



SOLIS

MARINE CONSULTANTS

LONDON

SINGAPORE

SHANGHAI

SOUTH AFRICA





KEY LOCATIONS & PERSONNEL

UK

- Capt. John Simpson (SCR)
- Duncan Campbell
Senior Naval Architect, VDR
& AIS Analyst
- Alwyn Forster
Marine Engineer
- Capt. Paul Walton
- Capt. Jamie Simpson
- Simon Hindley,
Naval Architect
- Olli Short,
Naval Architect
- Patrick Faas
Naval Architect
- Syafiqah Lee
Naval Architect
- Richard Pemberton
Naval Architect

SINGAPORE

- Capt. Ken Ellam (SCR)
- Ros Blazejczyk (SCR),
Naval Architect
- Capt. Sjoerd Blomsma
- Capt. Neil Minnitt
- Fangxu Sun, Naval
Architect
- Liew Jun Hao, Naval
Architect
- Andrew Ling, Naval
Architect

SOUTH AFRICA

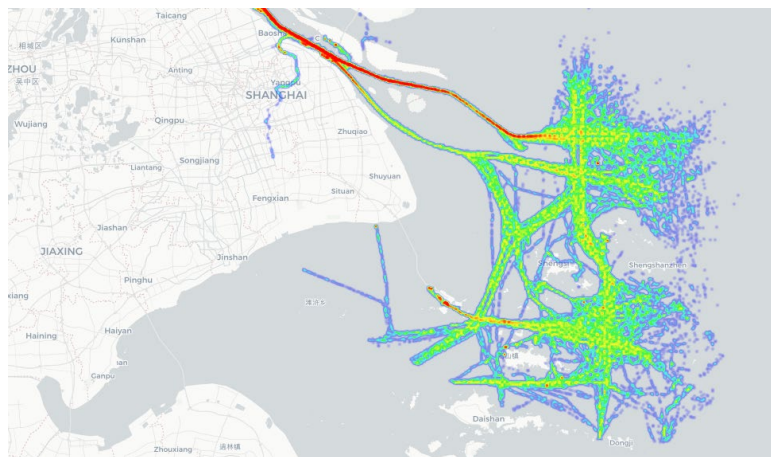
- Capt. Mike Melly

SHANGHAI

- Capt. Roland Orange

SERVICES

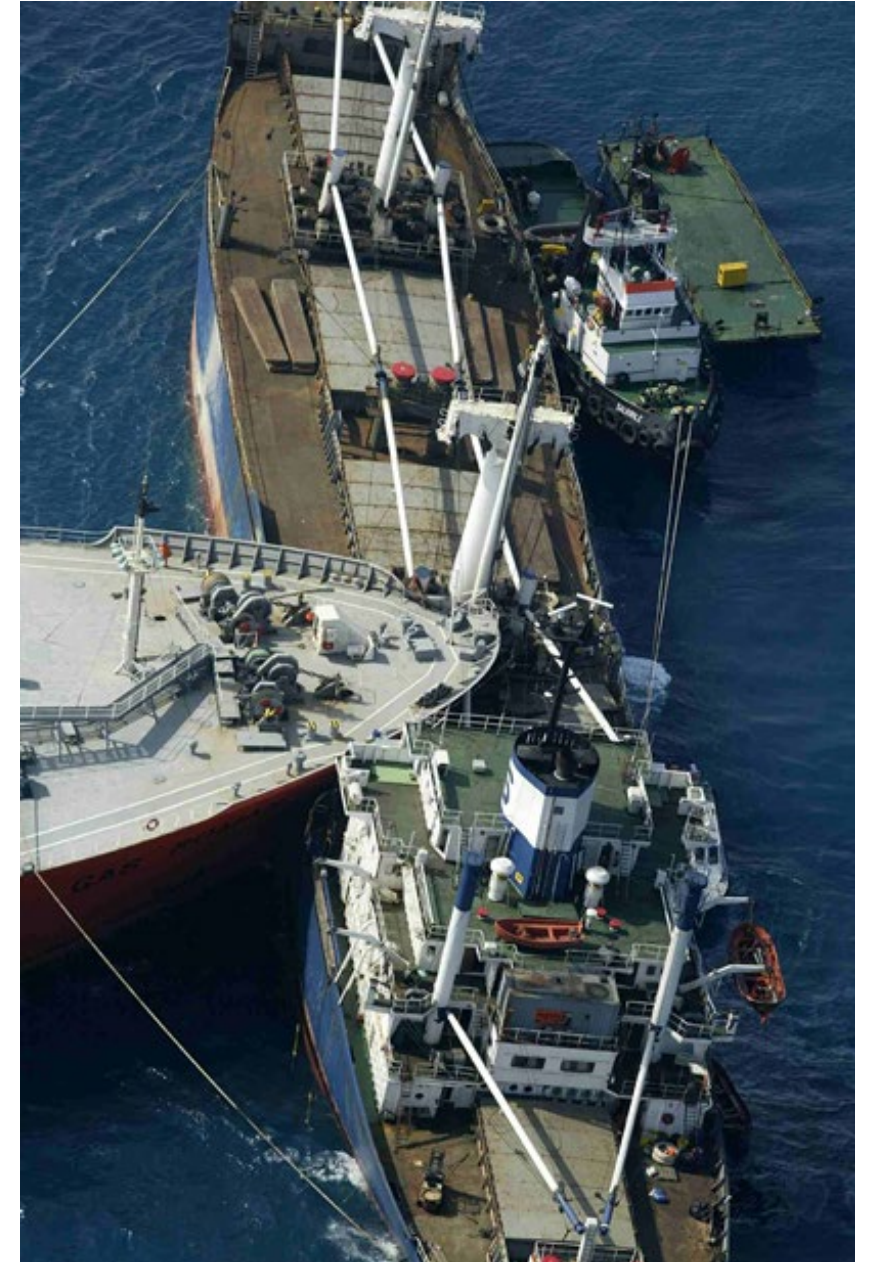
- Salvage and wreck removal
- Collisions and groundings: investigation and litigation
- Hull and machinery
- Incident reconstruction – Rapid Replay
- Cargo
- Strength and stability
- Passenger ships
- Ports and harbours
- Fishing vessels
- Technical due diligence
- Marine warranty survey
- Autonomous vessels
- Offshore renewable energy



