Global Maritime Distress and Safety System
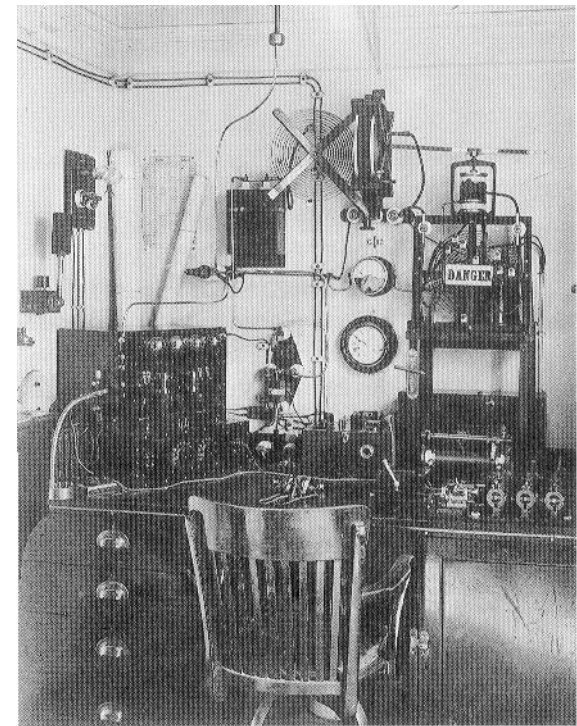
Andy Fuller

CEO

MarineWorks Ltd

the foundations

- Radio first used to save lives at sea in 1899
- SOLAS Convention developed post Titanic
- SOLAS Chapter IV regulates radiocomms in ships

Cunard's M/V "Ausonia" 1921

what happened next …

- MF/HF radio – using Morse Code and Radio Telex

- Distress Watch kept by Radio Officer – in person

- right up to 1999!

Container ship "Dubai" around 1989

the G.M.D.S.S.

- introduced satellites for distress, safety and general communications
- adopted by IMO in 1988
- transitional period 1992 to 1999
- phased implementation began with NAVTEX and EPIRBs

the operational concept

- equipment matched to area of operations – Sea Areas A1, A2, A3 & A4

- new core systems included:
  - DISTRESS button for primary alerting
  - Satellite EPIRBs for "last resort" alert
  - NAVTEX and SafetyNET for MSI
  - satcom for ships working offshore

4 Sea Areas

- **A1:** within range of shore-based VHF-DSC alerting (30-50 Nm)
- **A2:** within range of shore-based MF-DSC alerting (c.150-400 Nm excluding A1)
- **A3:** any area outside A2 but within coverage of Inmarsat satellites (between about 76 degs N & S)
- **A4:** any area outside A1, A2 & A3 (essentially Polar regions)

Inmarsat coverage
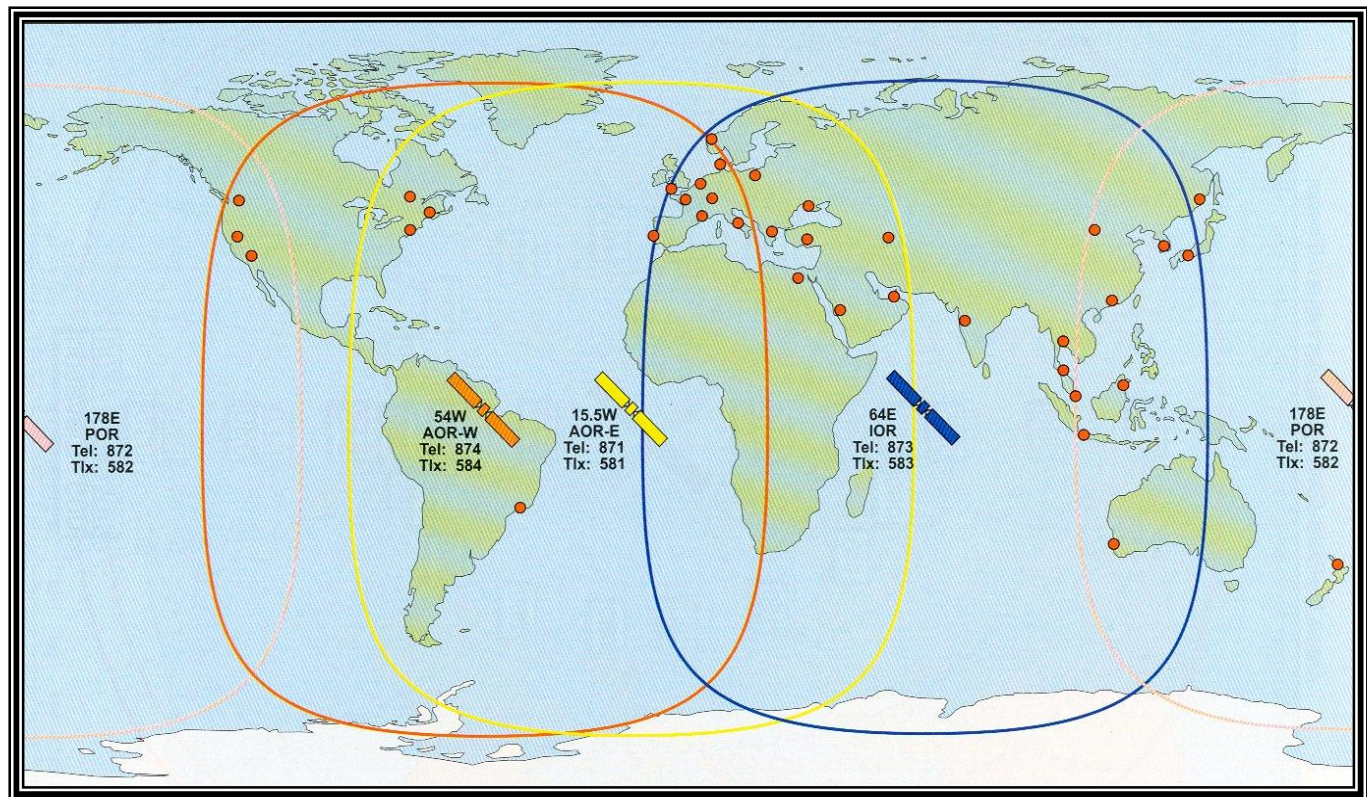
9 functional requirements (1)

1. transmit ship-to-shore distress alerts (2 independent methods)
2. receive shore-to-ship distress alerts
3. ship-to-ship distress alerts
4. rescue co-ordinating comms
5. on-scene comms
6. signals for locating

G.M.D.S.S

9 functional requirements (2)

7   transmit and receive Maritime Safety Information (MSI)

8   general radio communications

9   bridge-to-bridge comms

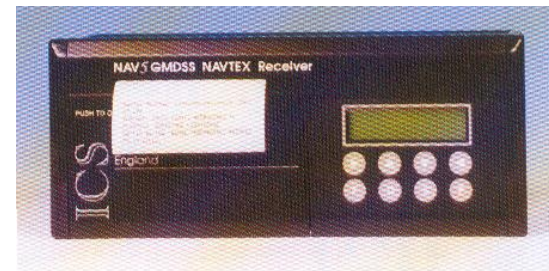# the G.M.D.S.S. radio station

the EPIRB

- **E**mergency **P**osition **I**ndicating **R**adio **B**eacon
- mostly COSPAS-SARSAT 406mHz
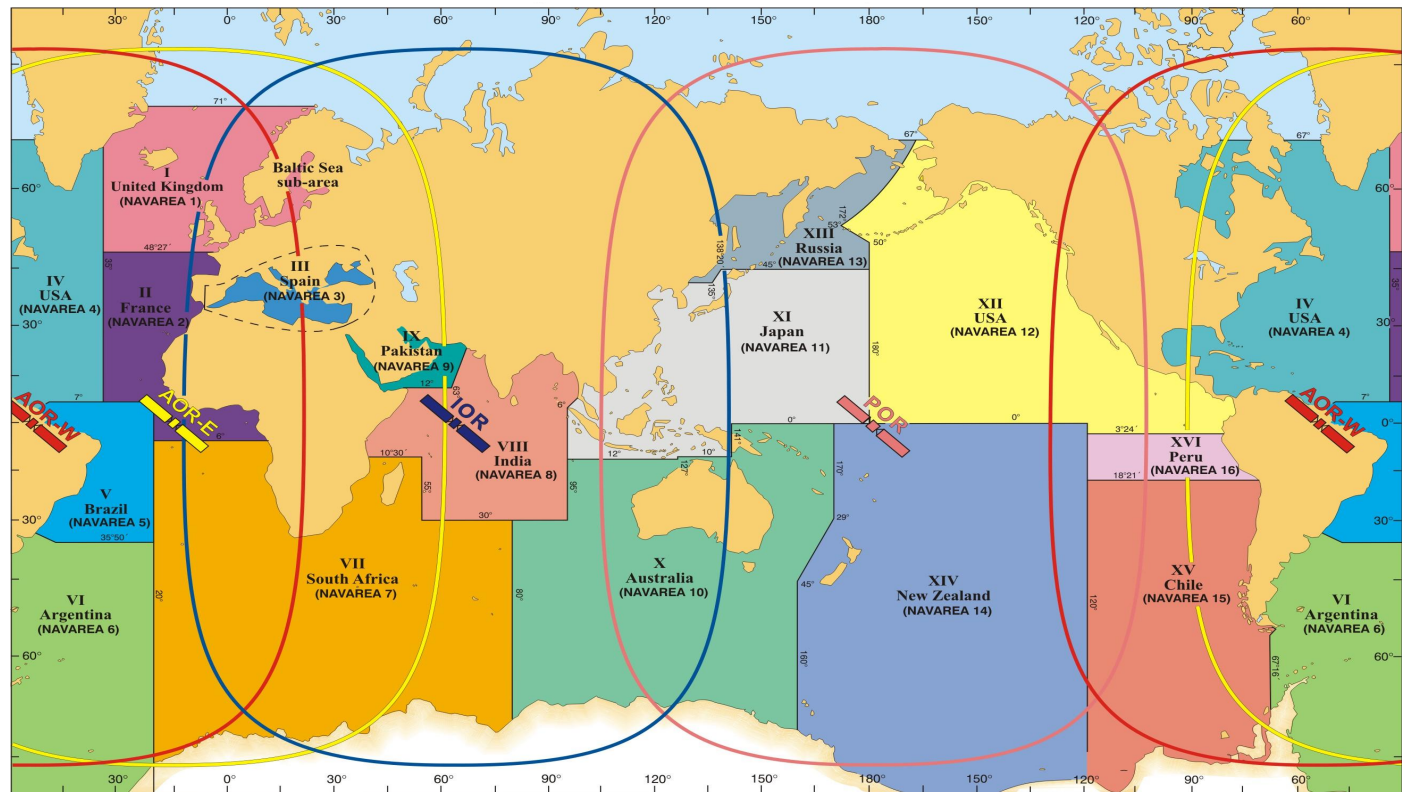- some Inmarsat-E EPIRBs also

Maritime Safety Information

- includes:
  - navigational warnings
  - meteorological warnings and forecasts
  - other urgent safety-related information

- automated broadcast via two systems:
  - NAVTEX
  - SafetyNET

G.M.D.S.S

16 NAV/MET AREAS

NAVTEX

- the medium range system for MSI

- automatic watch
- rejects unwanted messages
- prints relevant (!) messages

Digital Selective Calling (DSC)

- on MF and HF
- every terminal has a unique number
- all ships calls
- distress calling

G.M.D.S.S

Inmarsat-C

- low-speed data terminal

- e-mail and telex messaging

- the ONLY way to receive SafetyNET

- can be fitted in <u>any</u> ship

acknowledgement

- Thanks to the UK Hydrographic Office for use of some graphics from their excellent volume:

Admiralty List of Radio Signals Volume 5