

On-board electronic data storage devices

Integration into ship source pollution prevention/tracking?

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EU Directive 2005/35

- Art 10(1), EMSA should collaborate closely with the COM and MS in the area of accidental or deliberate marine pollution, and to
- *"develop the necessary **information systems**",*
- *"establish common practices and guidelines for ... the monitoring and early identification of ships discharging polluting substances .. including ...**on-board monitoring equipment**".*

On board e-monitoring systems



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Shipboard Equipment

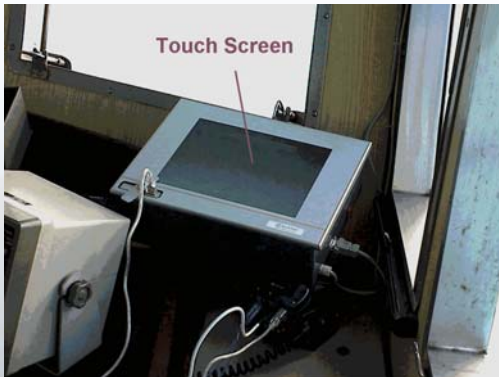
- to be monitored

- **Oily water separators**
 - Modern units have the ability to electronically store operational information (still open-loop system)
 - Often “temperamental” and potentially encourages bypassing mechanical/electrical systems to allow bilges to be pumped
- **Overboard valves**
 - Modern vessels incorporate some/most electro/hydraulically operated valves (reduced manning/logging purposes)
 - Technically feasible to bypass valve control system
- **Tank gauging systems**
 - Modern vessels incorporate sensor outputs in to remote readout/recording facilities
 - Accuracy dependant on various factors (vessel operations/external forces)

Shipboard Equipment - monitoring



Voyage Data Recorder (VDR)



Electronic Log Book (ELB)

VDR



Typical VDR Data Display



Radar

Audio

Date/time record

VDR - Minimum data items to be recorded

- Date/time (S)
- Ship's position (S)
- Speed (S)
- Heading (S)
- Bridge audio (S)
- Communications (VHF) (S)
- Radar data (S- and/or AIS)
- Echo sounder (underkeel)
- Main alarms (Bridge)
- Rudder order & response
- Engine order & response
- Hull openings (Doors) status
- Watertight/fire door status
- Accelerations/hull stresses (where monitoring equipment fitted)

VDR in legislation: performance standards

VDR: Resolution A861(20) (27/11/97); S-VDR: MSC.163(78)

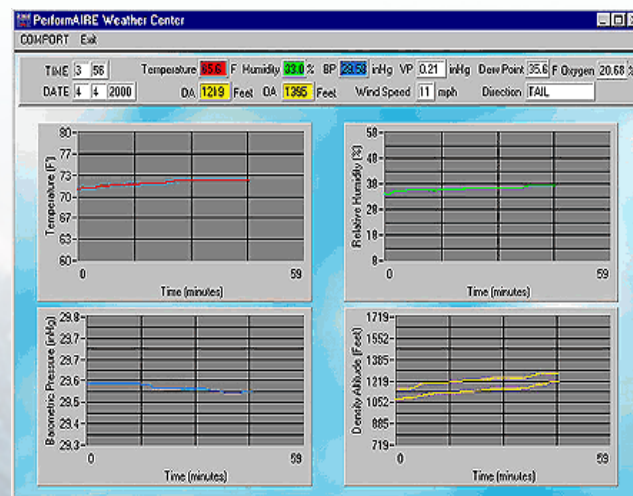
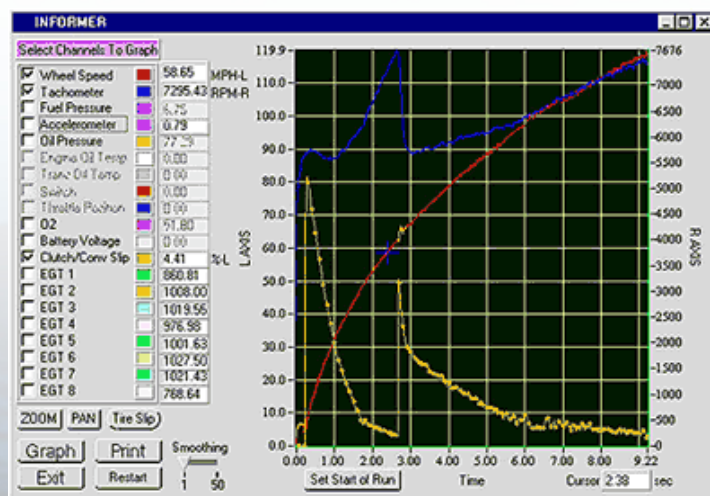
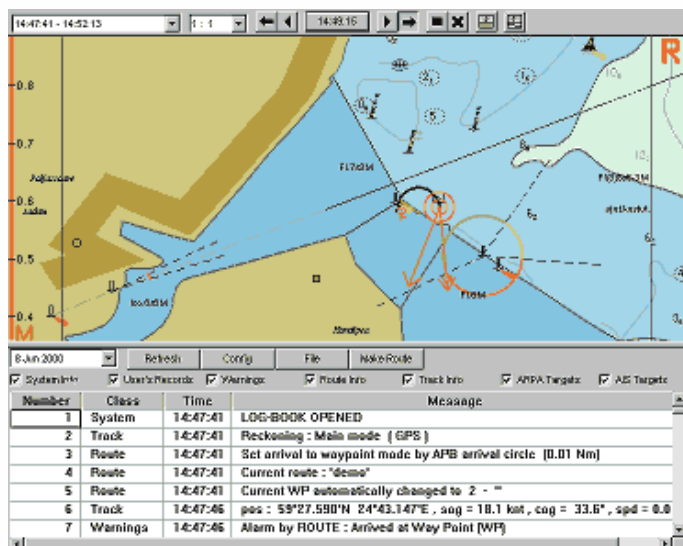
- **Purpose**: to maintain a store, in a secure and retrievable form, of information concerning the **position, movement, physical status, command and control of the vessel** over the period leading up to and following an incident having an impact thereon. Information contained in a (S-)VDR should be made available to both the Administration and the ship owner. This information is for use during any subsequent investigation to identify the cause(s) of the incident.
- → **mainly invented for technical safety investigations**
- **Continuity of operation**: stored data to be retained for at least **12 hours** before overwrite.
- → **legislation and standards on limited functions and different purpose**

ELB



More input, detail and storage capacity in ELB

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(Electronic) Log Book in legislation

- IMO agreed mandatory logbooks (eg):
 - Oil Record Book
 - Garbage Logbook
 - Ballast logbook
 - **Paper format ONLY**
 - Regulation 28 SOLAS V allows electronic recording of navigational activities for Deck Log
- **Little legislation and standards, but:**
(e-) loogbook device open for developments, added tasks and further storage

EMDM project

“European Maritime Data Management”

(FP6 – European Community Framework Programme for Research, Technological Development and Demonstration)

EMDM project

- **Vessel Data Management by**
 - Voyage Data Recorders
 - Electronic Logbooks
- **2 years, regular expert consulting**
(experts: mainly technical investigators)
- **identify, study and develop:**
 - new functionalities/applications for VDRs+ELBs
 - develop low cost devices
 - use of its data for other applications:
 - Environment Care (eg coupling with Garbage Logbook)

PROs ./ CONs of VDR/ELB integration into ship-source pollution tracking

?

**On board (e-)data provides
evidence against the vessel,
but also in defence of the vessel**