

ECDIS Chart Layers

And

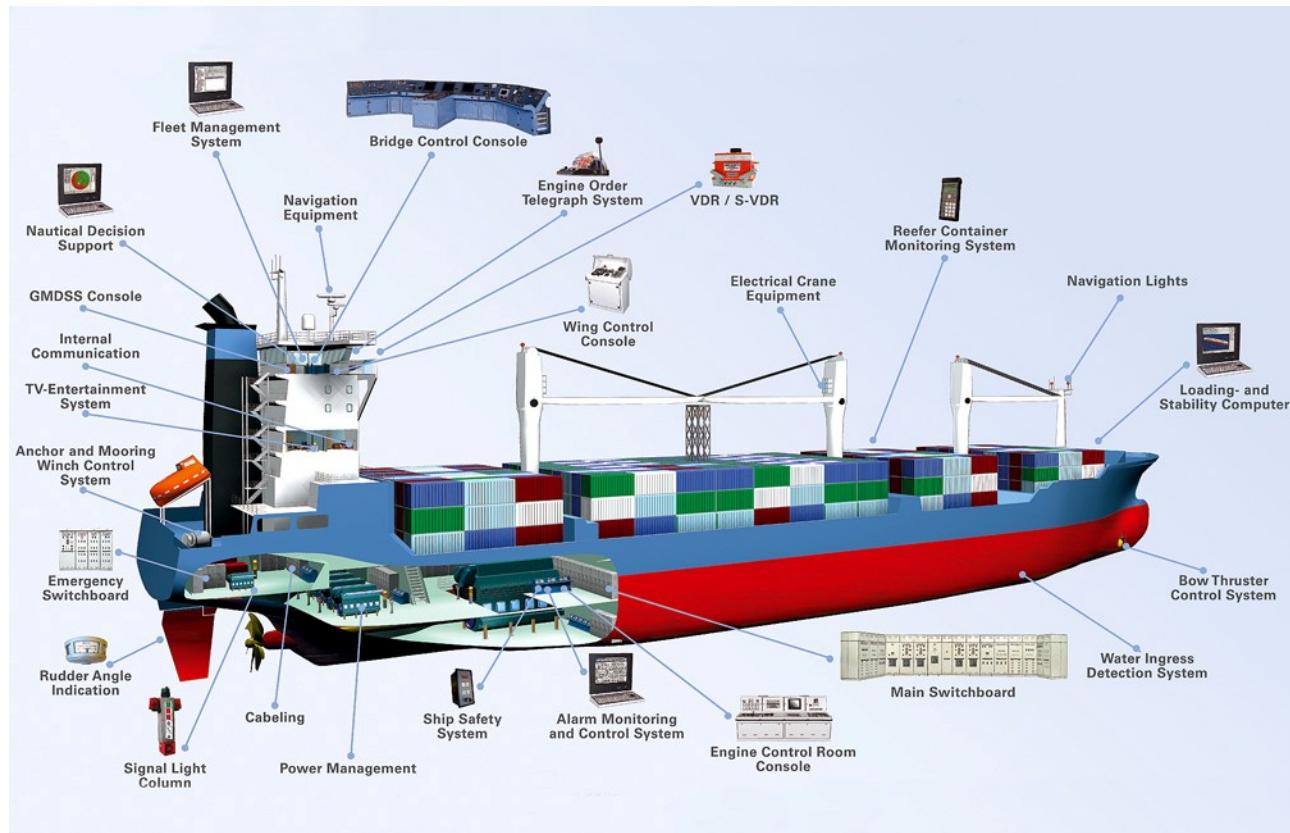
Their Navigational Impact

Maritime Education & Training



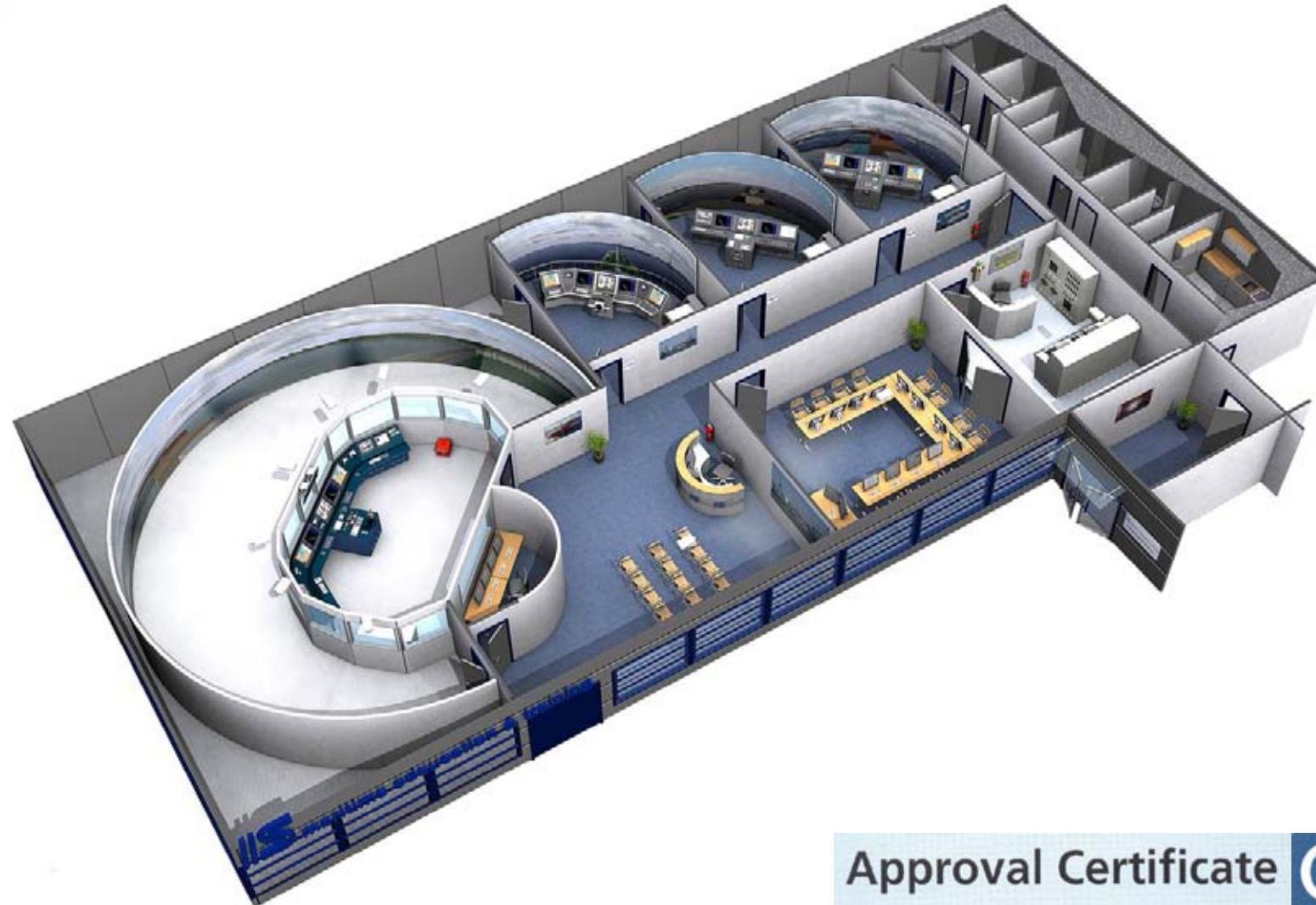
To the benefit of all:

- Added value from integrated products and services
- Partner for the maritime industry



System integrator for all electronic parts:

- Comprehensive product portfolio
- IS products cover a vessel's entire life cycle
- System integration for own and third party products