THE COLLISION REGULATIONS AND THEIR EVOLUTION OVER 150 YEARS

Agenda

- History of the Collision Regulations (COLREGs)
- Current Challenges
- Looking Ahead to Autonomous Ships



HISTORY OF THE COLLISION REGULATIONS

- 1200-600 BC - Rhodian Sea Law
- 1175 - Roll of Oléron
- 1840 - Trinity House Rules (2 rules only)
- 1846 - Act for the Regulation of Steam Navigation and for requiring Sea-going vessels to carry boats.
- 1858 – Rules to prevent Collisions at Sea (USA.) coloured sidelights required
- 1863 – “Articles” (adopted by over 30 maritime nations)
- 1867 – The Rule of the Road (Thomas Gray)

Two Steam Ships crossing.

Note. – This is the position of greatest danger; there is nothing for it but good look-out, caution and judgment.

If to your starboard RED appear,

It is your duty to keep clear;

To act as judgment says is proper;

To Port – or Starboard – Back – or Stop her!

But when upon your Port is seen

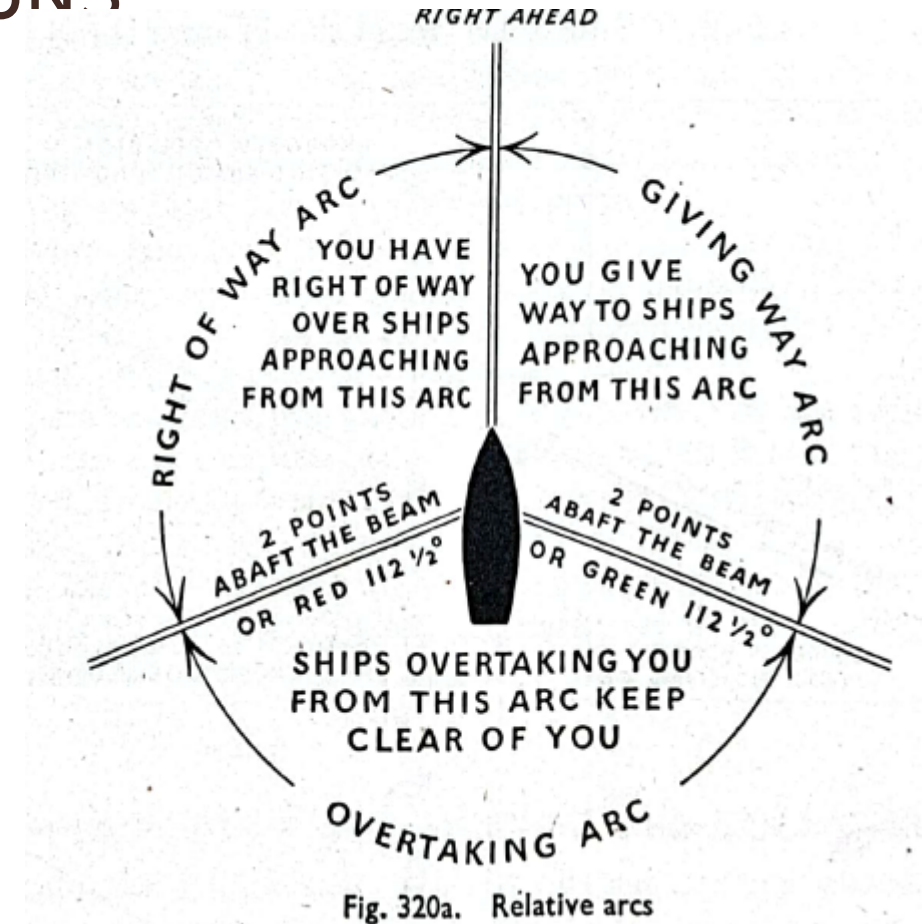
A Steamer's Starboard Light of GREEN,

There's not so much for you to do,

For GREEN to Port keeps clear of you

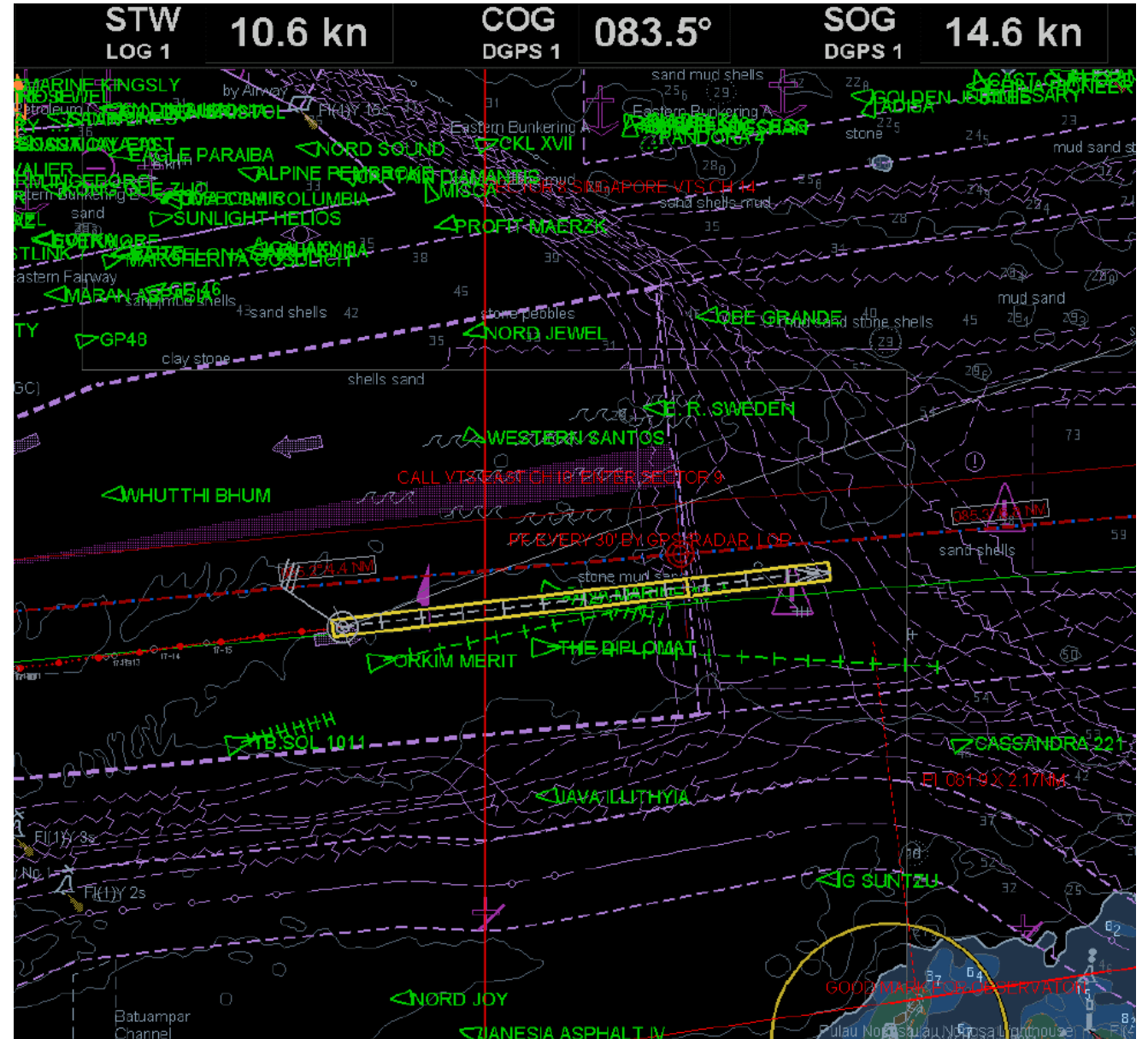
HISTORY OF THE COLLISION REGULATIONS

- 1889 - The first international maritime conference in Washington, D.C.
- 1910 - Minor amendments, ratified in 1929
- 1948 - Rule 16 - Speed to be moderate in fog. Lights and shapes added
- 1960 - Conduct of vessels in restricted visibility
- 1972 - Changed to current format, new rules added.



