interface for real-time in-field remote diagnostics
- » Simultaneous high-density topo/bathy data from a single laser
- » Segmented detector capable of up to 70,000 measurements/second
- » Lidar, hyperspectral, and RGB camera integrated on-board
- » Weight and design optimized for airworthiness and military standards

Parameters	Specifications
GENERAL SPECIFICATIONS	
Operating altitude	400 m (nominal), up to 1,000 m
Aircraft speed	140 kts (nominal)
Hyperspectral sensor	CASI-1500H
Digital cameras	Phase One iXU-RS 1000 100MP
Positioning & GPS/GNSS	Applanix POS AV™
Positioning system	OmniSTAR capable (subscription required)
LIDAR HYDROGRAPHIC MODE	
Shallow channels measurement rate	70 kHz
Shallow channels maximum depth	$2/K_d$ (bottom reflectivity > 15%), K_d is water diffuse attenuation coefficient
Deep channel measurement rate	10 kHz
Deep channel maximum depth	$4.3/K_d$ (bottom reflectivity > 15%)
Depth measurement accuracy	$\sqrt{(0.3^2 + (0.013d)^2)}$ m, 2 σ
Horizontal accuracy	$(3.5 + 0.05d)$ m, 2 σ
Scan angle	20° circular
Swath width	70% of operating altitude
Laser classification	Class 4 laser product: IEC 60825-1 Ed. 3.0 2014
LIDAR TOPOGRAPHIC MODE	
Measurement rate	80 kHz
Horizontal accuracy	± 1 m, 2 σ
Vertical accuracy	± 15 cm, 2 σ
PHYSICAL	
Power requirements	85 A for Lidar/camera @ 28 VDC and 95A @28VDC with CASI
Operating temperature	0°C to 40°C
Storage temperature	-10°C to +60°C
Humidity	0-95% non-condensing
Sensor head	89 W x 60 D x 90 H cm; 175 kg
Control & operations rack	59 W x 56.5 D x 106 H cm; 112 kg
Data processing software	CZMIL HydroFusion (Windows-based)

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