Approval Certificate **GL** 



Chart Presentation Modes

Additional Chart Layers

Chart Scale

Navigational Impact

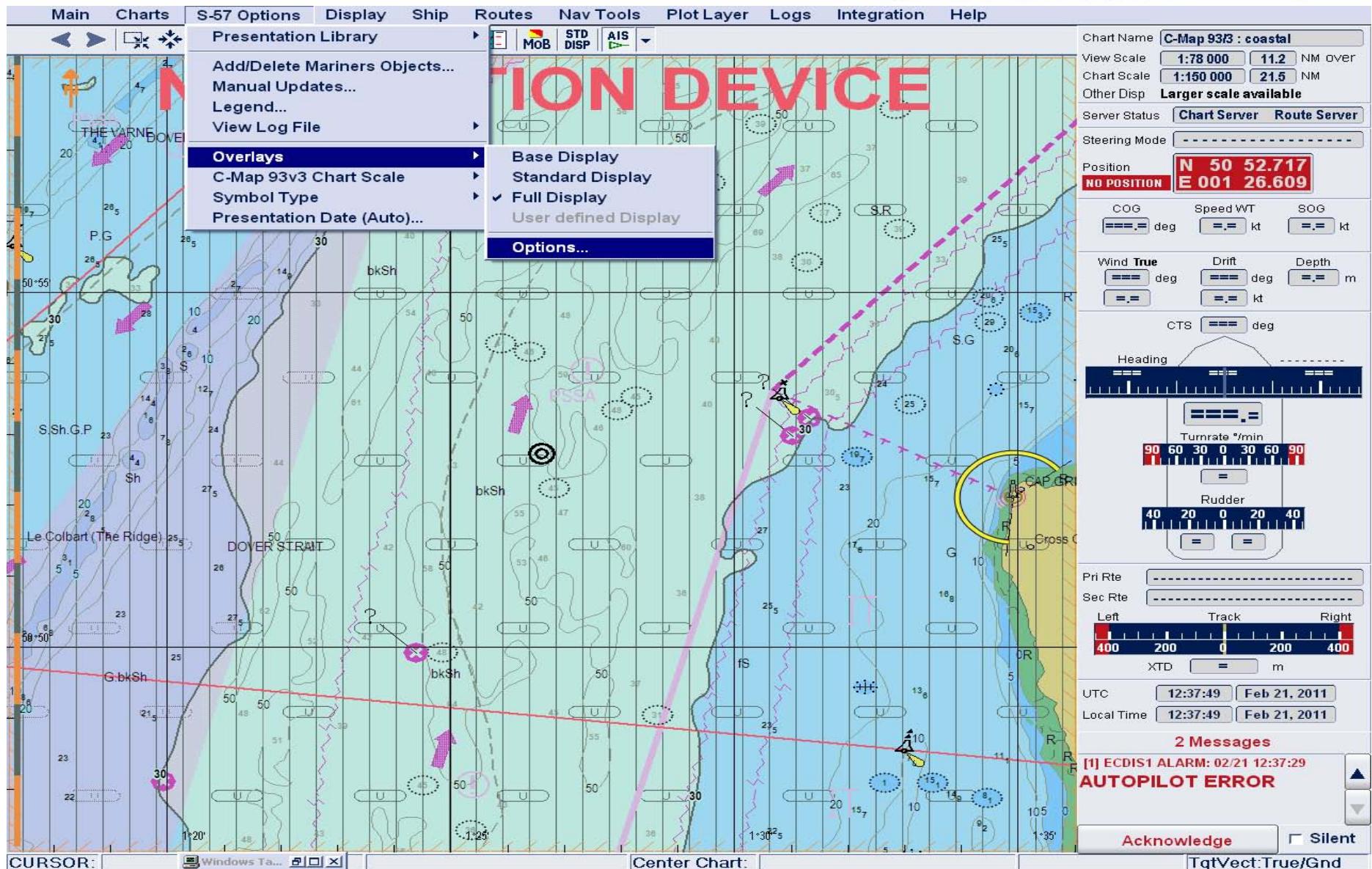
Chart Presentation Modes

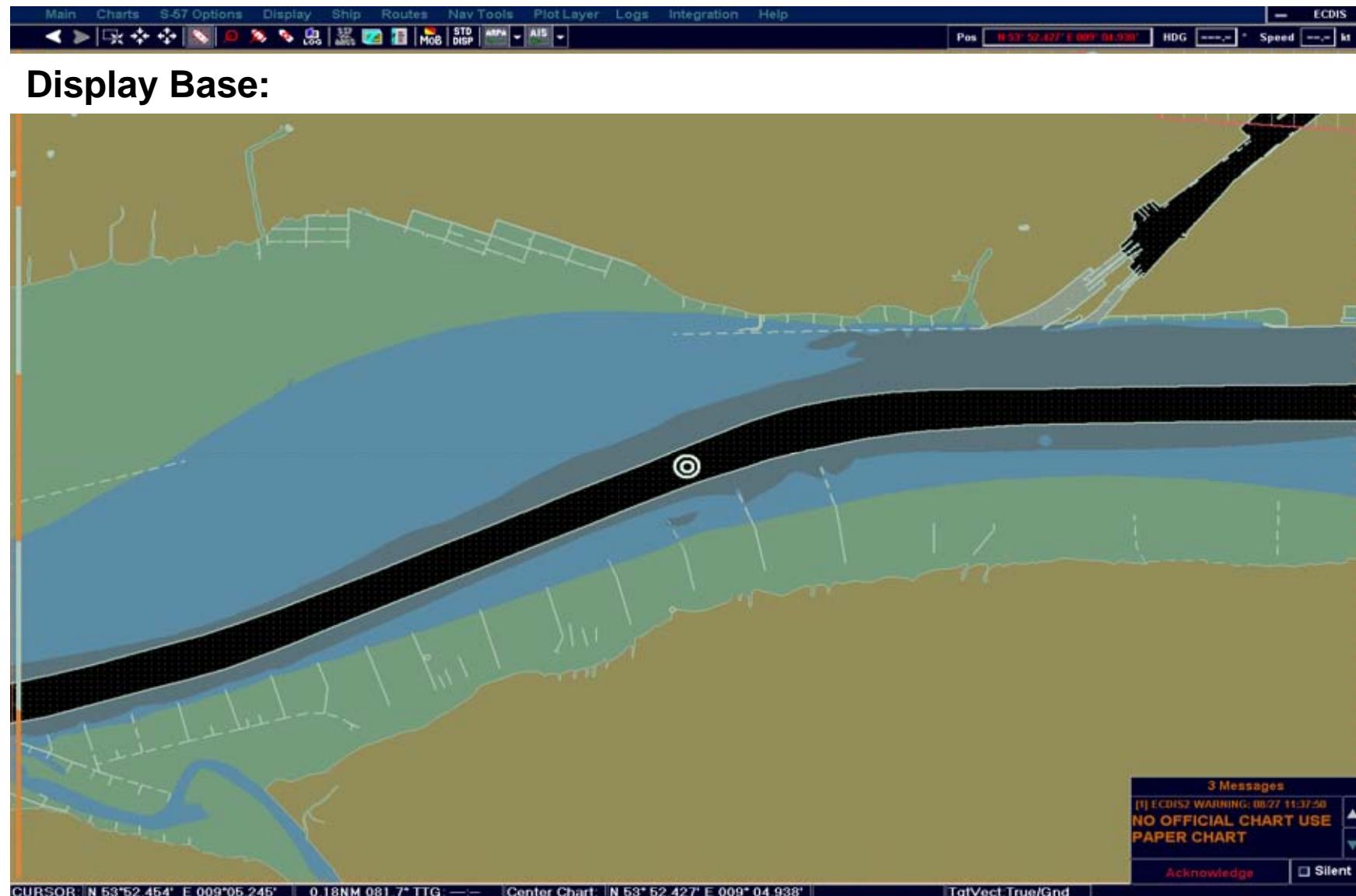
Additional Chart Layers

Chart Scale

Navigational Impact

Chart Presentation Modes





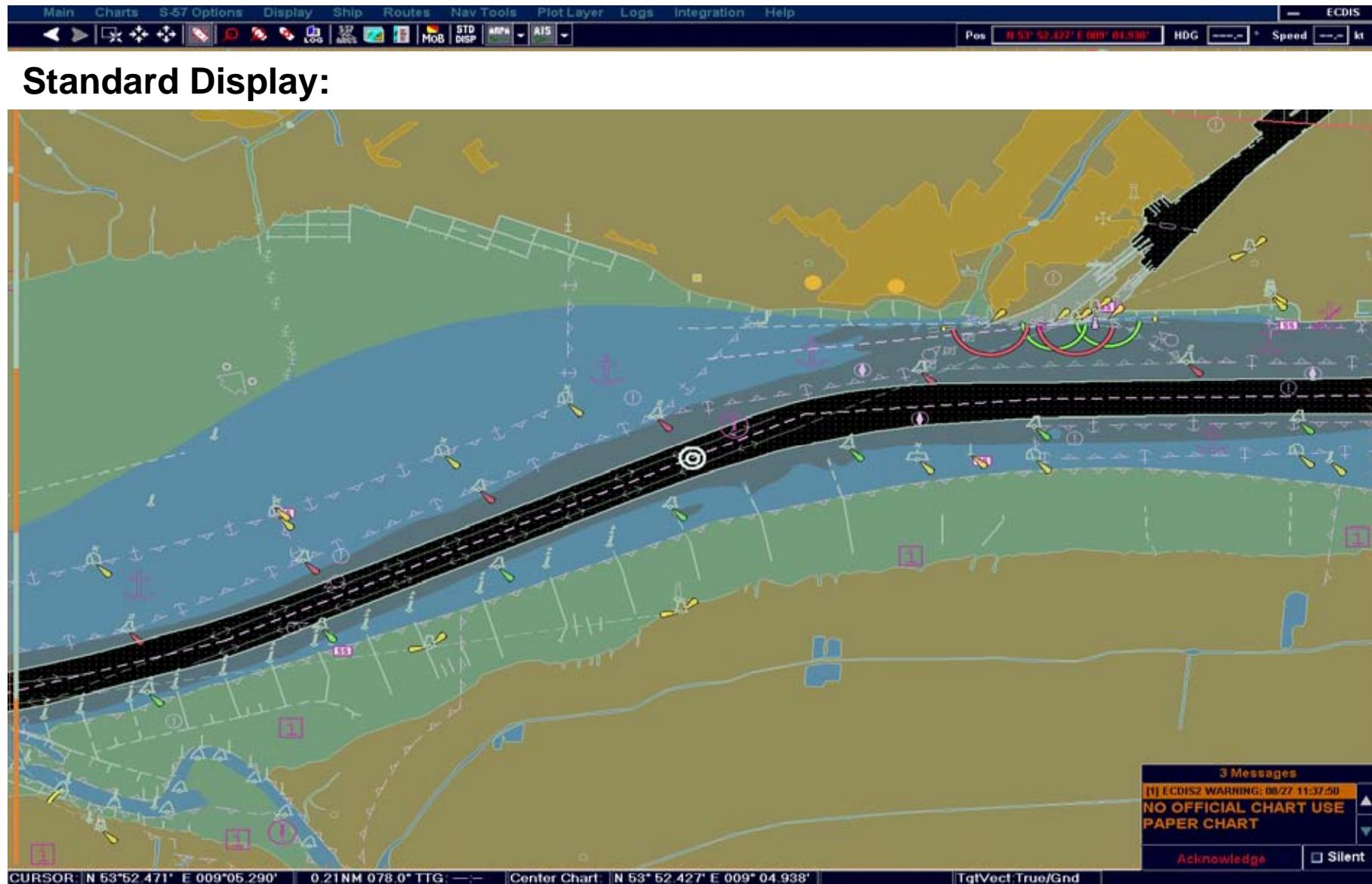




Chart Presentation Modes

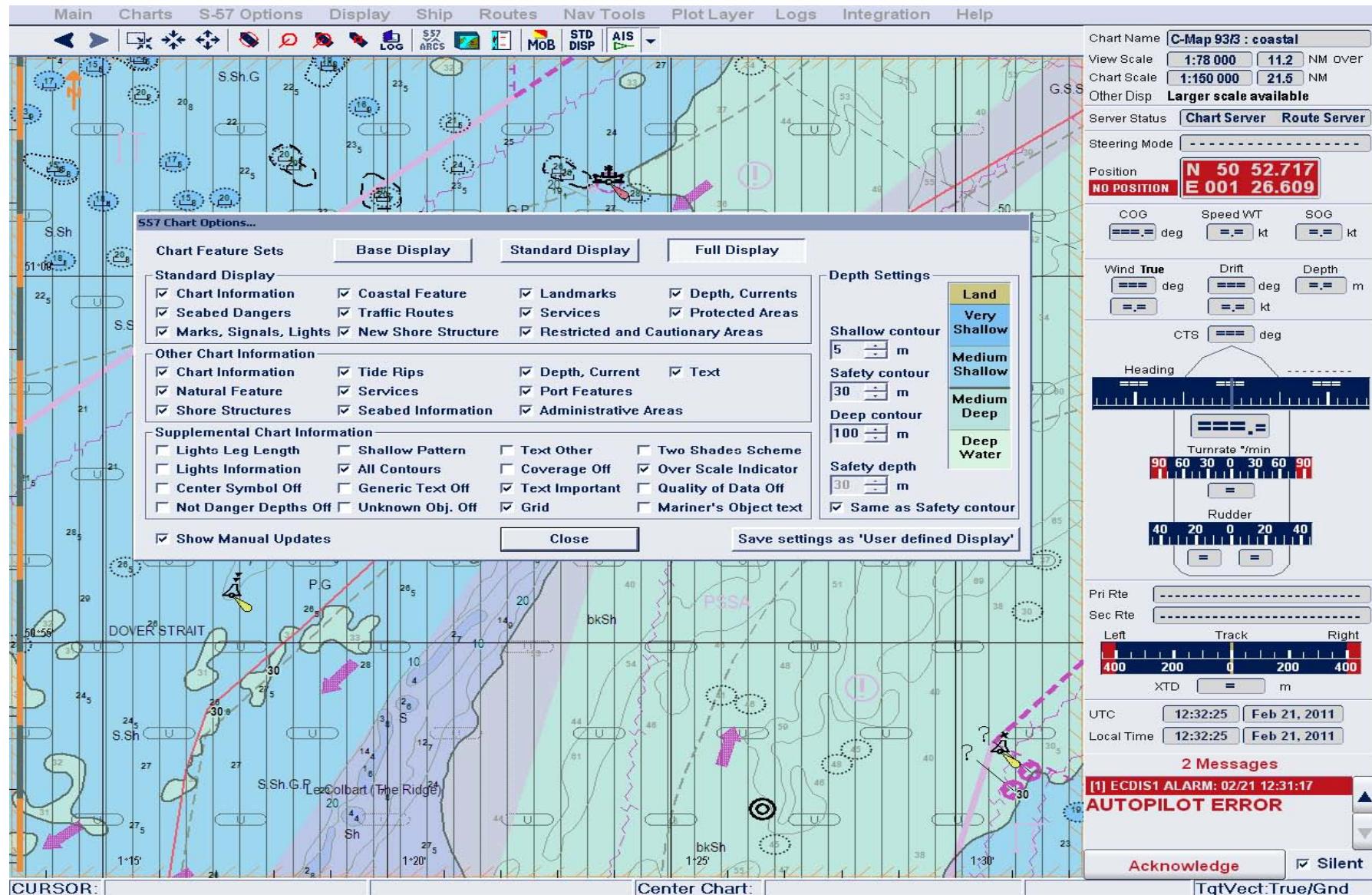




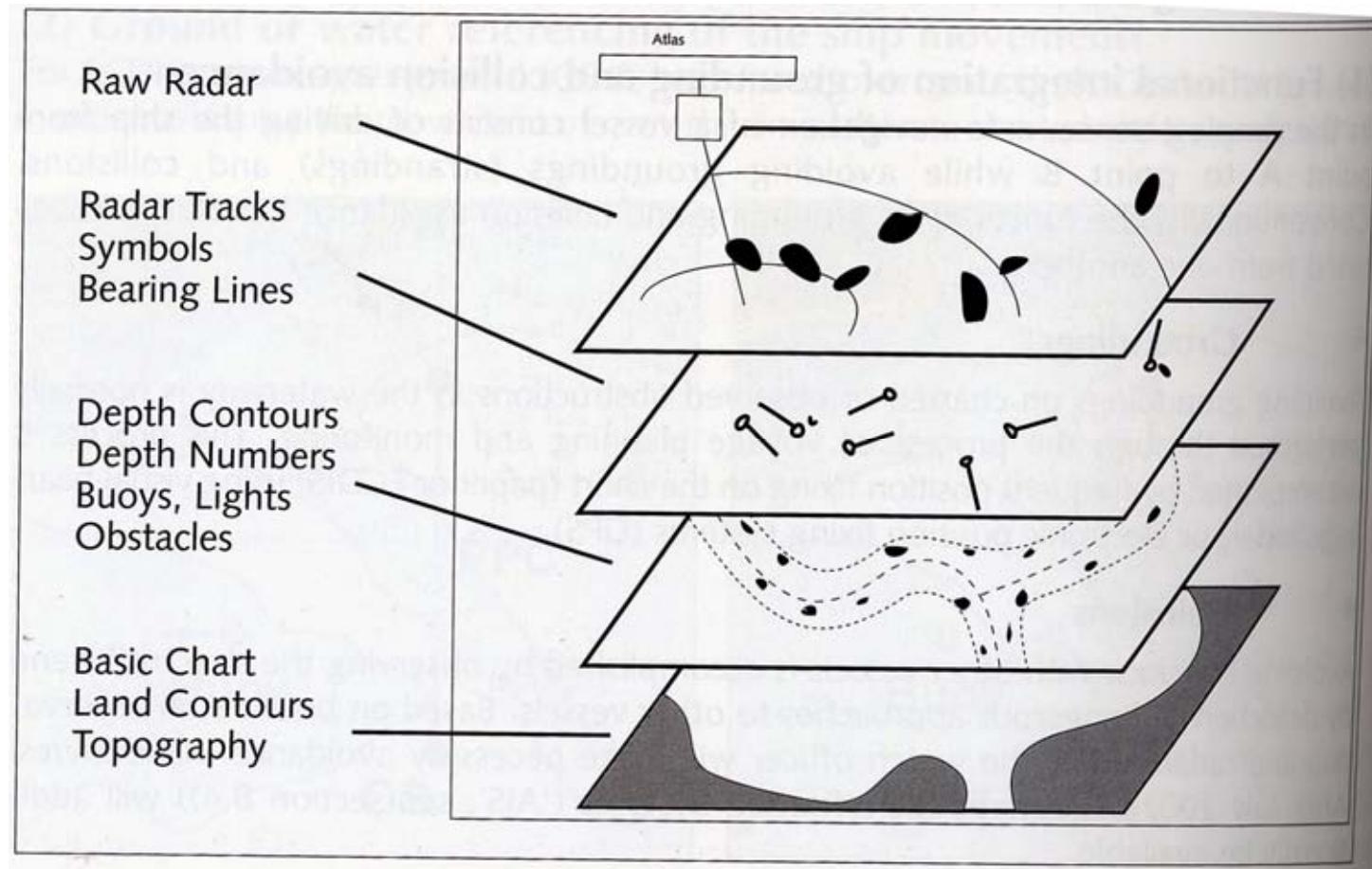
Chart Presentation Modes

Additional Chart Layers

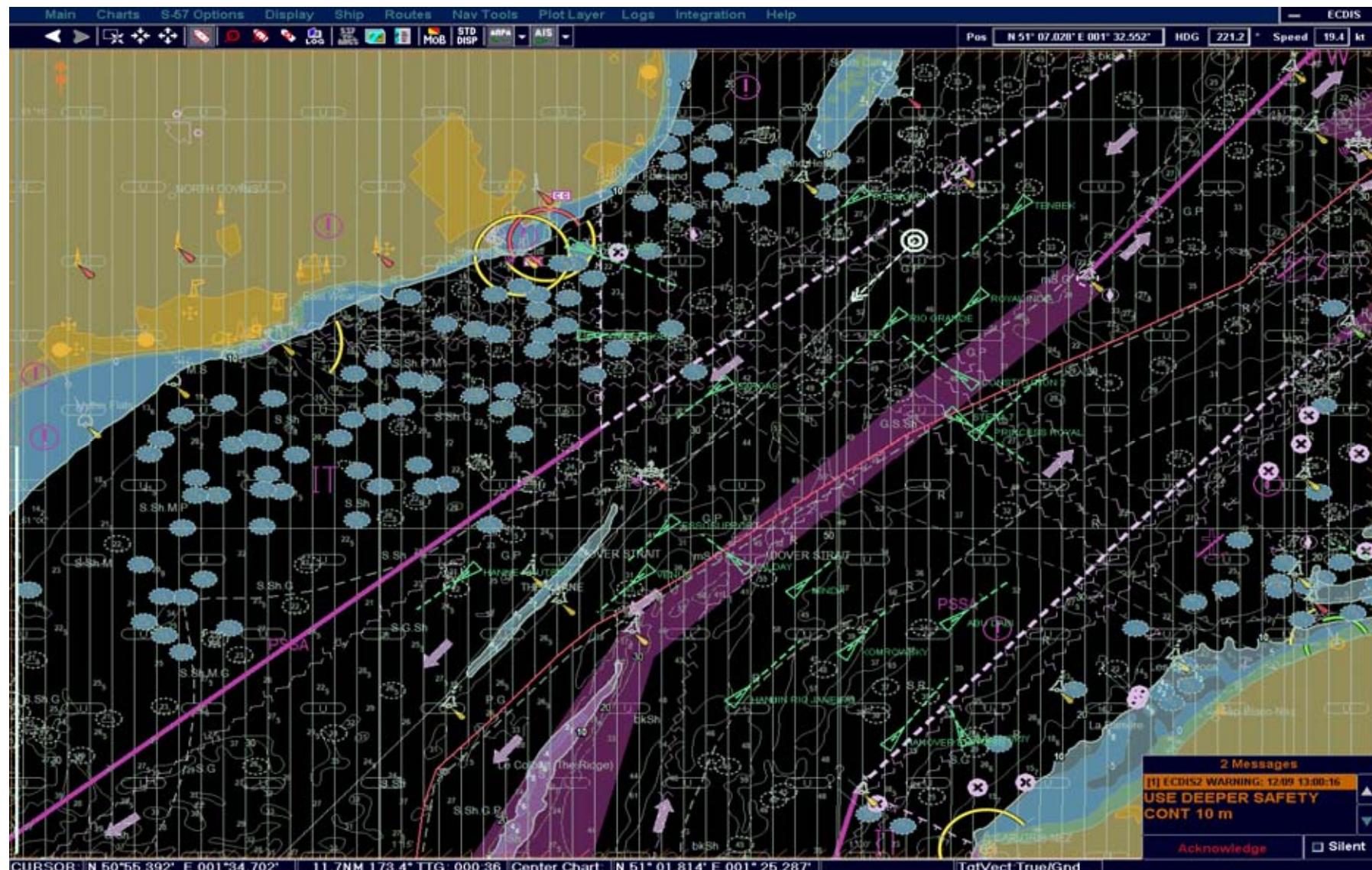
Chart Scale

Navigational Impact

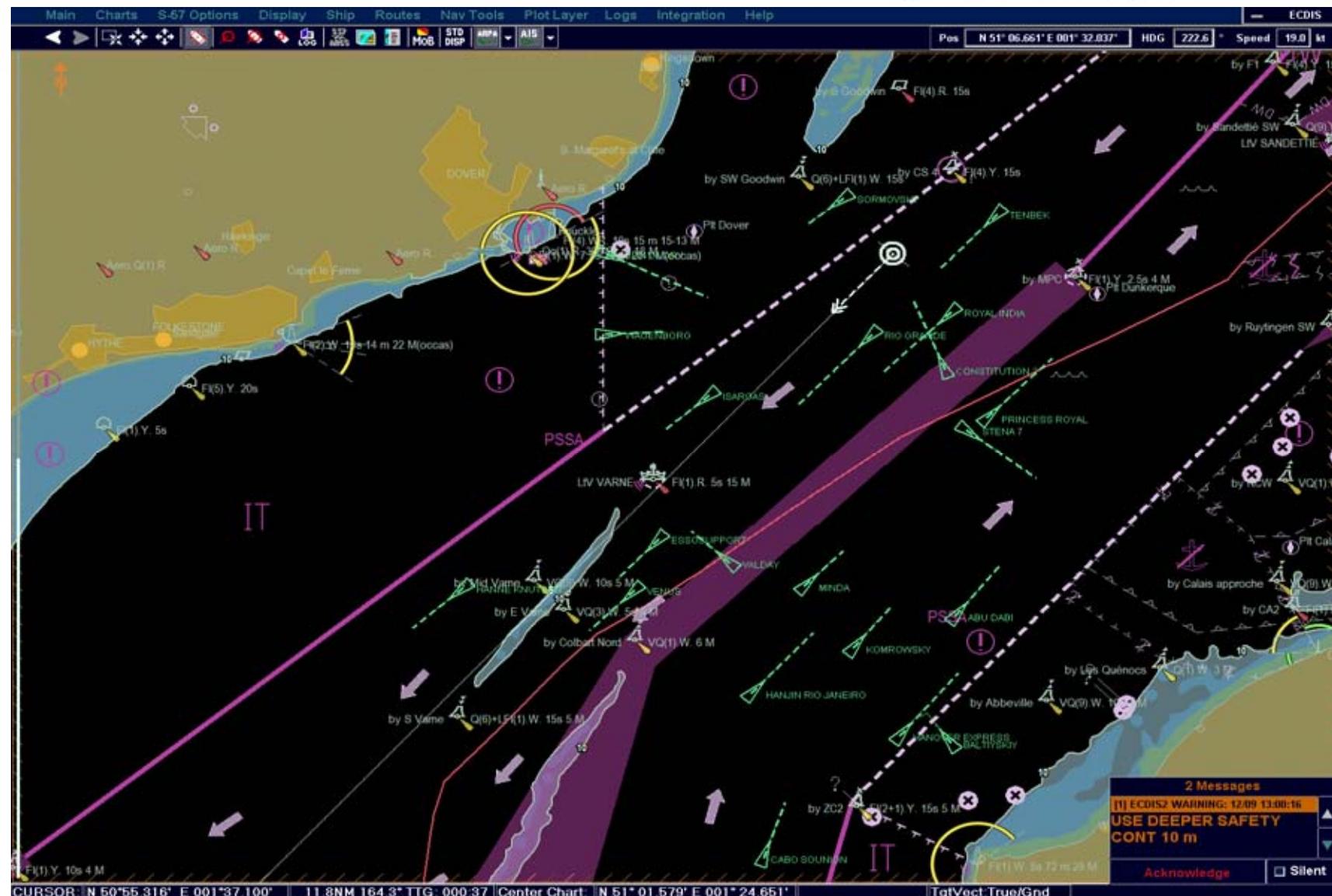
Multilayer Object structure



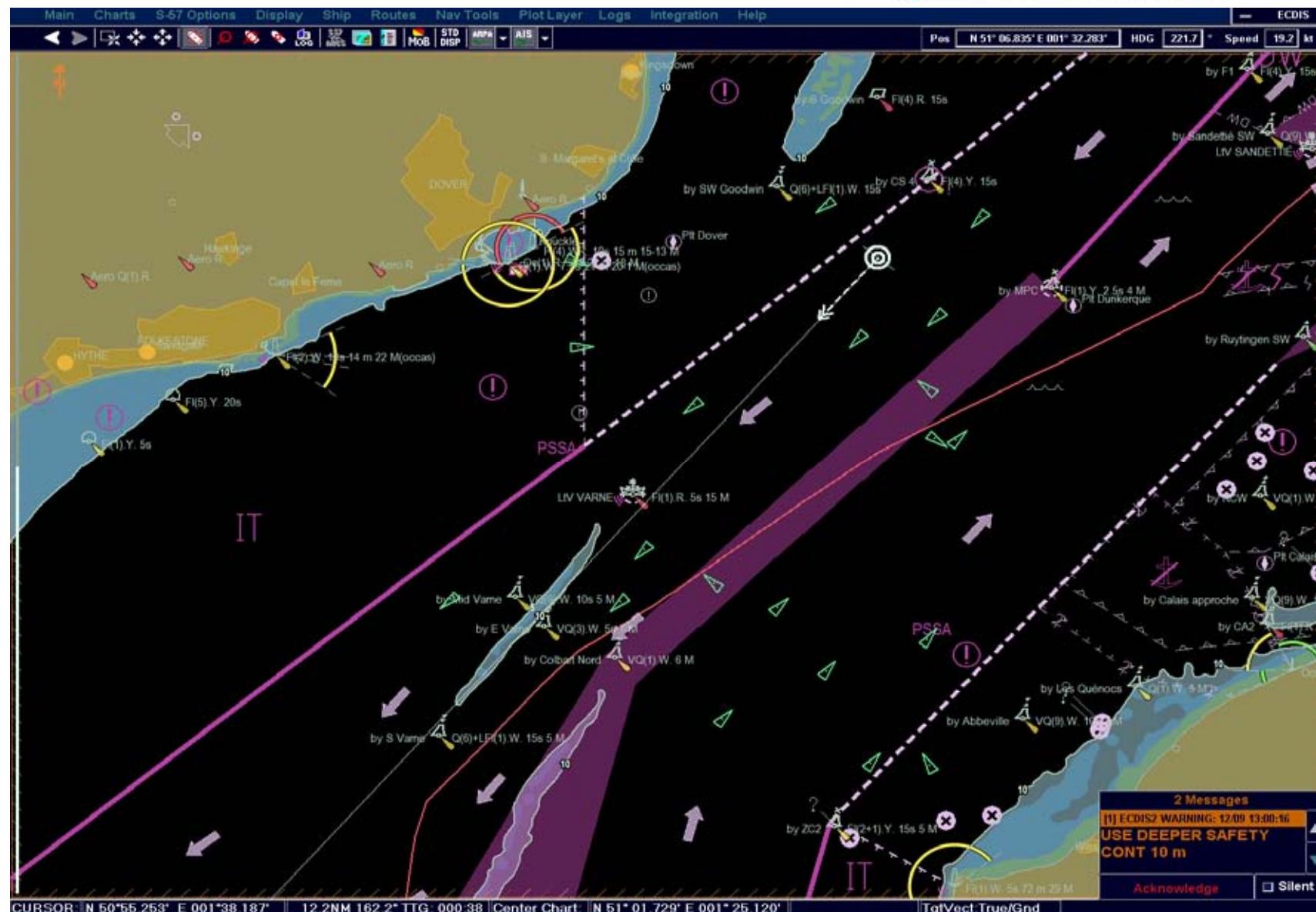
Additional Chart Layers



Additional Chart Layers



Additional Chart Layers

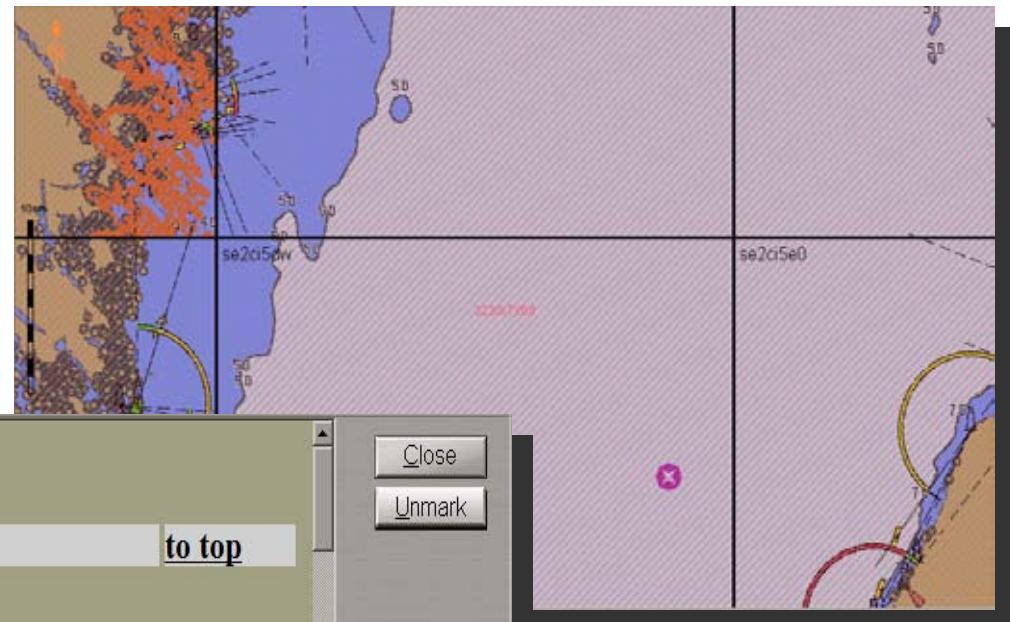


Multilayer Object structure

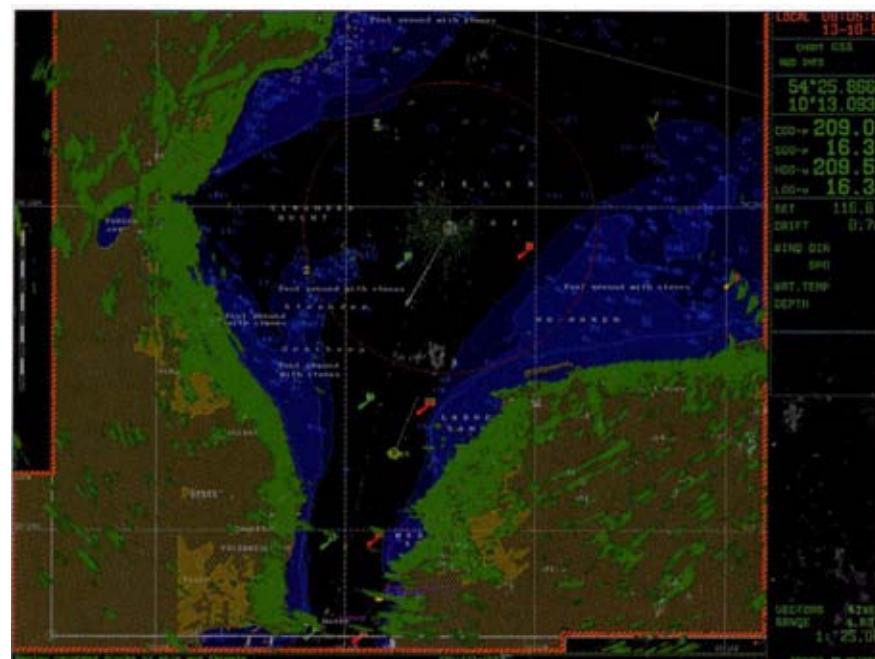
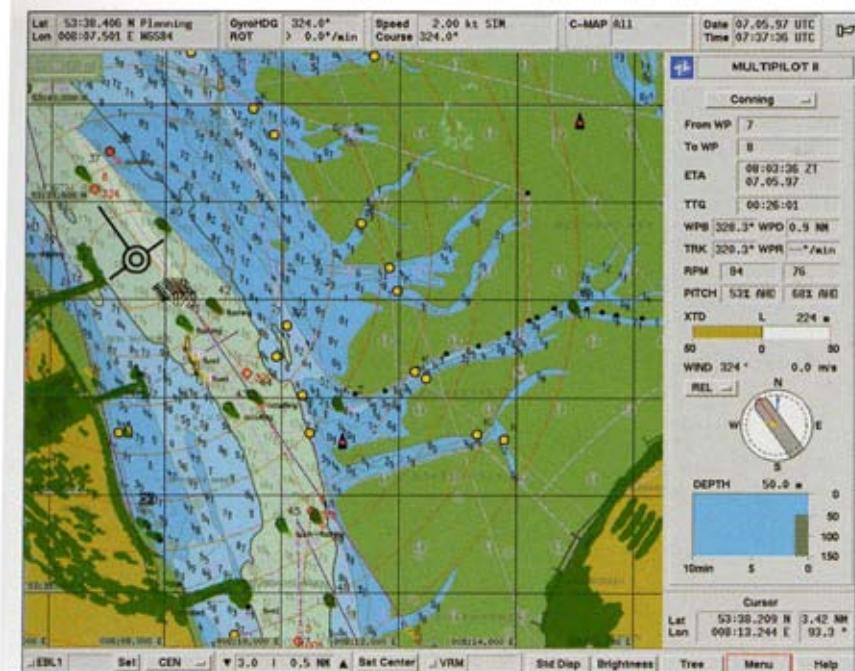


Admiralty Information Overlay (AIO)

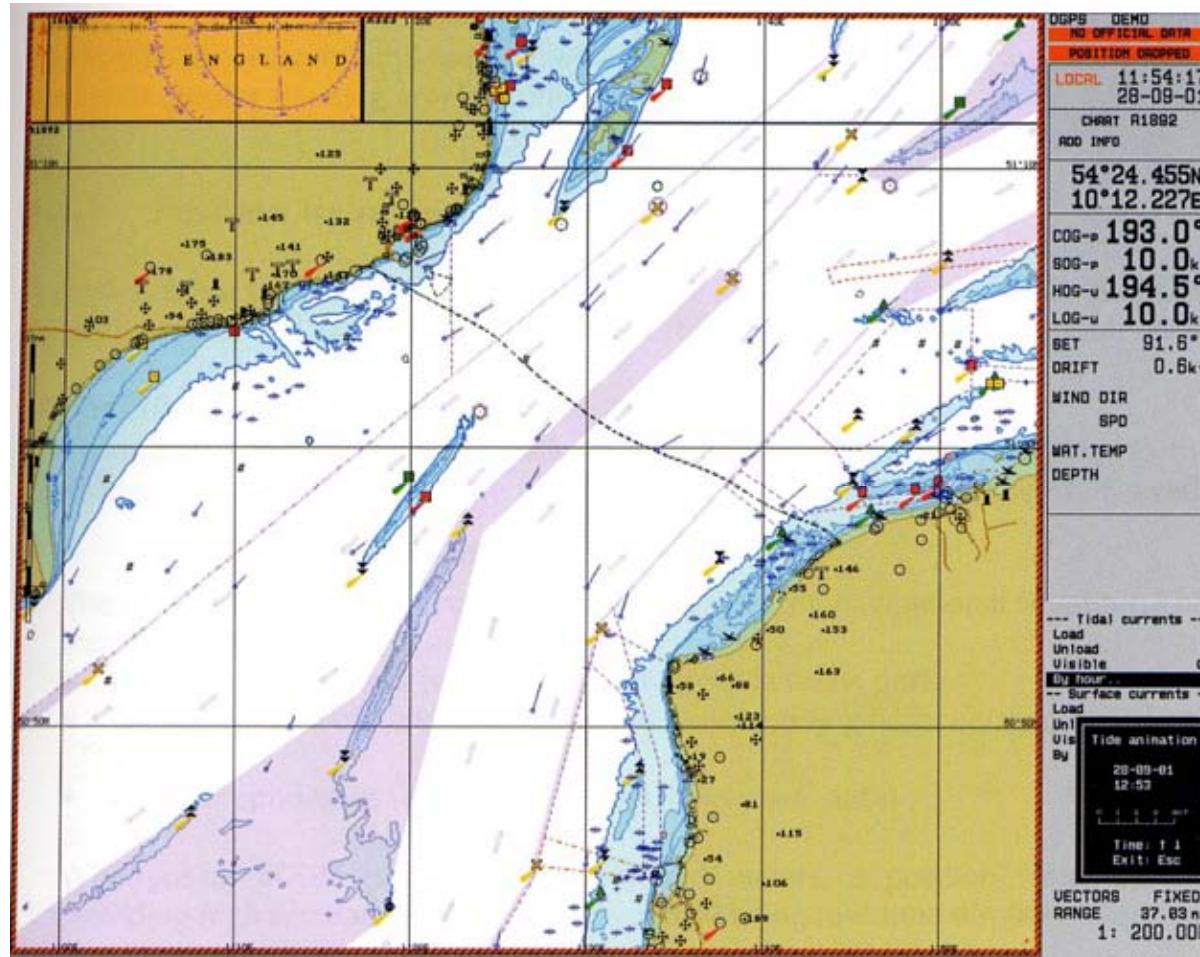
- In combination with official ENCs it is possible to display Temporary & Preliminary Notices to Mariners as a separate overlay.



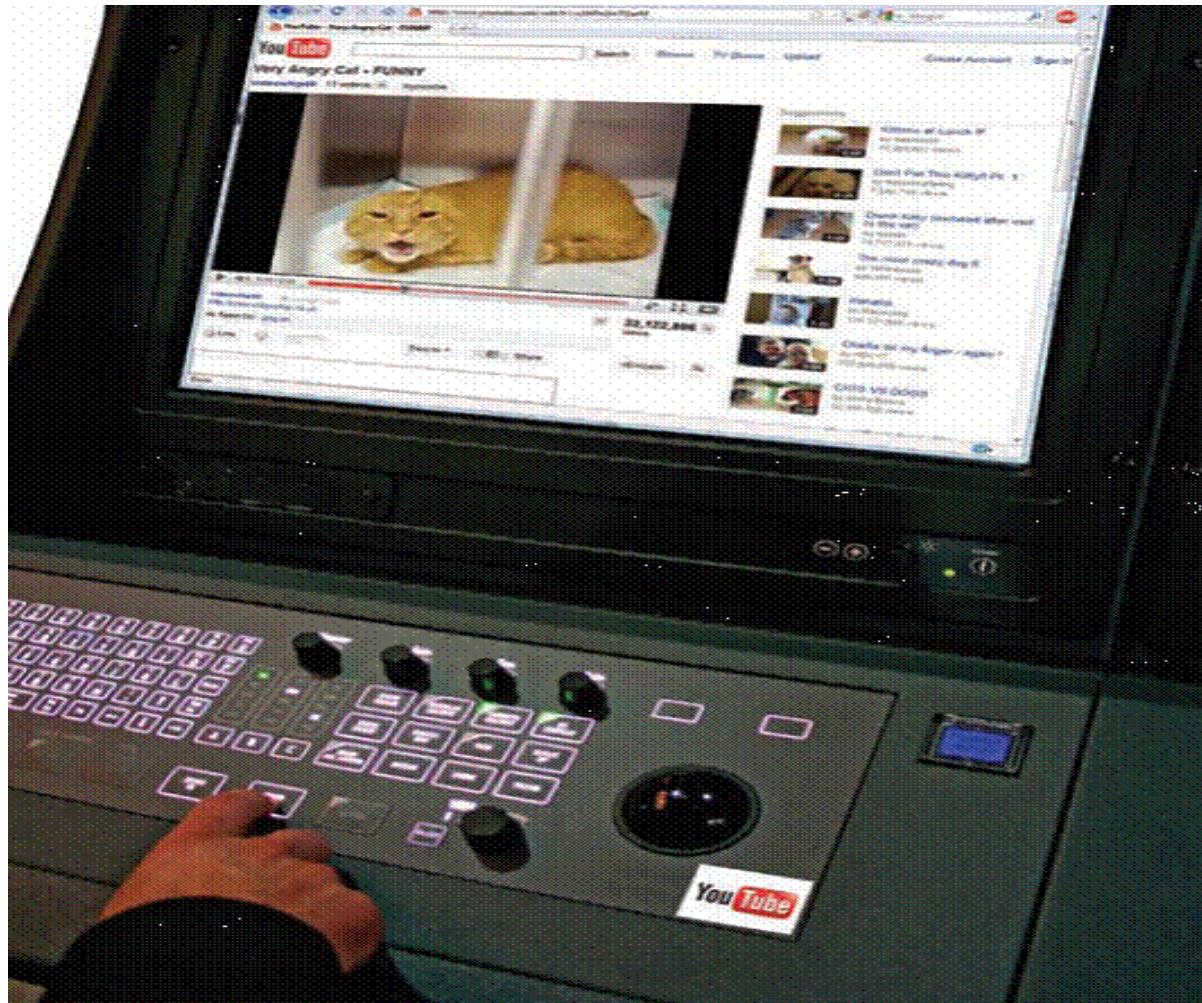
Radar overlays



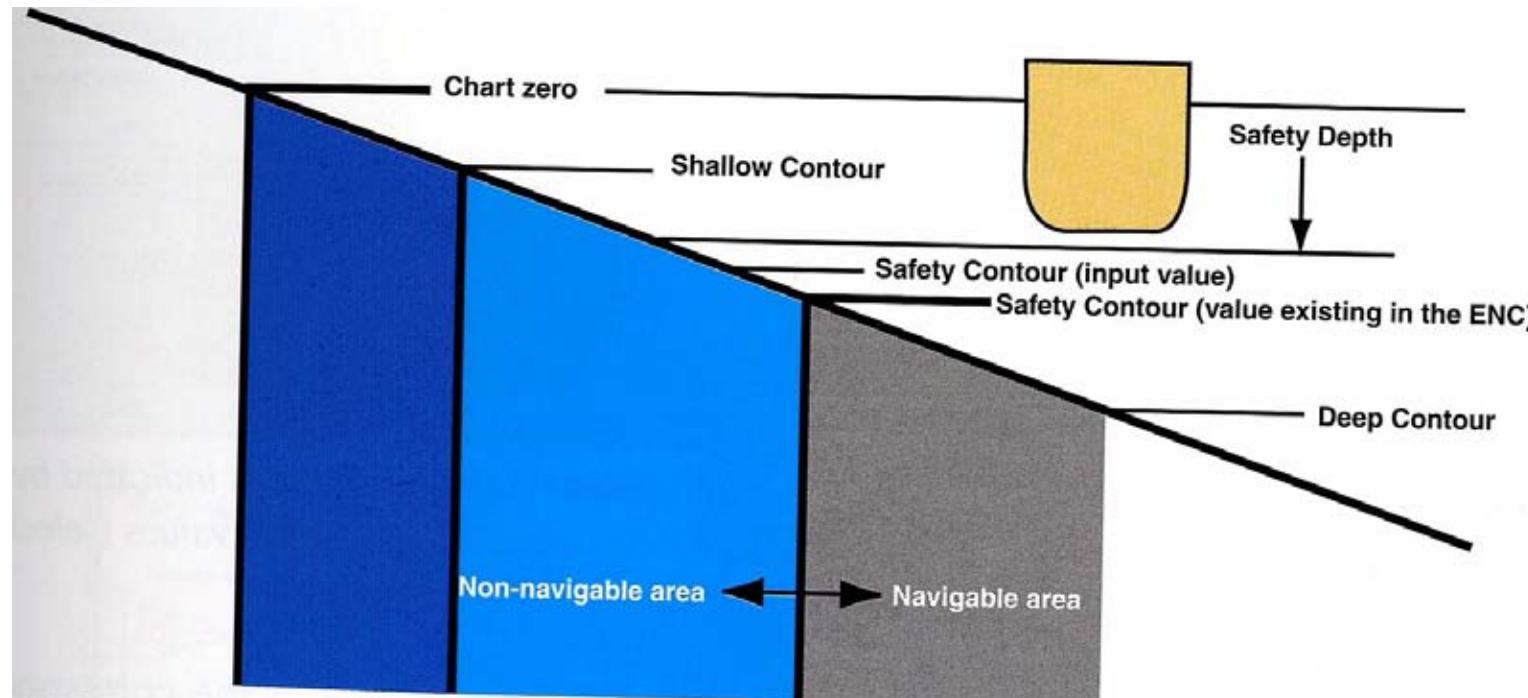
Tide and current modules



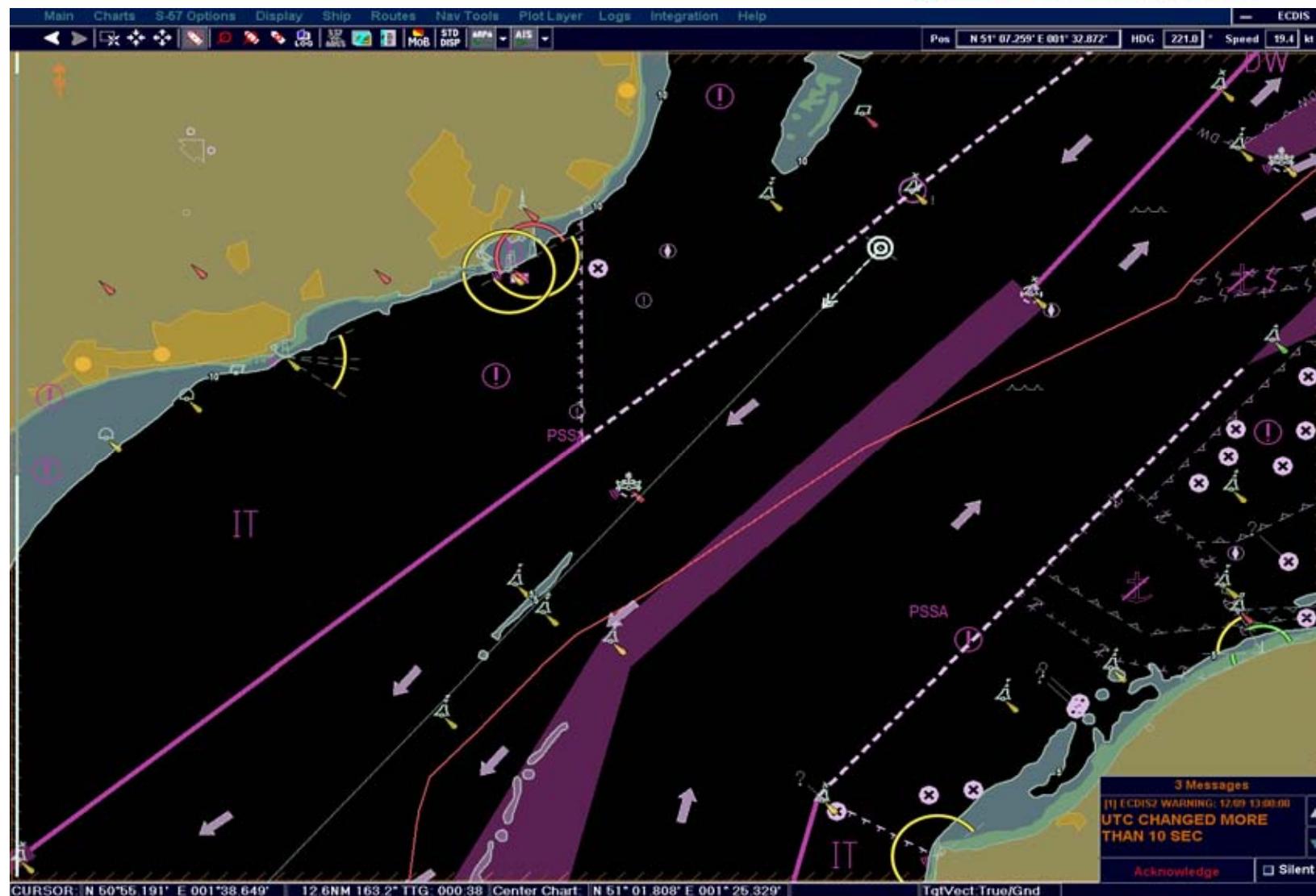
Additional Chart Layers



Safety contour



Additional Chart Layers



Shallow Contour: 0 m

Safety Contour: 1m

Deep Contour: 5 m

Additional Chart Layers



Shallow Contour: 5 m

Safety Contour: 10m

Deep Contour: 15 m

- Default Settings according to standing orders / company standards (PassWord Secured, Restricted Access)
- User Profiles (Advantages/Disadvantages)
- Influence of chart settings during route planning / Monitoring
- Impact of the Chart View
- Function: Paper Chart / Depth setting / contours similar to a paper chart
- Limitations on available chart depth contours (8m input -> 10m line displayed)



Chart Presentation Modes

Additional Chart Layers

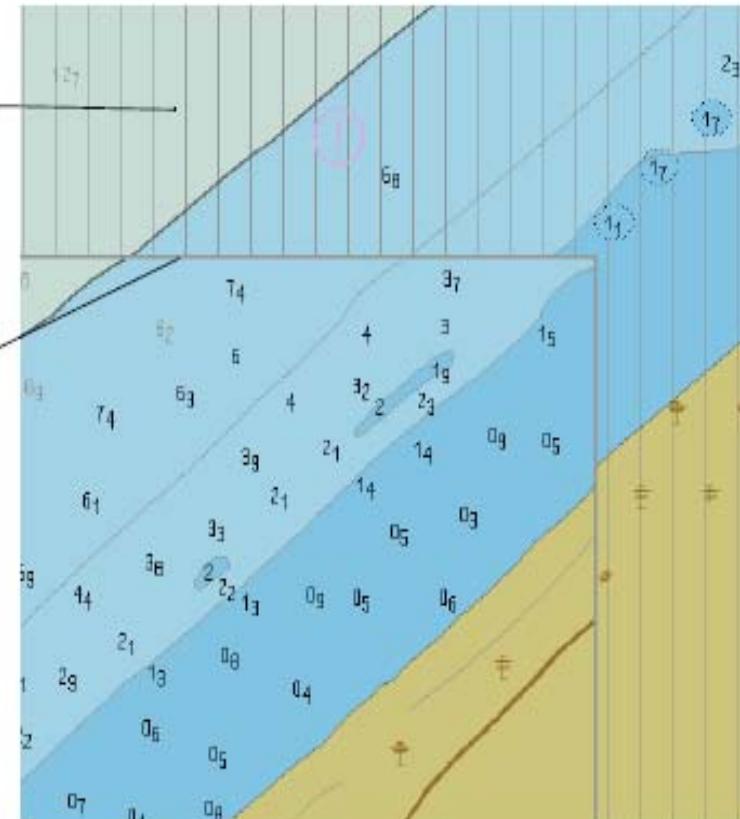
Chart Scale

Navigational Impact

Over scale warning

The scale of the cell used here is considerably smaller than the display scale.

Boundary between cells having different scales



Be aware: On some systems the feature „Overscale indicator“ can be deactivated

Chart Scale

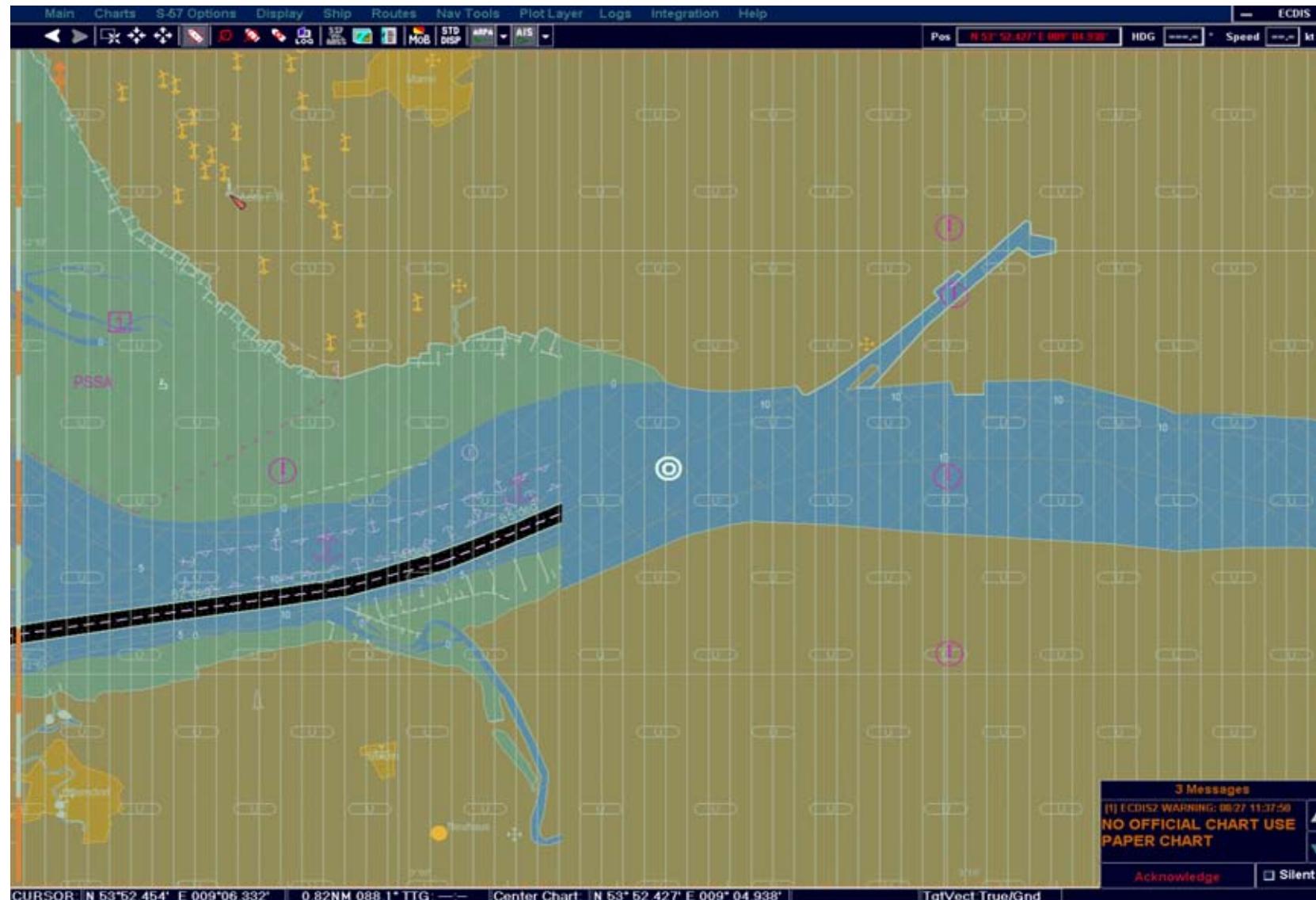
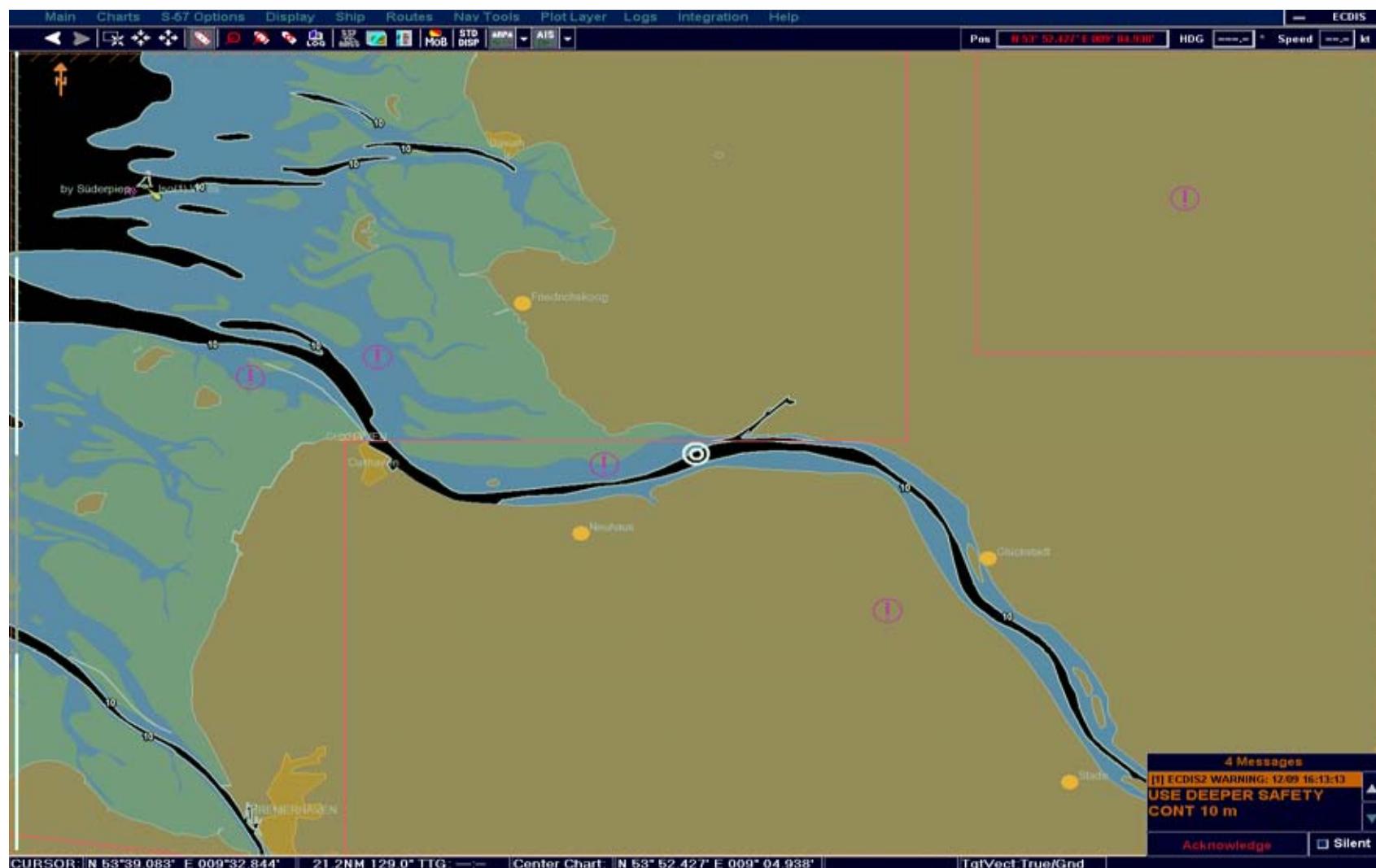


Chart Scale





- Google Earth one chart without different scales
- Deactivation Overscale Indicator
- 100% ENC coverage - > all feasible scale ranges available?



Chart Presentation Modes

Additional Chart Layers

Chart Scale

Navigational Impact



Grounding of CV LT CORTESIA on 02. January 2008 passing English Channel west-bound.



Flag: German
Type: Full Container
GT: 101.007 t
Engine: 65.880 kW FPP
Length: 333,99 m
Draught: 11,75 m [max]
Crew: 22 + 5 Passengers

Navigational Impact



0428 Light Vessel reported by Look-out



0436 Course change to 237°



Grounding Position

0420 Captain leaving Bridge

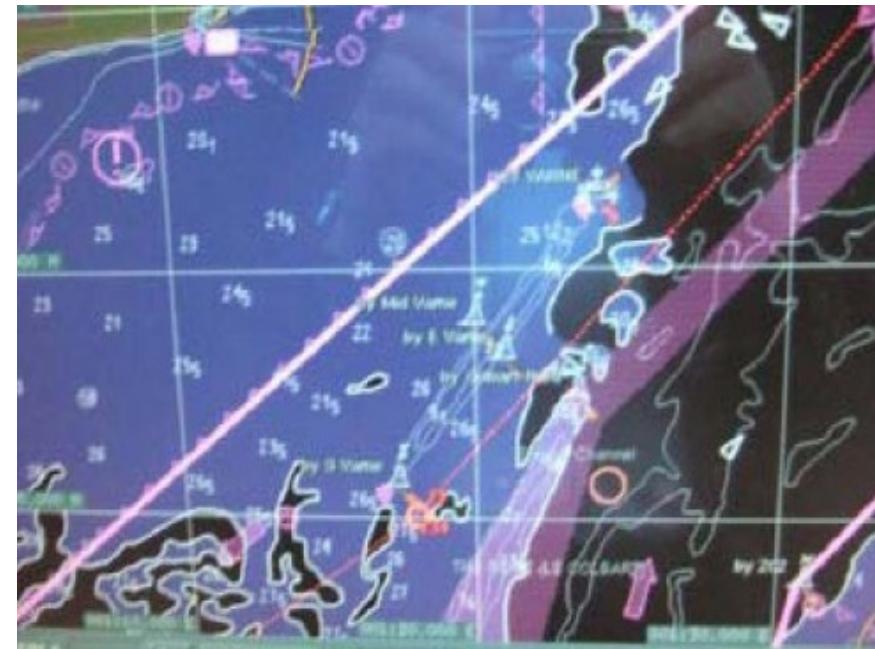


Analysis of Error Chains

- The passage plane, done by the third mate was well clear of the varne bank. During grounding the shallow countour was 20m, safety countour 30 m (ships draught: 12m)



Day mode

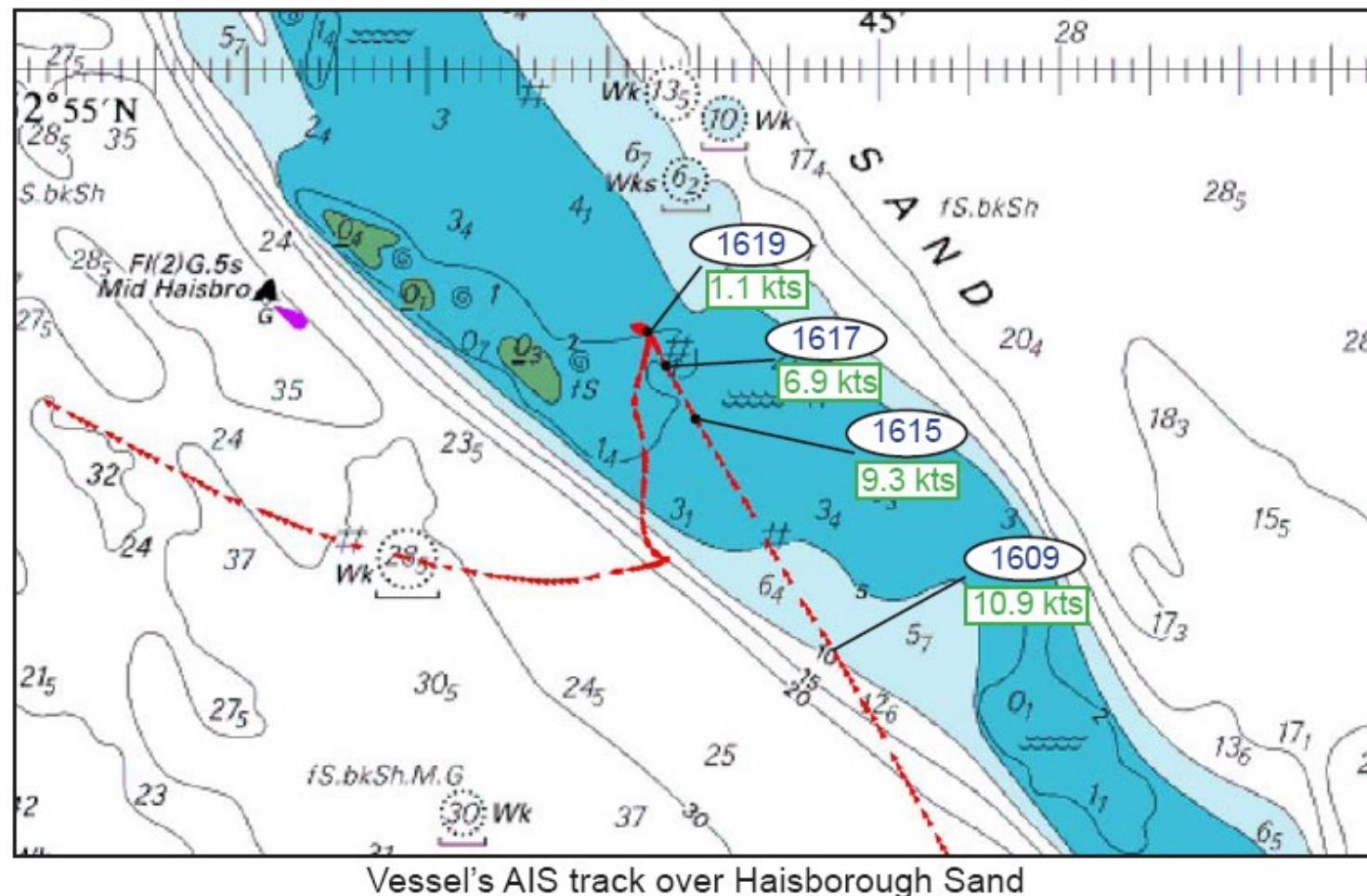


Night mode (during grounding)

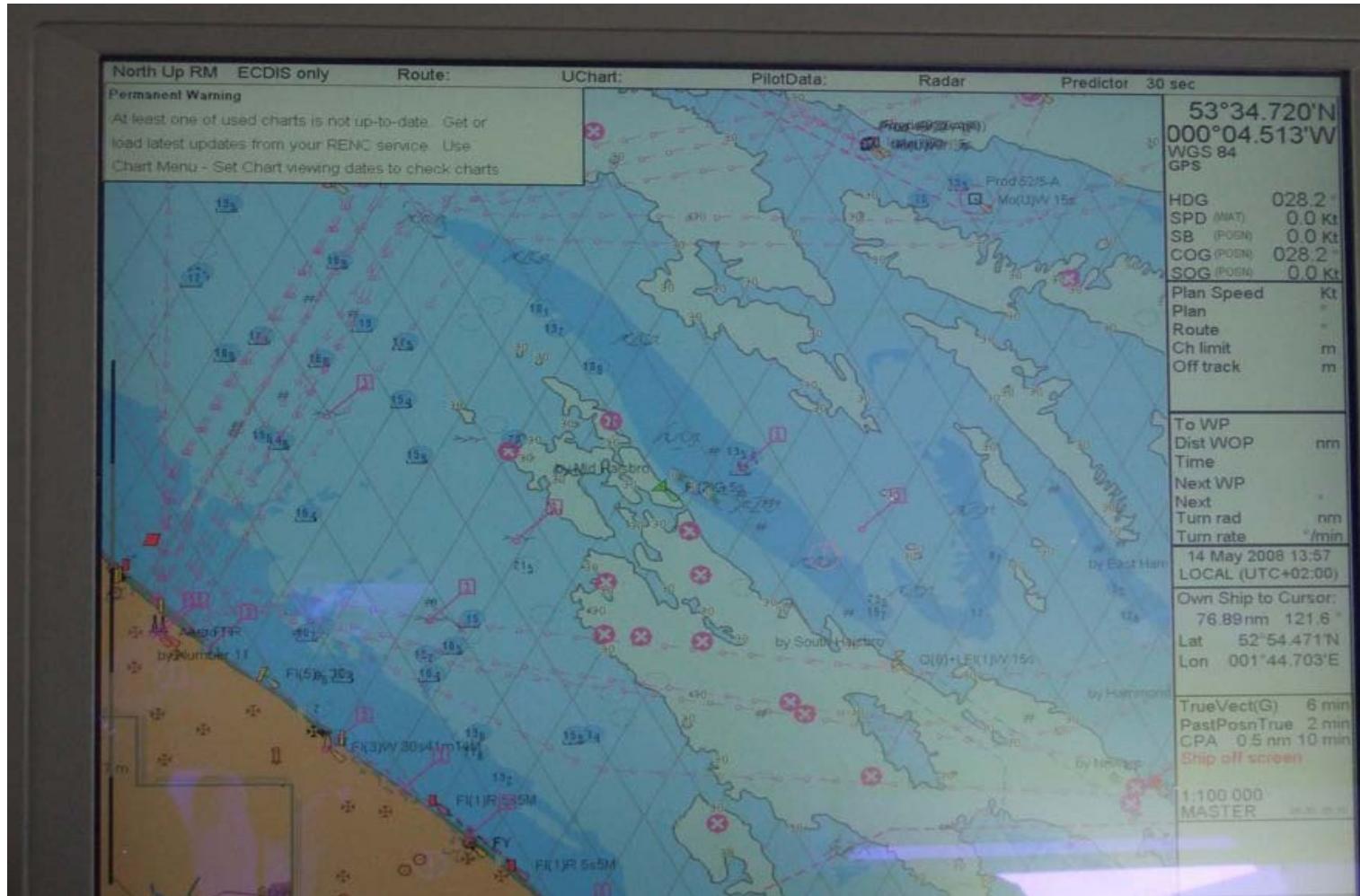
Grounding of the general cargo vessel „CFL Performer“ on 12 May 2008 at 1619 (Haisborough Sand/ England / East entrance Dover Strait)



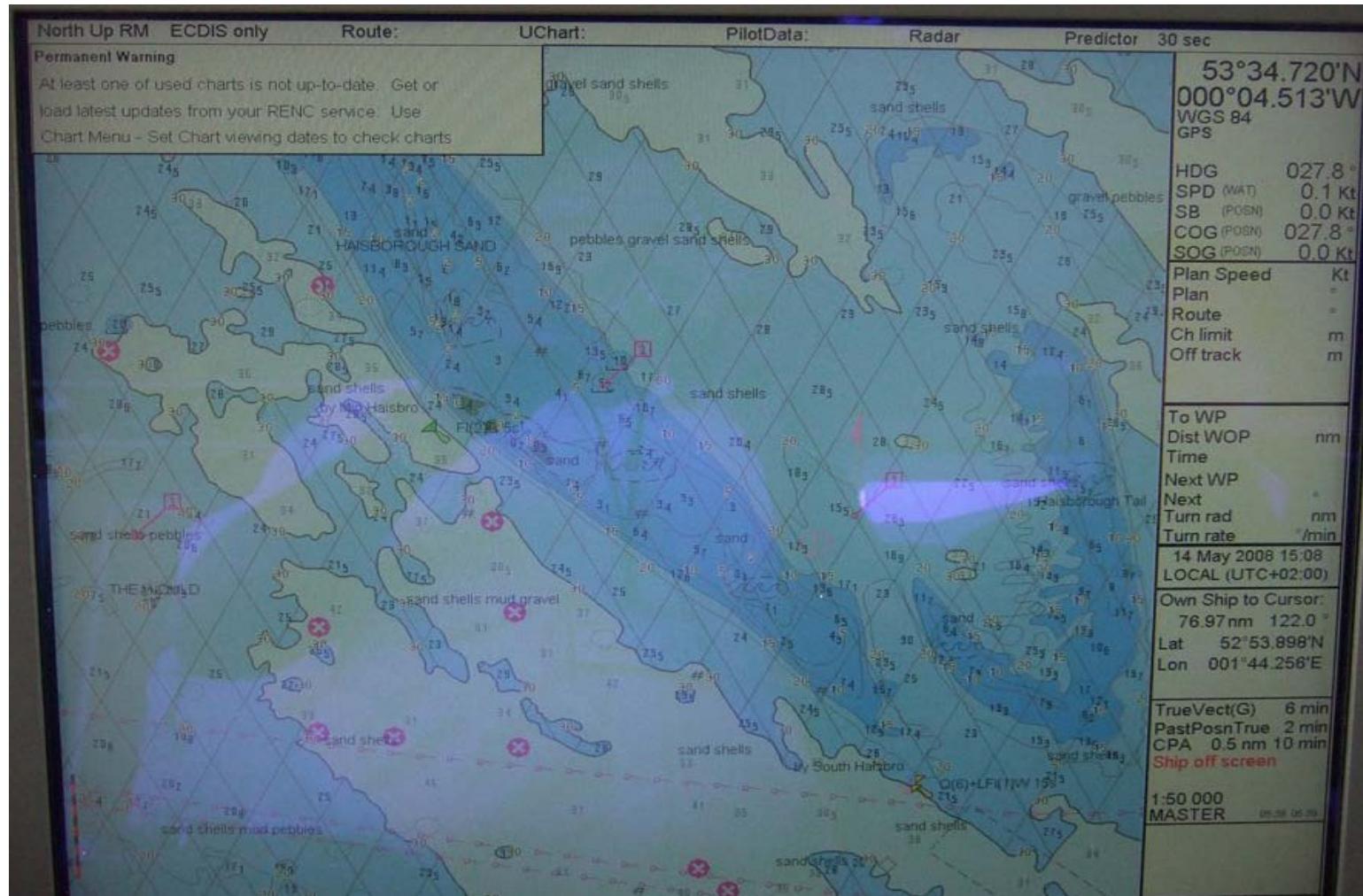
Flag: Netherlands
Type: General Cargo
GT: 4 106 t
Engine: 2 040 kW CPP
Length: 118,40 m
Draught: 5,90 m [max]
Crew: 8



Wrong scale settings Scale 1: 100 000



Scale 1: 50 000



Similar Accidents

The MAIB is aware of a number of accidents in recent years in which the use or misuse of ECDIS or ECS has been identified as a contributing factor.

In 2006, a ro-ro ferry ran aground after the safety contour in her ECDIS was set at 30m. This caused the chart display to be shaded blue, which severely impeded the bridge teams ability to see that the vessel was outside the navigable channel.

In January 2008, a ro-ro passenger ferry hit a submerged wreck near Dover and severely damaged her propellers. Vessels primary means of navigation: paper charts, her deck officer relied on the vessels ECS, despite not having been trained in its use. The wreck was not shown on the ECS display due to settings applied to the system at the time.



Case Study

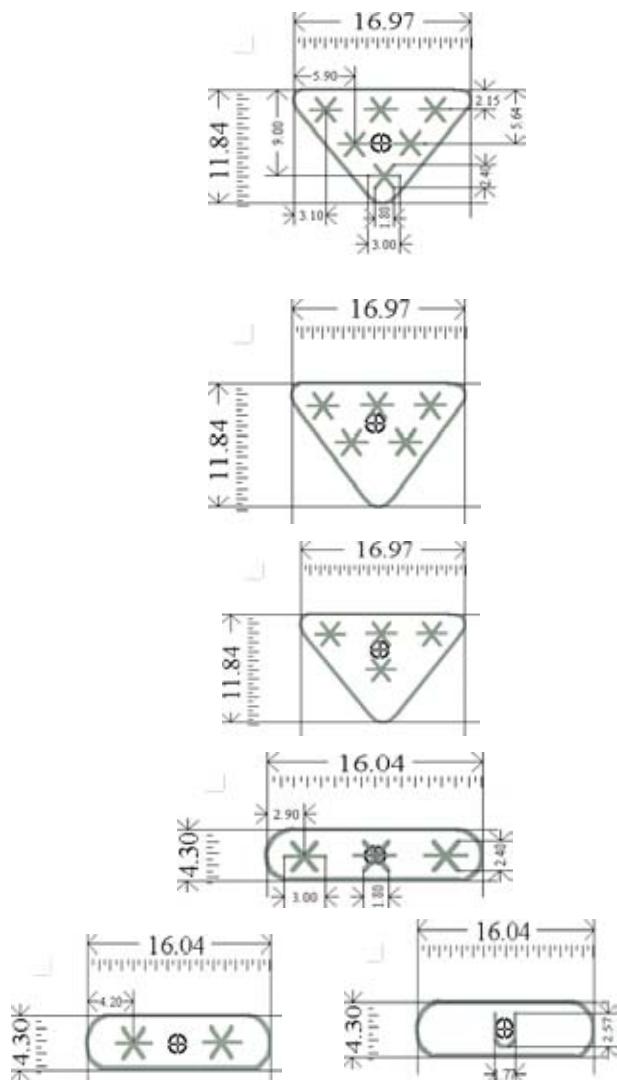
Grounding of CV PACIFIC CHALLANGER on 09. April 2008 east of OroBay/Papua New Guinea



Flag: German
Type: Container
GT: 9.966 t
Engine: 9.730 kW FPP
Length: 147,87 m
Draught: 7,90 m [max]
Crew: 19



Navigational Impact



1	2	3	4	5
ZOC ¹	Position Accuracy ²	Depth Accuracy ³	Seafloor Coverage	Typical Survey ⁵ Characteristics
A1	$\pm 5 \text{ m}$	$a = 0.5$ $b = 1$	Full seafloor ensonification or sweep. All significant seafloor features detected ⁴ and depths measured.	Controlled, systematic high accuracy Survey on WGS 84 datum; using DGPS or a minimum three lines of position (LOP) with multibeam, channel or mechanical sweep system.
		Depth (m) Accuracy (m)		
A2	$\pm 20 \text{ m}$	$a = 1.0$ $b = 2$	Full seafloor ensonification or sweep. All significant seafloor features detected ⁴ and depths measured.	Controlled, systematic survey to standard accuracy; using modern survey echosounder with sonar or mechanical sweep.
		Depth (m) Accuracy (m)		
B	$\pm 50 \text{ m}$	$a = 1.0$ $b = 2$	Full seafloor coverage not achieved; uncharted features, hazardous to surface navigation are not expected but may exist.	Controlled, systematic survey to standard accuracy.
		Depth (m) Accuracy (m)		
C	$\pm 500 \text{ m}$	$a = 2.0$ $b = 5$	Full seafloor coverage not achieved, depth anomalies may be expected.	Low accuracy survey or data collected on an opportunity basis such as soundings on passage.
		Depth (m) Accuracy (m)		
D	worse than ZOC C	worse than ZOC C	Full seafloor coverage not achieved, large depth anomalies may be expected.	Poor quality data or data that cannot be quality assessed due to lack of information.

Thank you for your attention!