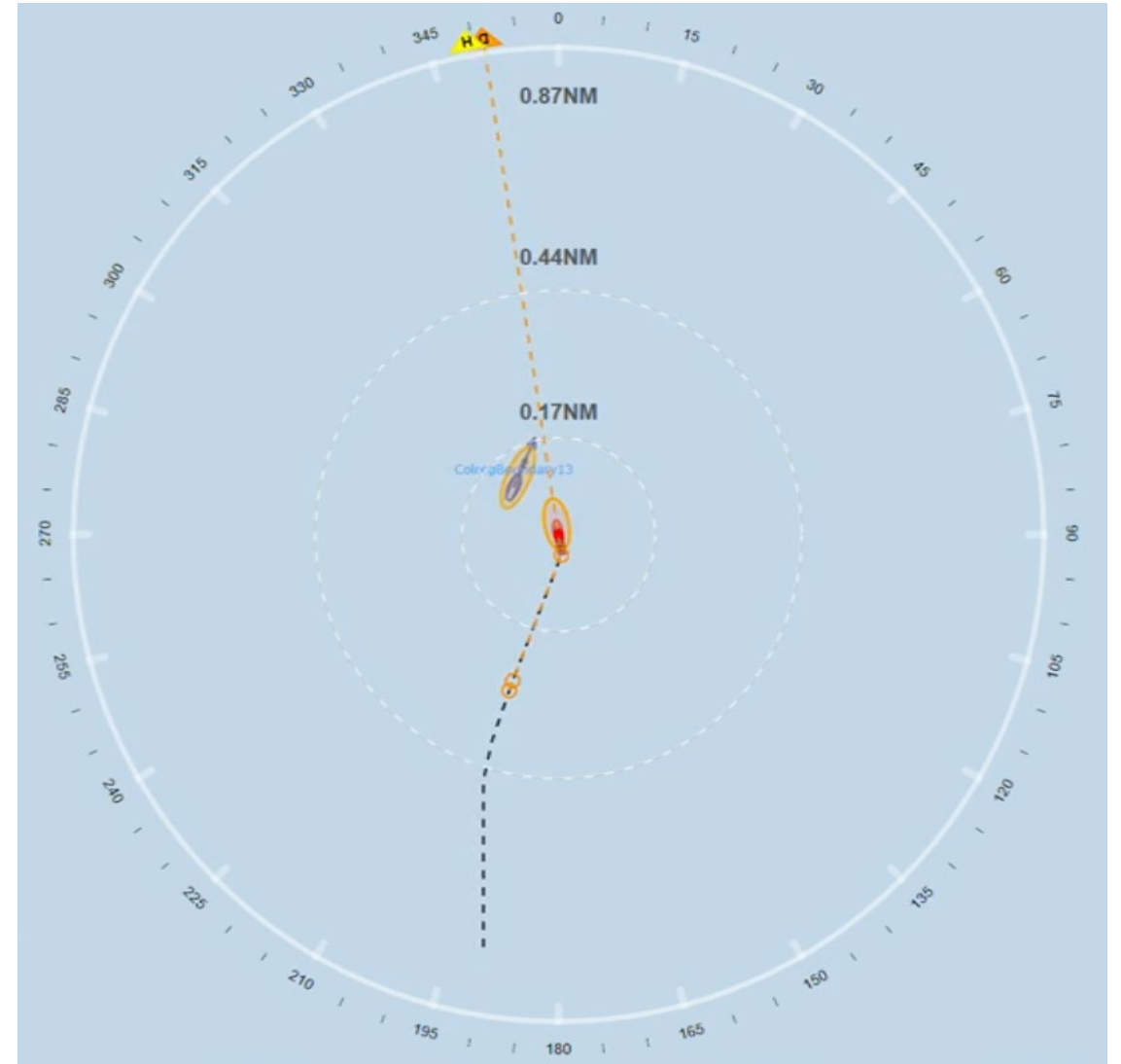
CURRENT CHALLENGES

- Improper use of ECDIS (Navigation)
 - Over reliance on AIS
 - Inadequate lookout
 - Lack of situational awareness
- Improper use of Radar and ARPA (Collision Avoidance)
 - Rule 5 – ‘Lookout’ – all available means
 - