Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation

ECDIS; a grounding avoidance tool?

EMAIF 5; 30th - 31st March 2009

Jörg Kaufmann

Outline

Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation

A. NAV 54 / MSC 85, 86: mandatory ECDIS carriage requirement

B. groundings in 2008

- in the English Channel; January 08
- in the Caribbean Sea; March 08
- in the Solomon Sea; April 08
- in the Gulf of Suez; May 08

C. contribution of ECDIS to safety of navigation

A. ECDIS carriage

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NAV 54

- IHO: use of ECDIS with ENC recognized as major fact in improving safety at sea
- BIMCO/OCIMF: support mandatory carriage requirement for ECDIS because of ability to improve safety of navigation
- ICS: use of ECDIS has potential to make significant contribution to navigational safety

A. ECDIS carriage

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NAV 54

- Liberia, Marshall Islands, Vanuatu: agree that ECDIS provides important contribution to safety of navigation
- Australia: ECDIS as a safe and efficient risk control measure for safe navigation
- UK: ECDIS as an efficient and cost-effective risk control measure for safe navigation

A. ECDIS carriage

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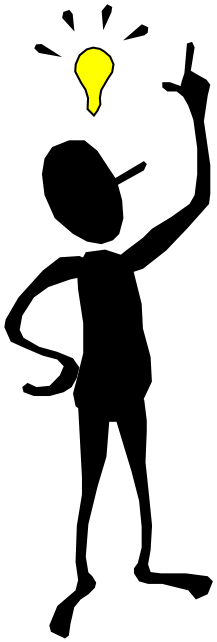
NAV 54



- special attention drawn to ENC coverage until 2010
- for top 800 ports and routes between them
- SOLAS V Reg. 19 amendment proposed

A. ECDIS carriage

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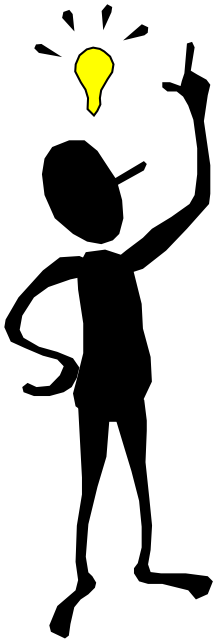
MSC 85, 86



- draft amendments to SOLAS V / 19 approved
- to be adopted at MSC 86 (May 2009)
- mandatory carriage requirement starting 2012

B. groundings in 2008

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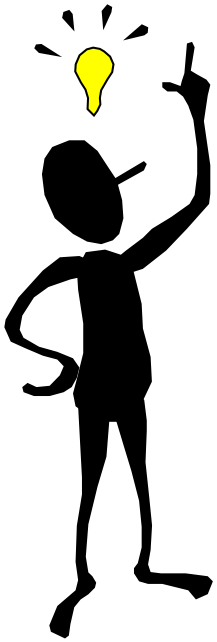
in the Gulf of Suez; May 08; no EC on board



source: Hapag Lloyd

B. groundings in 2008

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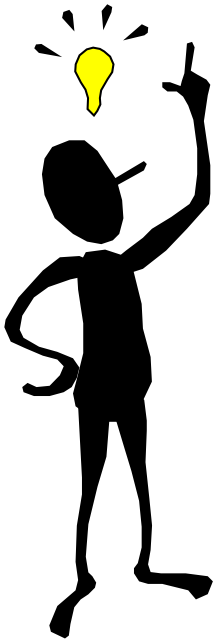

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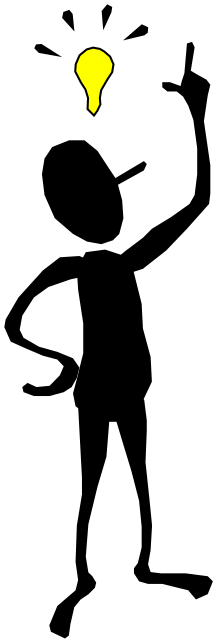

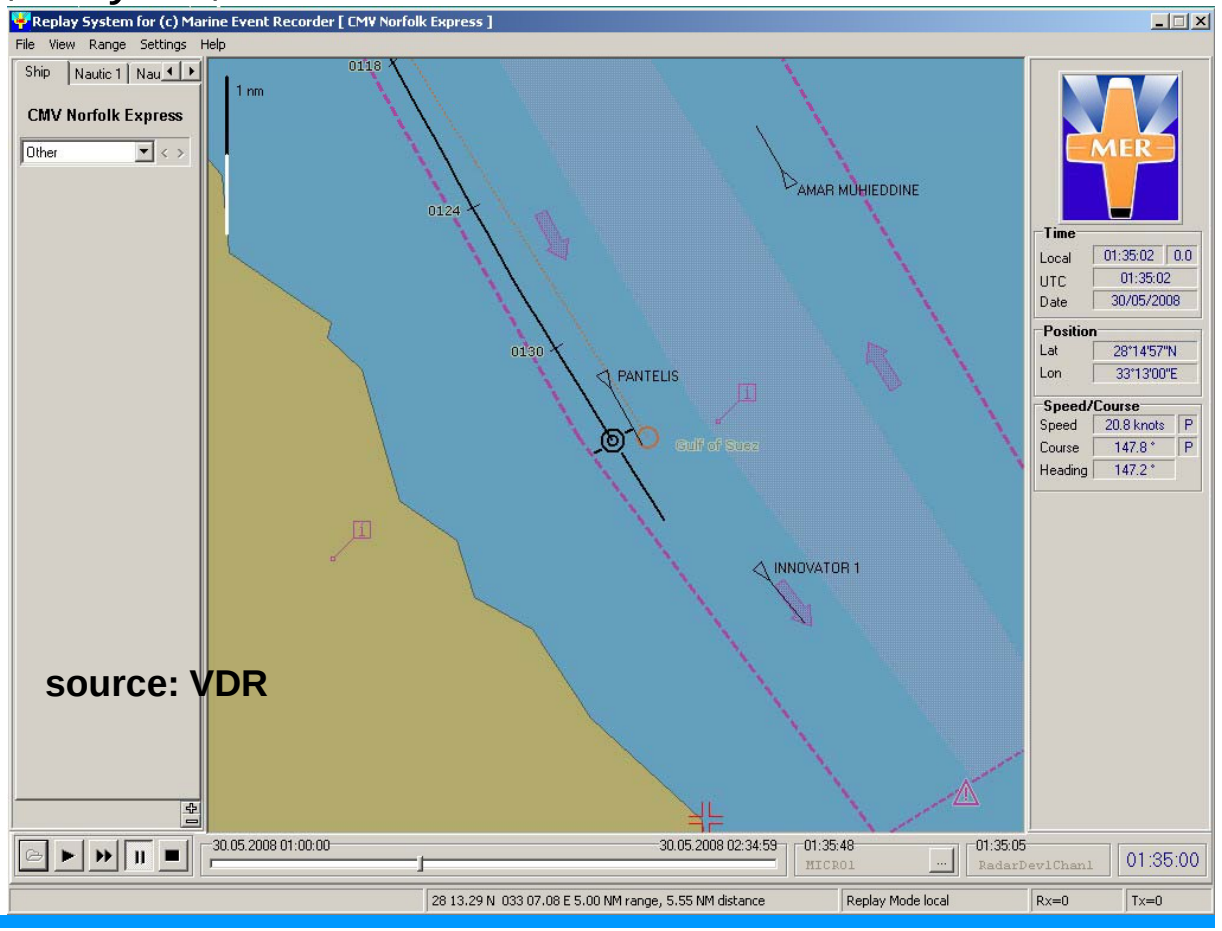

source: VDR

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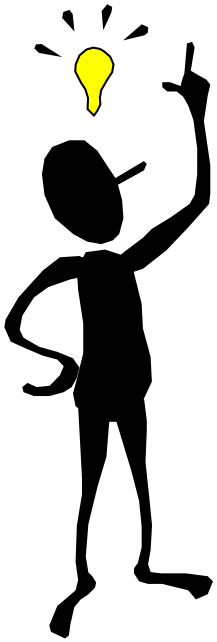

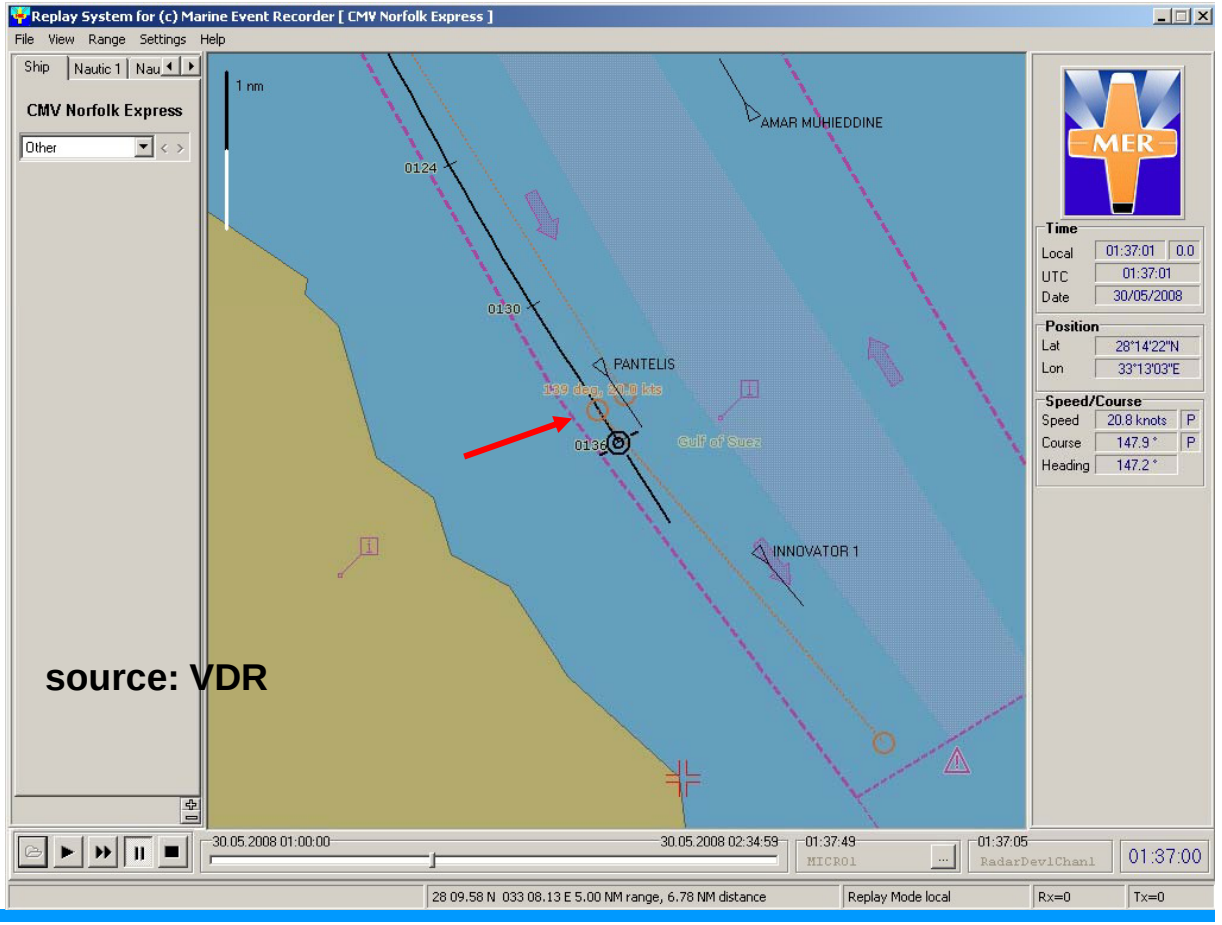

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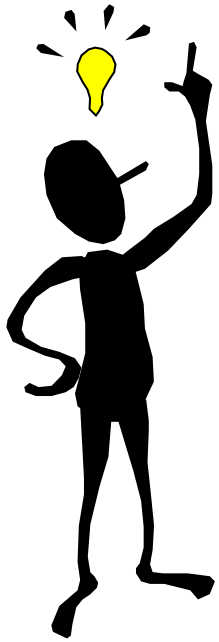

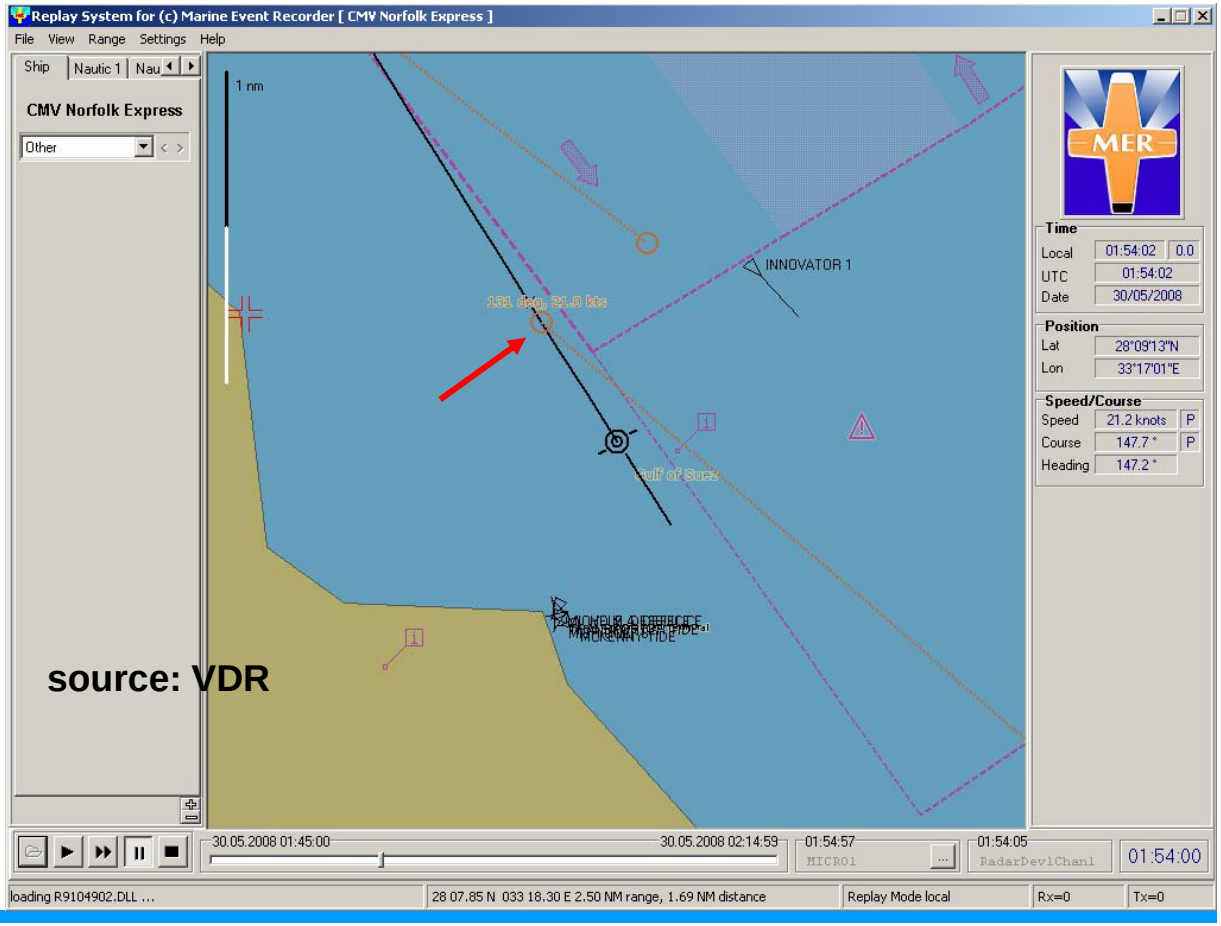

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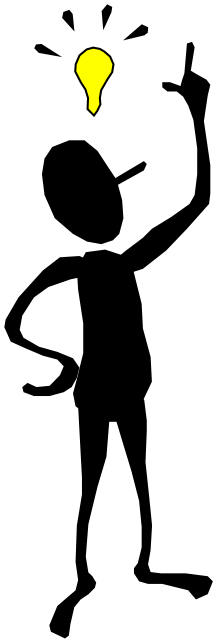

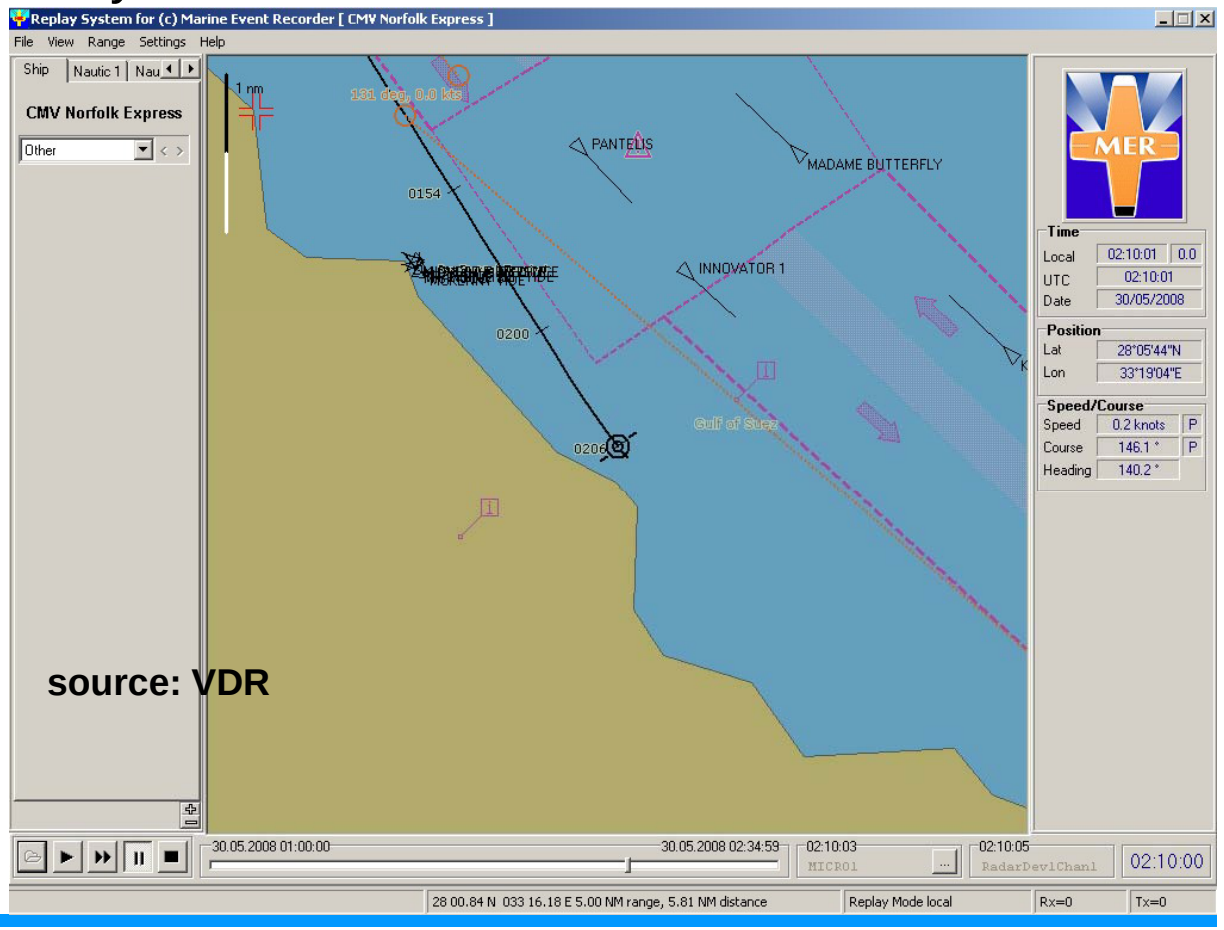

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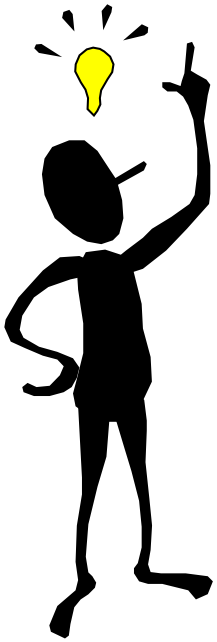
in the Solomon Sea; April 08; no EC on board



source: Reederei Carsten Rheder

B. groundings in 2008

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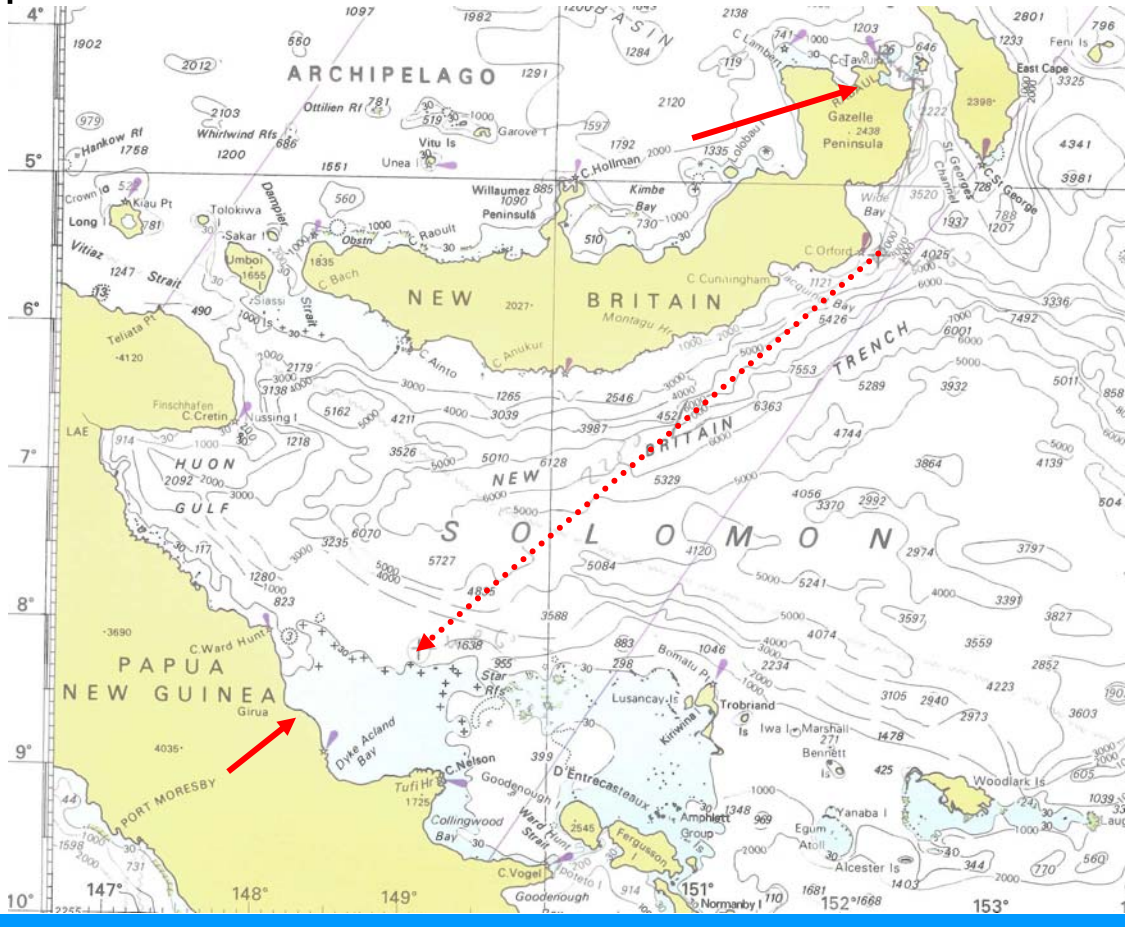

B. groundings in 2008

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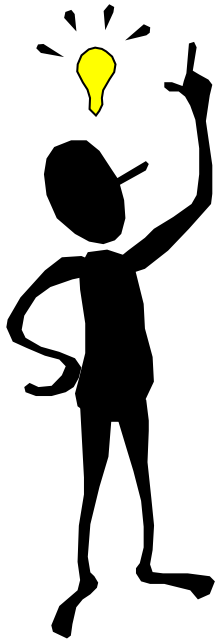
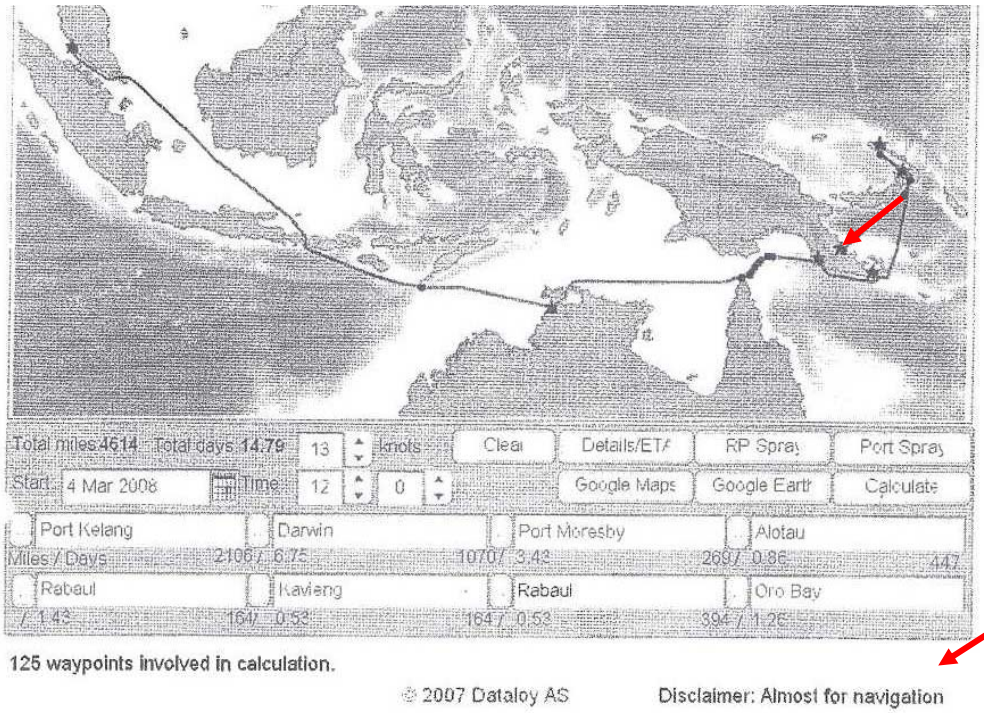
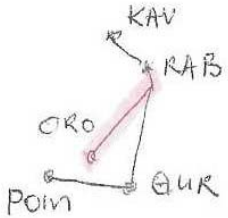
in the Solomon Sea; April 08; no EC on board

To assist you in your fuel calculations, the distances between the outports are:
Port Kelang 2106 Darwin 1070 Port Moresby 269 Alotau 447 Rabaul 164 Kavieng 164 Rabaul 394 Oro Bay 166 Lae 2761 Jakarta.
In a separate msg, I will scan you a copy of the area and the route to use.
Pls adv any questions you may have.







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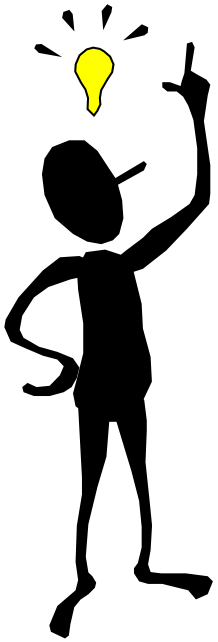

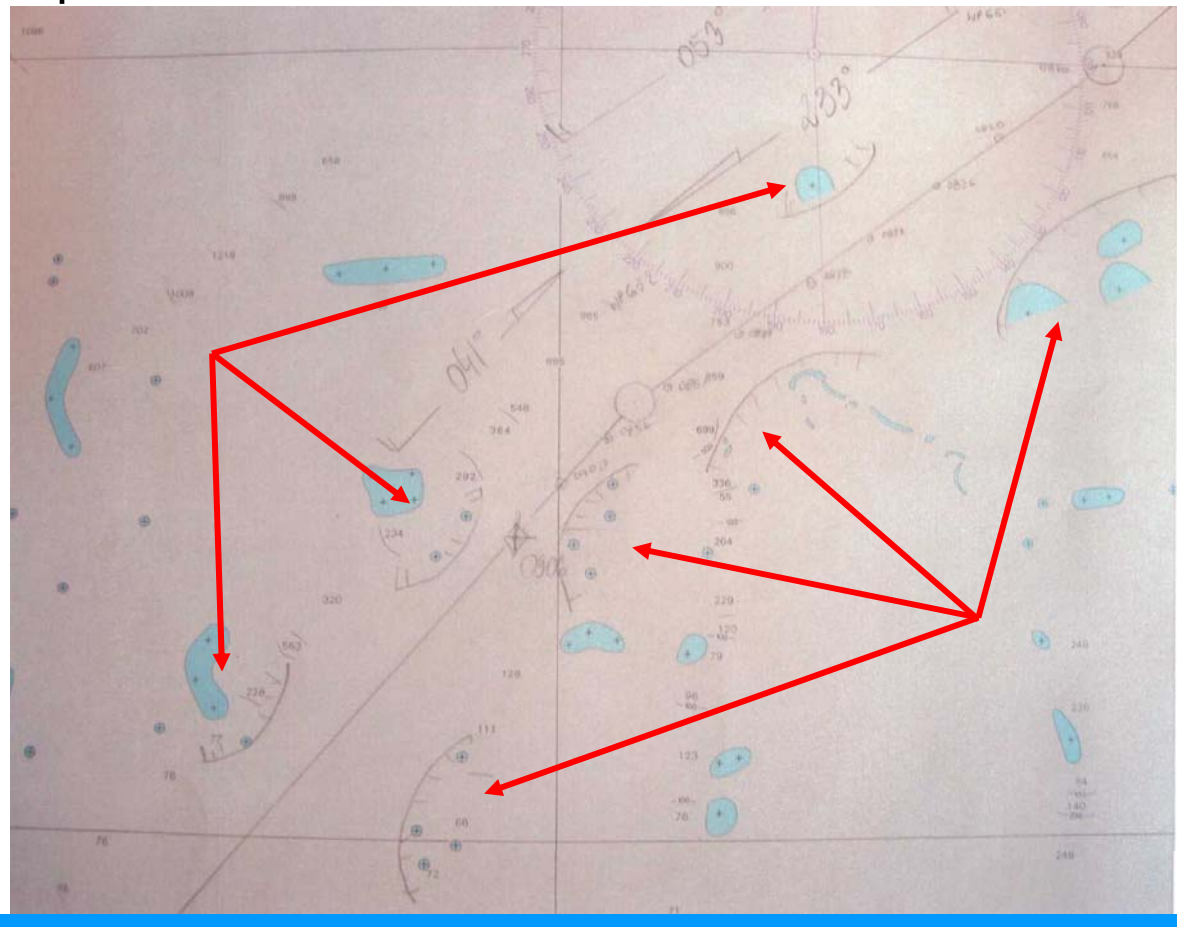

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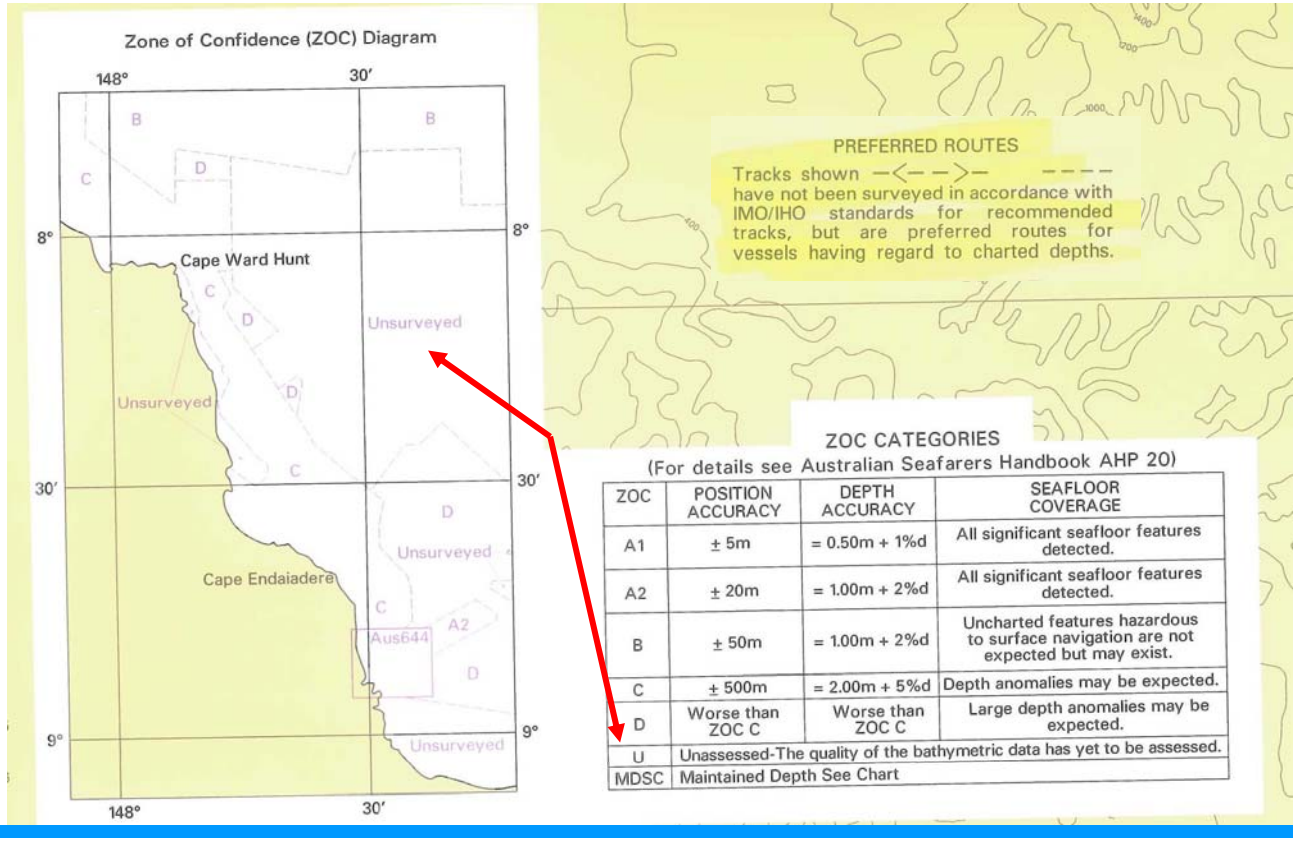

ZOC	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	± 5m	= 0.50m + 1%d	All significant seafloor features detected.
A2	± 20m	= 1.00m + 2%d	All significant seafloor features detected.
B	± 50m	= 1.00m + 2%d	Uncharted features hazardous to surface navigation are not expected but may exist.
C	± 500m	= 2.00m + 5%d	Depth anomalies may be expected.
D	Worse than ZOC C	Worse than ZOC C	Large depth anomalies may be expected.
U	Unassessed-The quality of the bathymetric data has yet to be assessed.		
MDSC	Maintained Depth See Chart		

B. groundings in 2008

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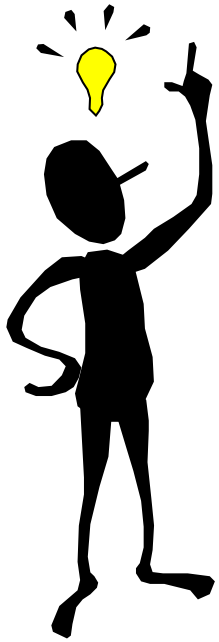
in the Solomon Sea; April 08; no EC on bo



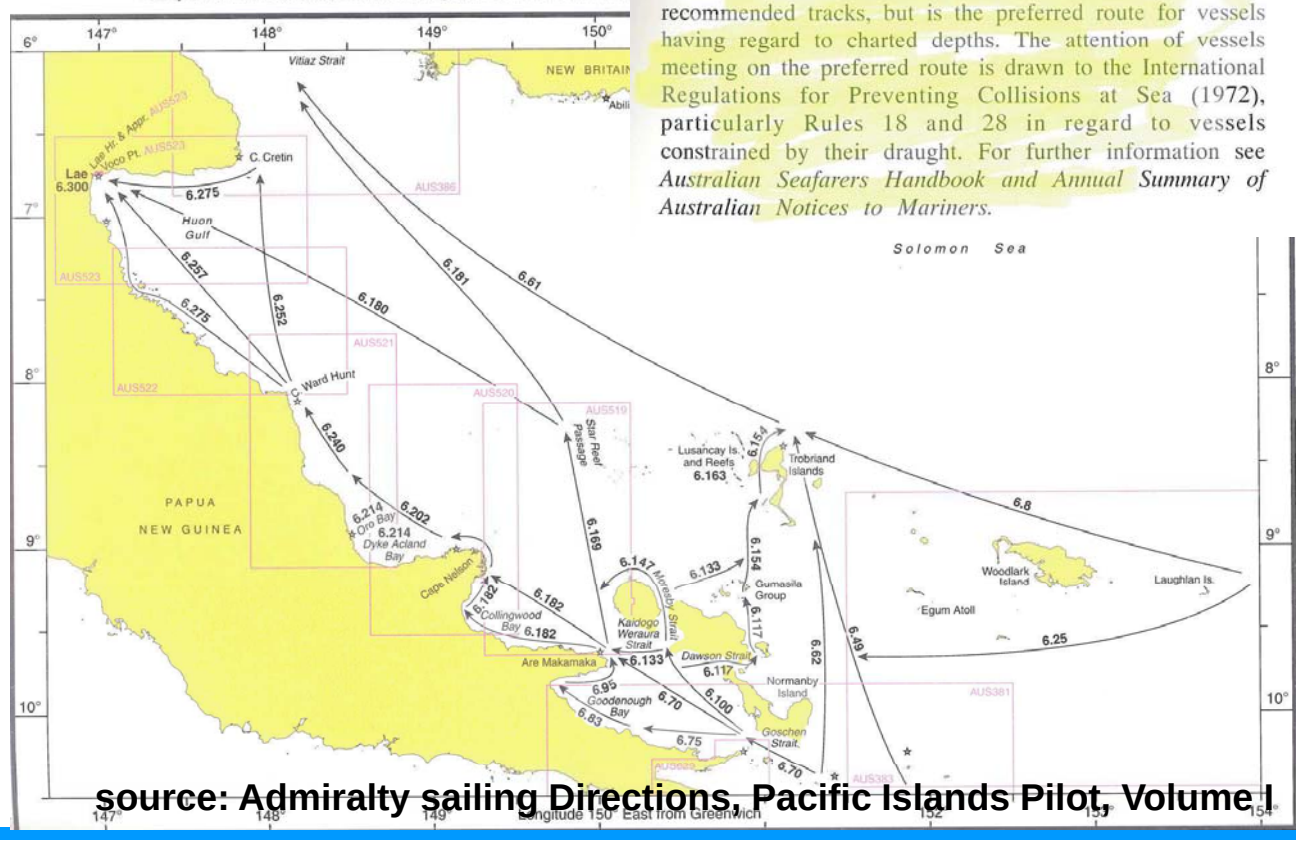
Routeing

Preferred route

1.12

Where on several Australian Charts serving the areas covered by this volume, preferred routes are indicated, the term preferred route implies that the route has not been surveyed in accordance with IMO/IHO standards for recommended tracks, but is the preferred route for vessels having regard to charted depths. The attention of vessels meeting on the preferred route is drawn to the International Regulations for Preventing Collisions at Sea (1972), particularly Rules 18 and 28 in regard to vessels constrained by their draught. For further information see *Australian Seafarers Handbook and Annual Summary of Australian Notices to Mariners.*

Chapter 6 - North-east coast of Papua New Guinea - Kel



source: Admiralty sailing Directions, Pacific Islands Pilot, Volume I

B. groundings in 2008

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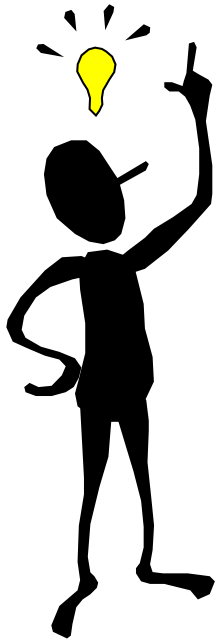
in the Caribbean Sea; March 08; no EC on board



On February 29th, 2008 the container vessel "Turin Express" departed at 06:00 hrs lt from Savannah and commenced her sea passage at 09:30 lt .
The vessel's destination was Caucedo, Dominican Republic, with estimated time of arrival March, 3rd, 06:00 hrs lt.

A voyage plan from Pilot to Pilot had been prepared by the Navigation Officer as done before. The vessel headed for the Mona Passage with the intention to continue with the coastal voyage to the port of destination.
Unfortunately the Navigation Officer altered the track of previous voyages closer to the east coast of Hispaniola, passing the center of the Silver Bank, the center to avoid charted reefs in the northeasterly edge of the bank, considering the passage safe and free of underwater reefs.

During his watch the Duty Officer entered the bank and followed the route until a nearby research vessel contacted him by VHF, given warnings about dangerous reefs with the advice to alter the couse by 10 degrees to starboard for a safe passage to which I agreed.
Course had been set to 150 degrees and the vessel continued on her passage with the 2nd Officer on duty, assisted by the 3rd Mate. Speed was about 17.5 kts.

When the Duty Officer detected discoloured water close to the port bow, he altered the course to starboard, reduced the speed and called me.
When I arrived on the bridge the vessel hit with her bulbous bow an underwater coral reef and the vessel was shaking and she listed for few seconds to port.

B. groundings in 2008

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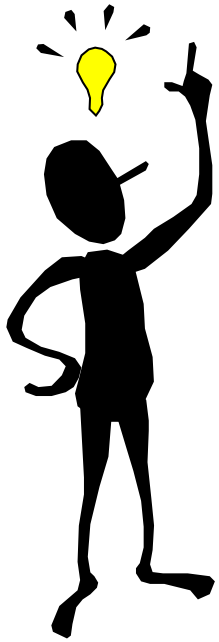
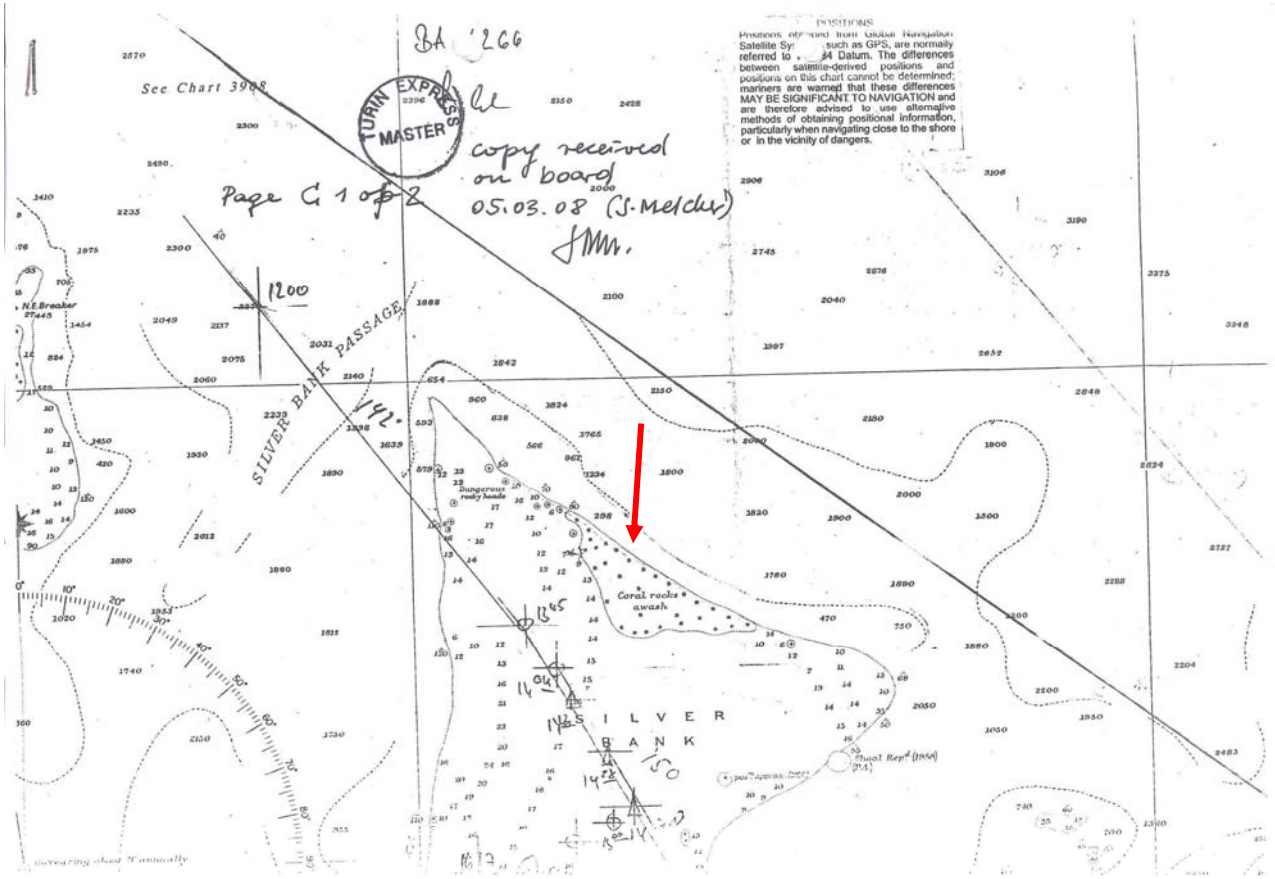
in the Caribbean Sea; March 08; no EC on board





B. groundings in 2008

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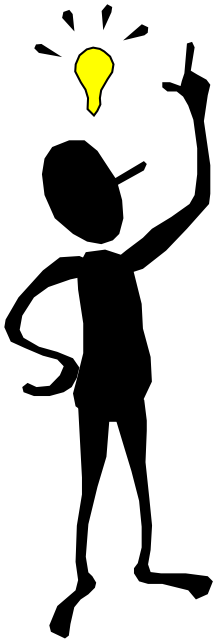

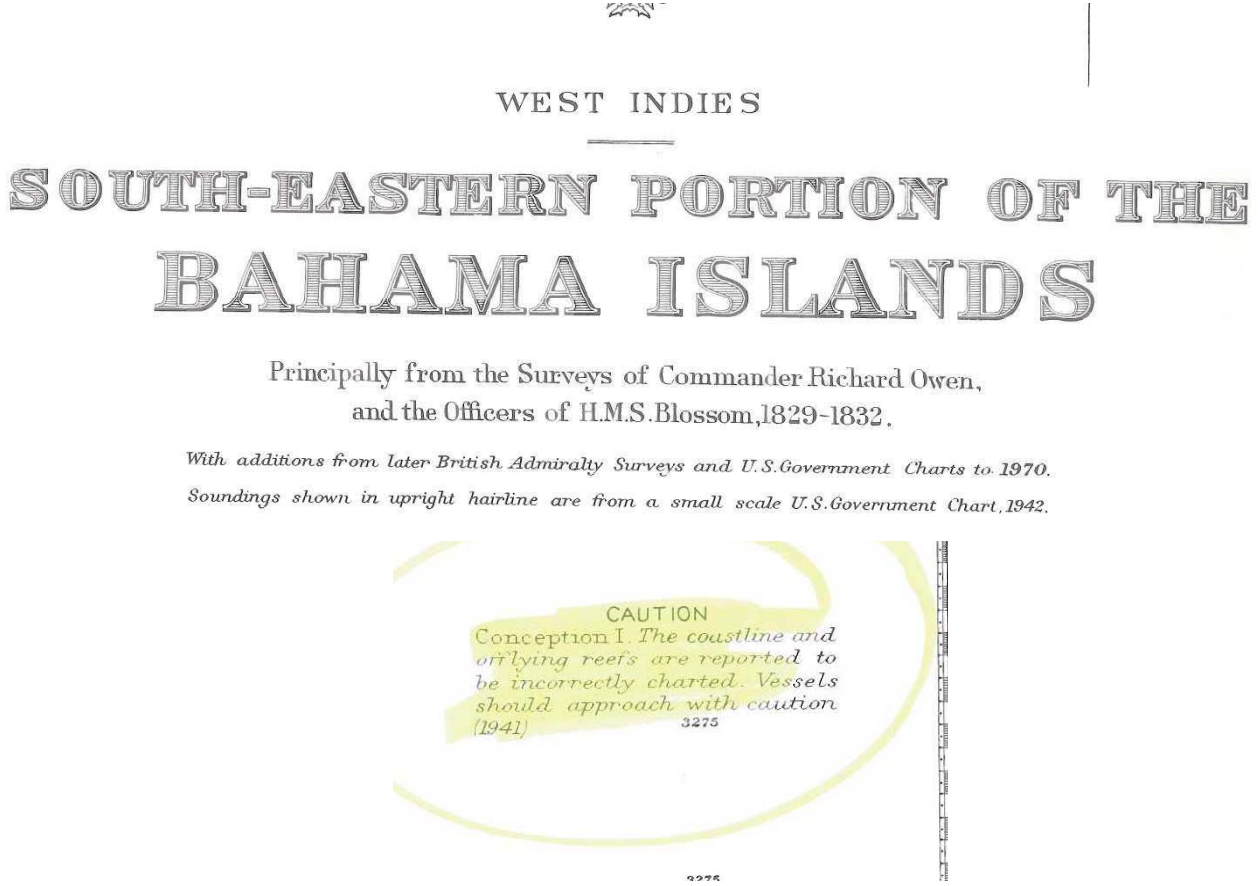

B. groundings in 2008

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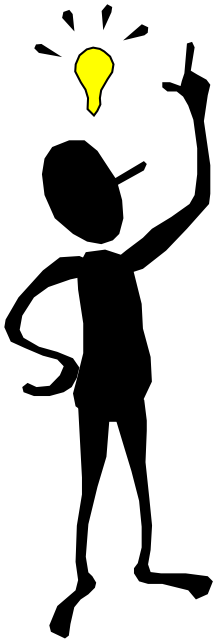
in the English Channel; January 08; ECS on board



B. groundings in 2008

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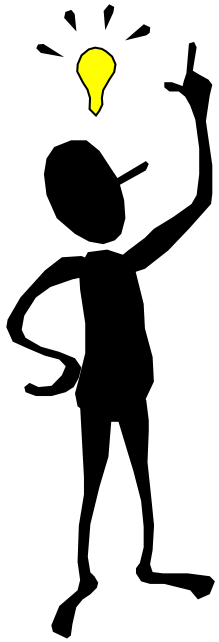
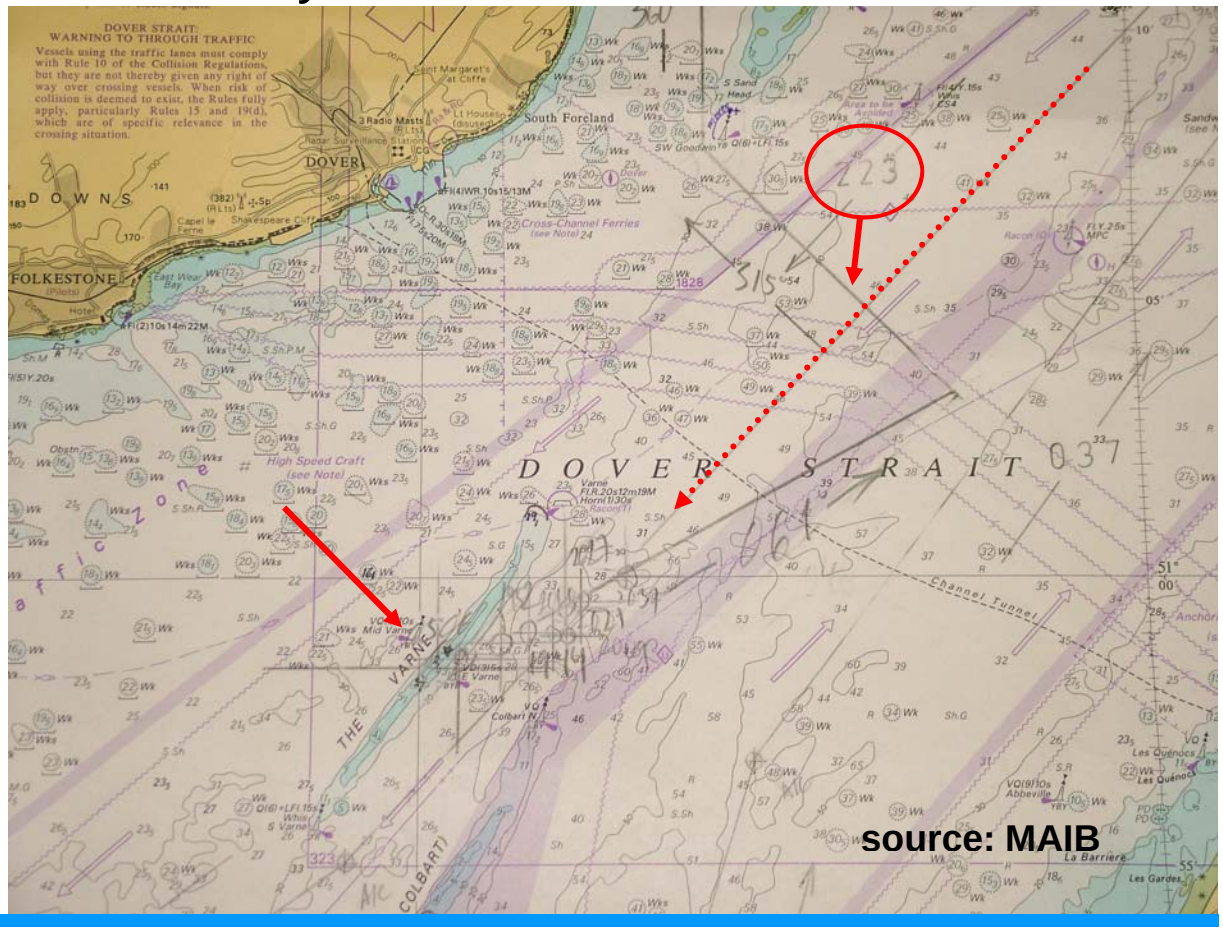
in the English Channel; January 08; nautical chart





B. groundings in 2008

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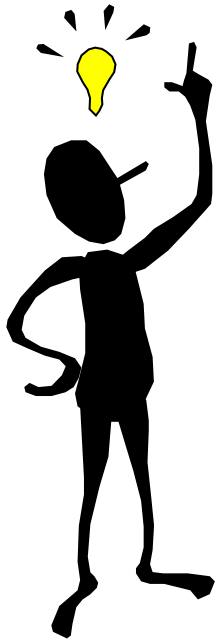
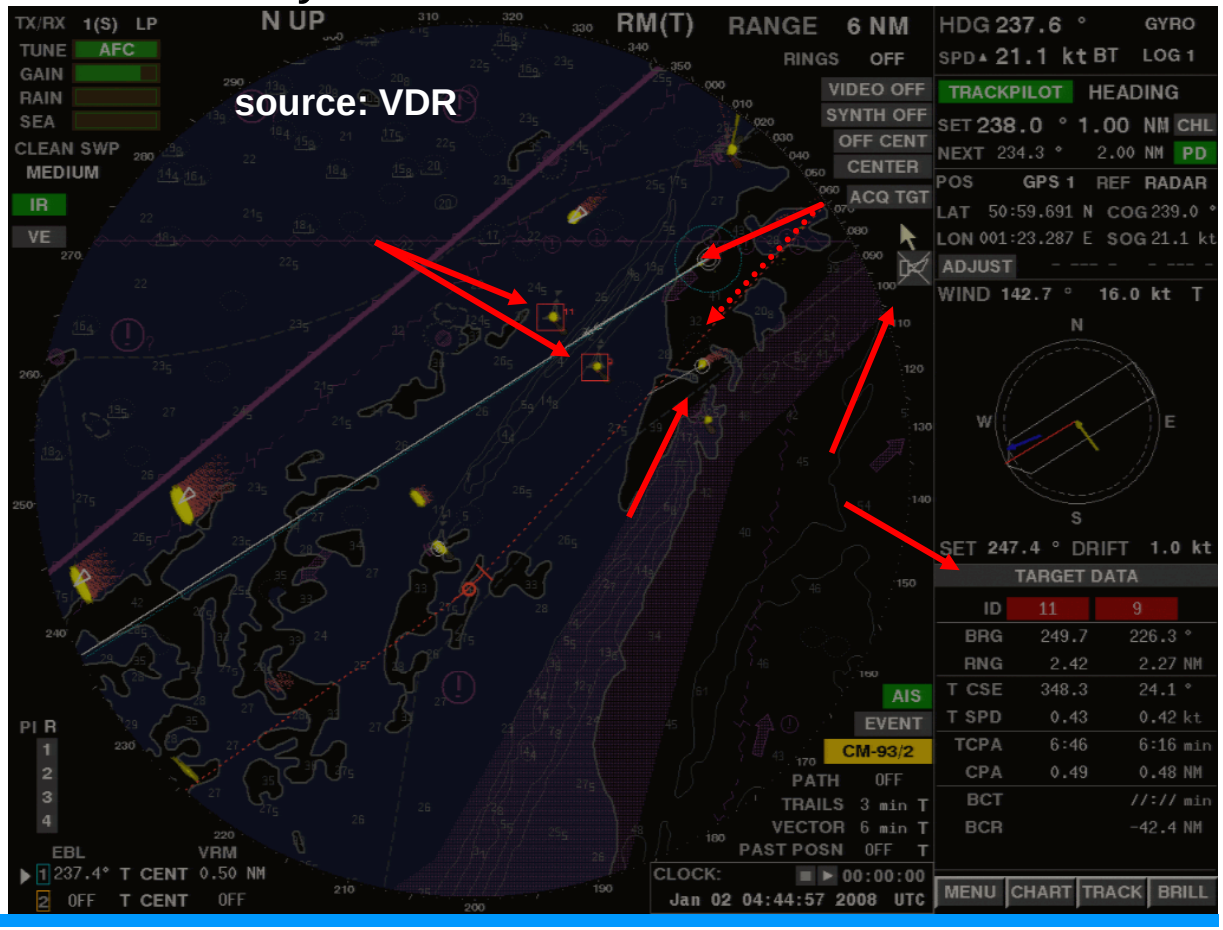
in the English Channel; January 08; Radar / ECS; t ~ -10 min.





B. groundings in 2008

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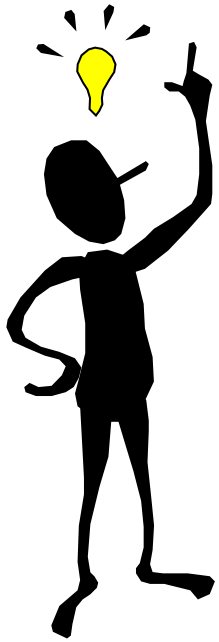

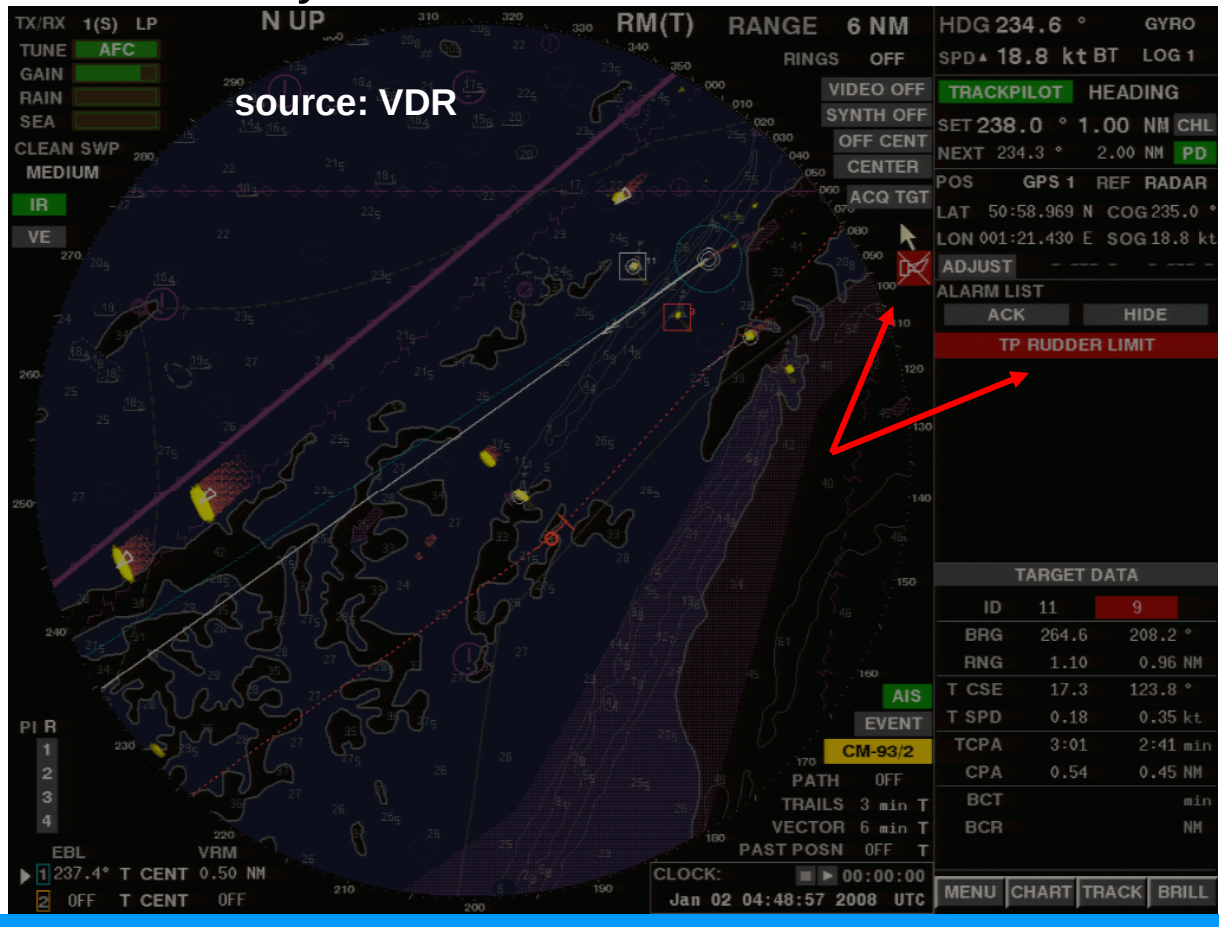

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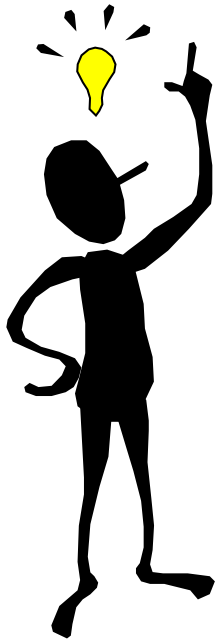

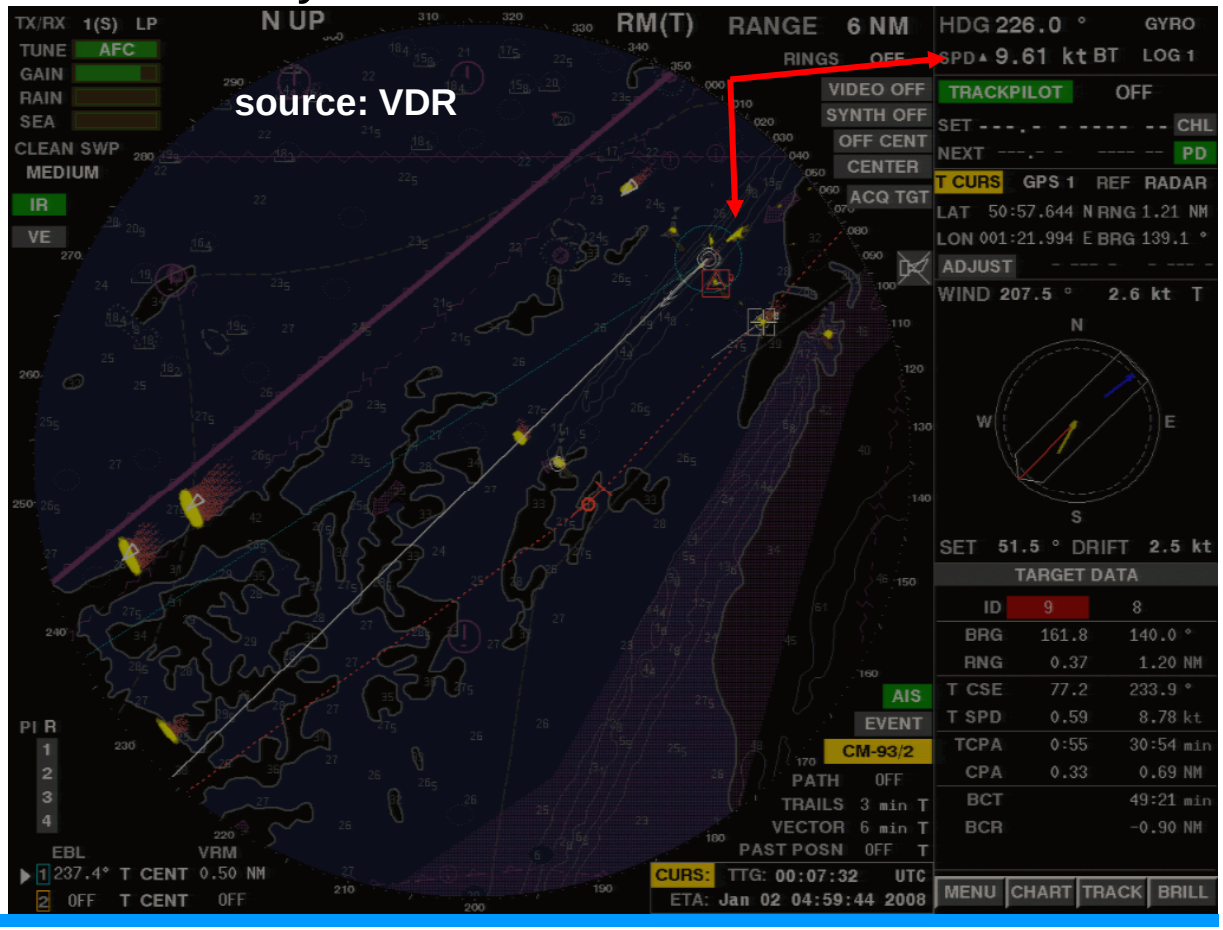

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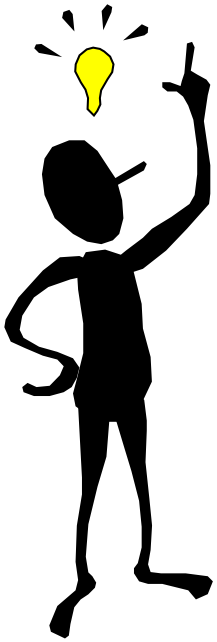
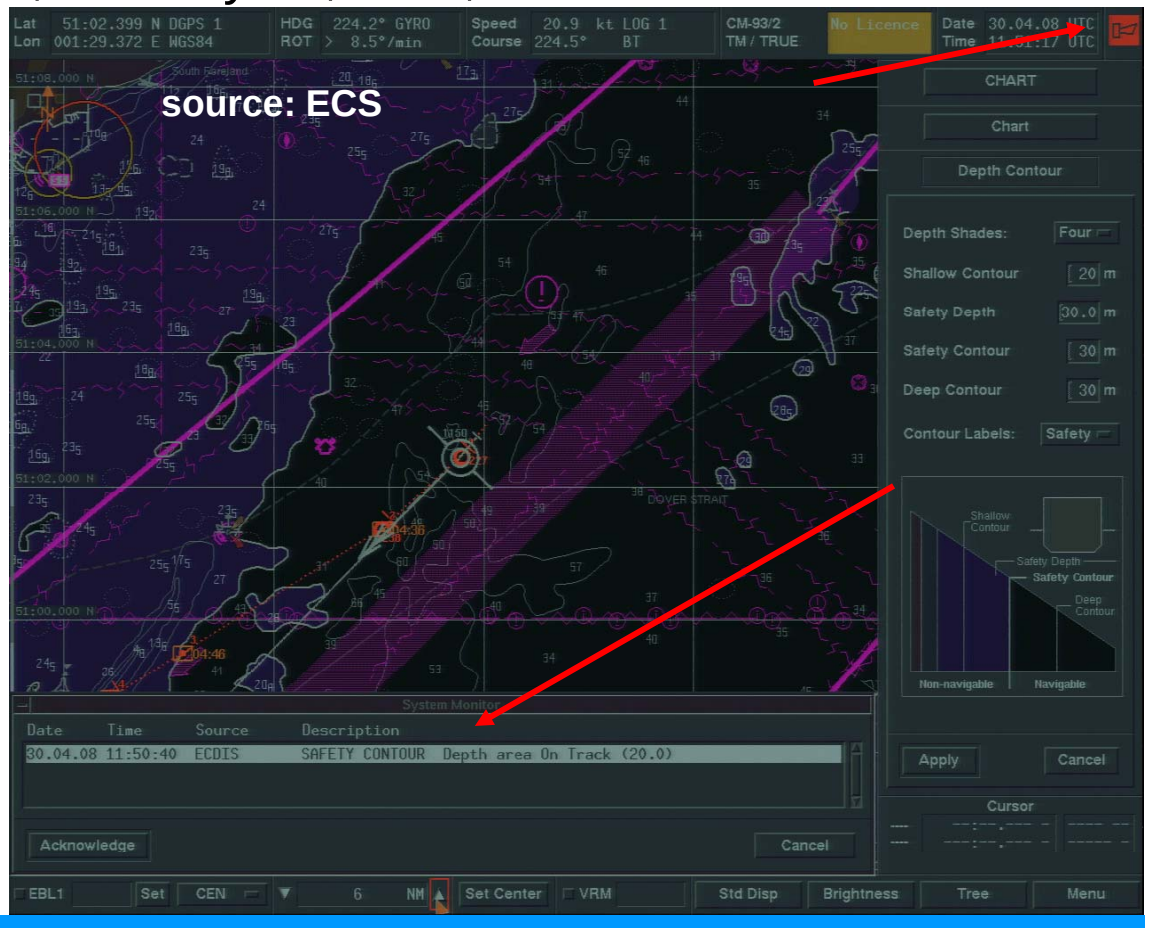
in the English Channel; January 08; ECS; test run





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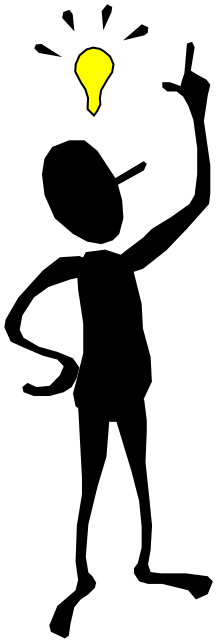

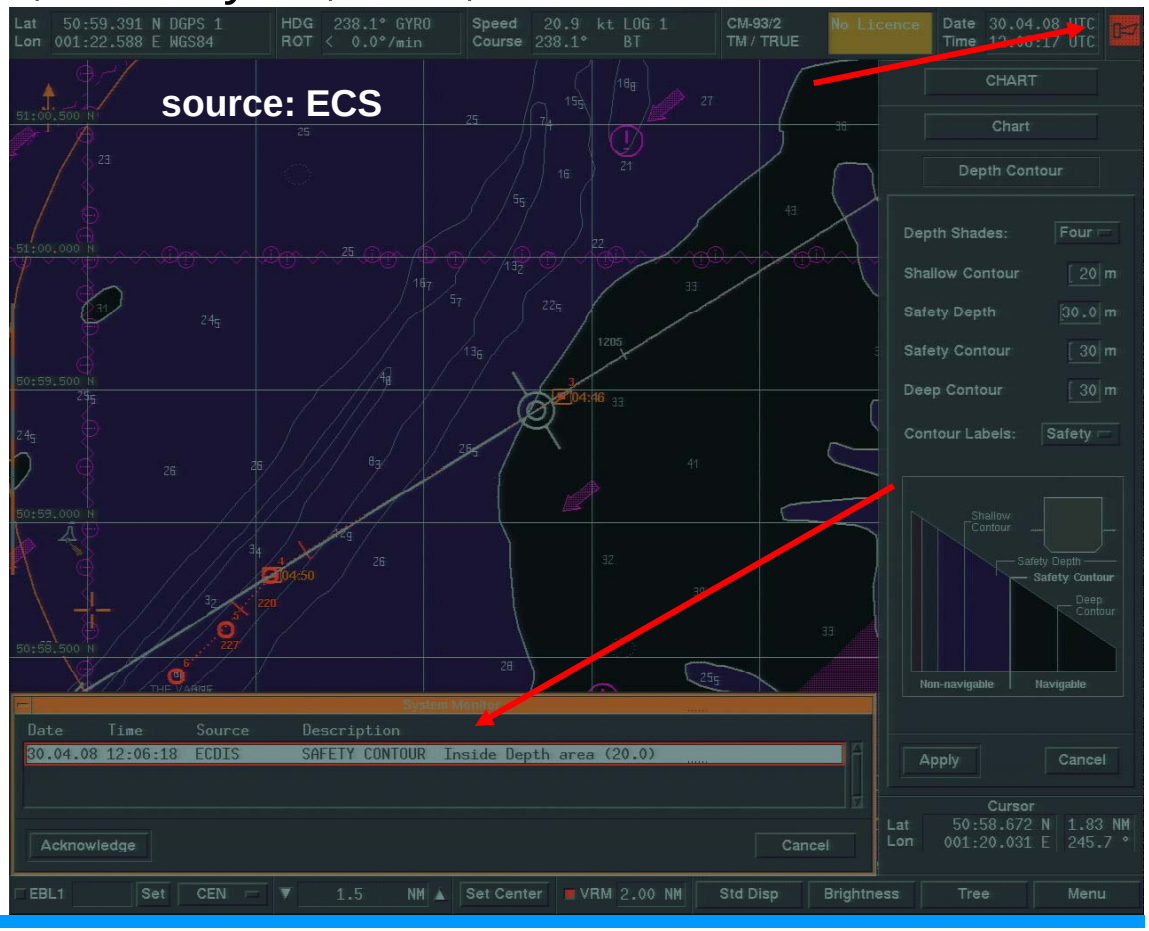

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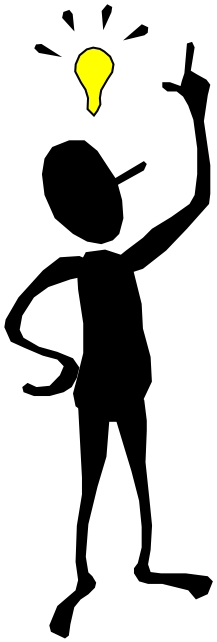

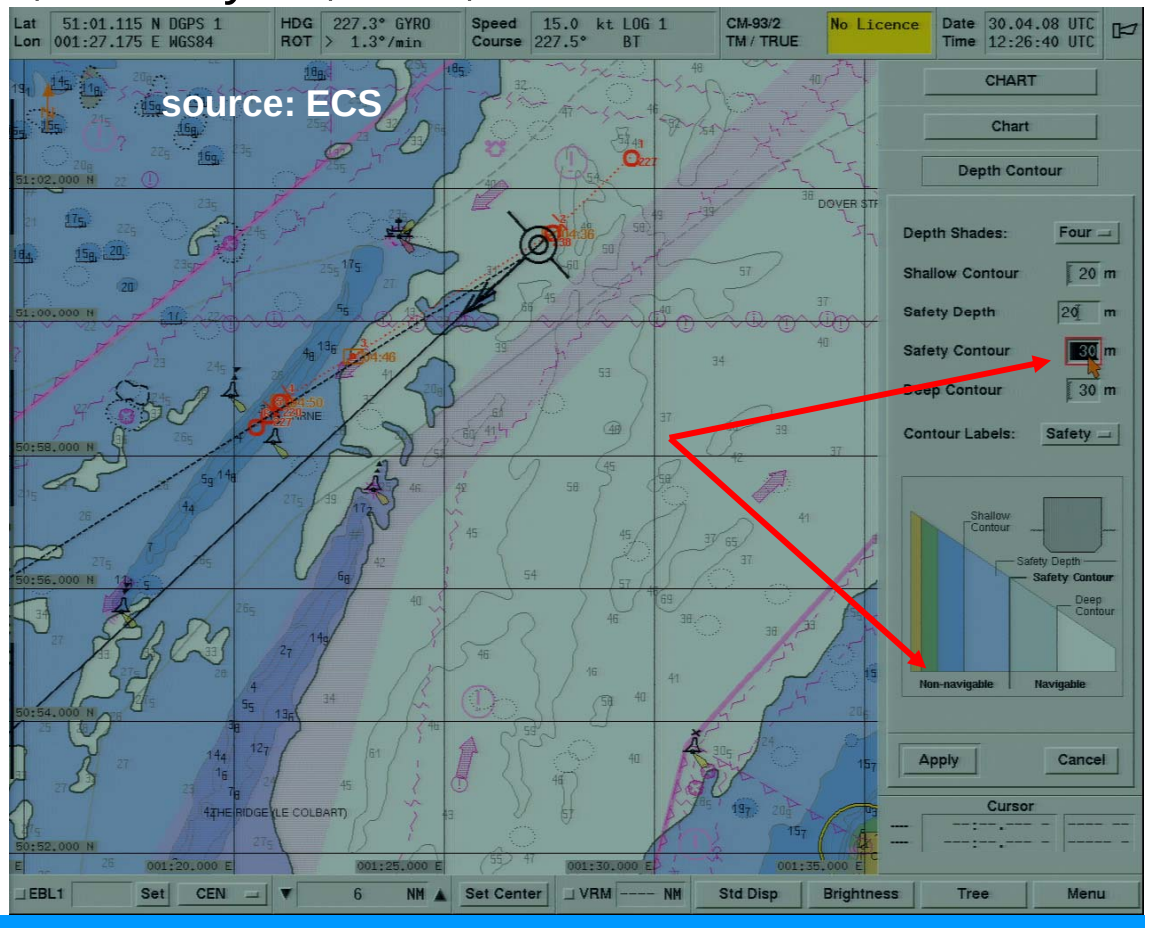

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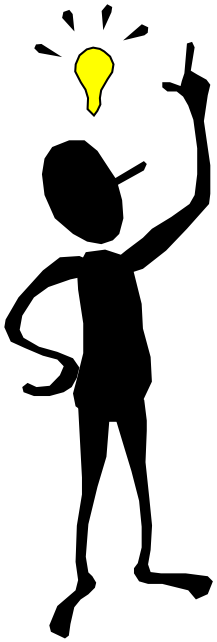

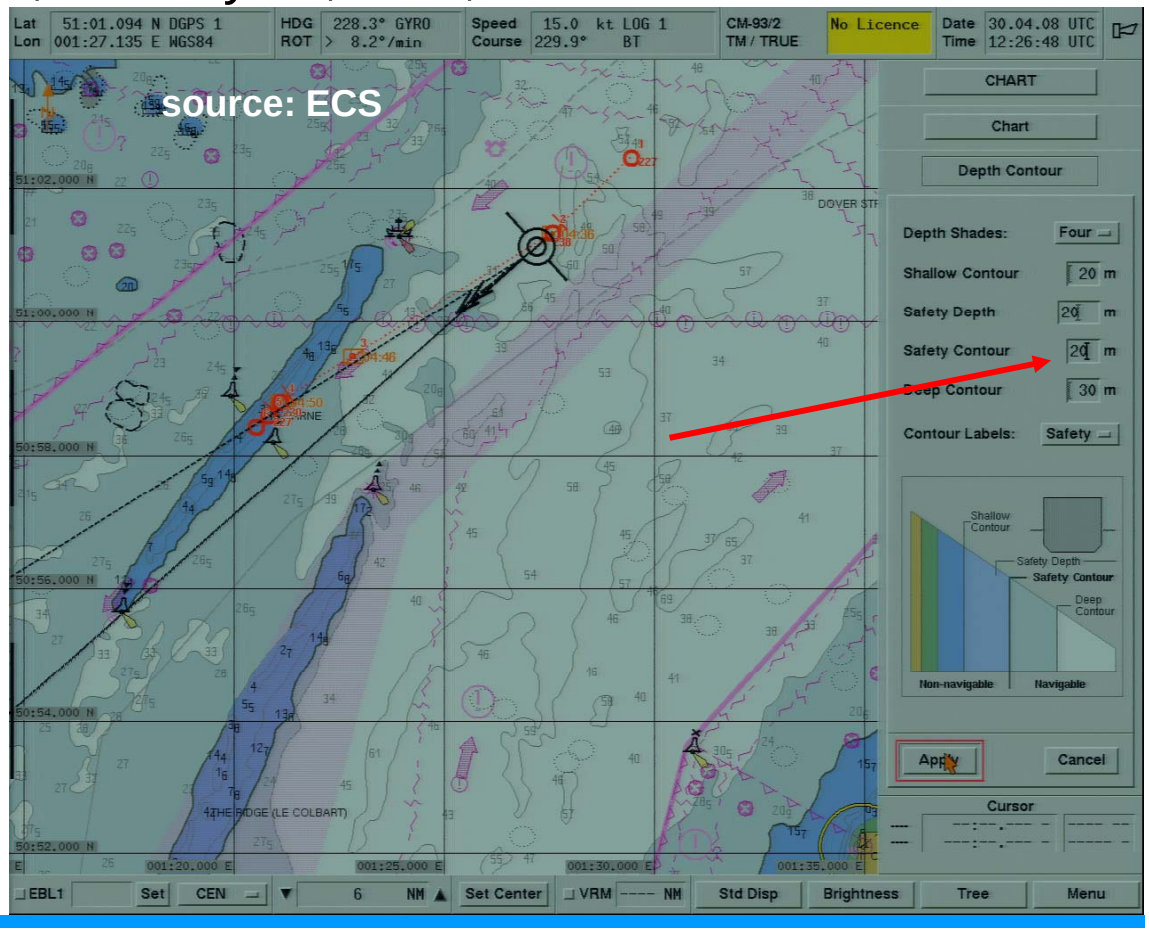

B. groundings in 2008

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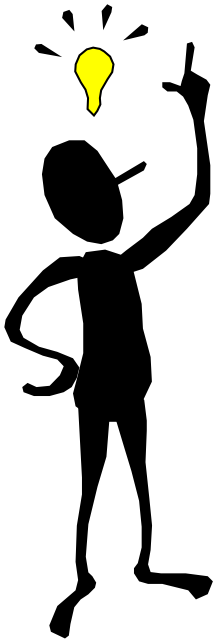
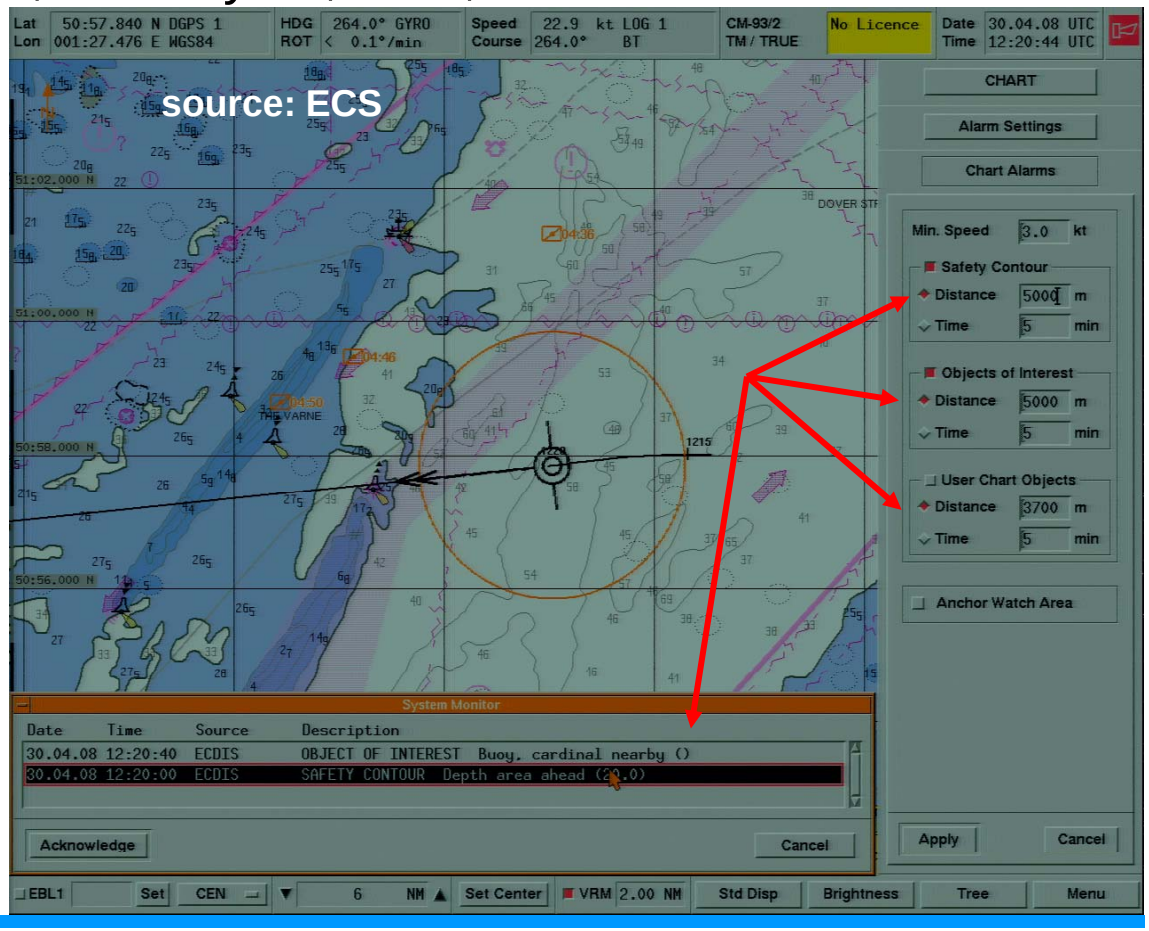
in the English Channel; January 08; ECS; test run





C. safety of navigation

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status quo of EC's in BSU marine accident investigations

- number of ships equipped with EC's is increasing, but still there is
  - uncertainty about status ECS or ECDIS
  - insufficient knowledge about functionality
  - ineffective use in voyage planning, execution and monitoring
  - inadequate training

C. safety of navigation

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NAV 54

- UK NAV 54/14/2:
  - NAV 53 debate included issues relating to human element and training aspects
  - properly trained mariner using ECDIS with good quality ENCs is significantly less likely to have a navigational accident
  - ECDIS also provides significant efficiencies in voyage planning, execution and monitoring
  - human element and training issues addressed by STW Sub-Committee

C. safety of navigation

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contribution of ECDIS carriage requirement to safety of navigation

- ECDIS can facilitate voyage planning, execution and monitoring
- reasonable alarm settings here can significantly enhance a safe navigation
- but it is still the “man” to plan, execute and monitor the voyage, not the “machine”
- in-depth understanding of the “machine” is paramount for efficient use by the “man”

Questions

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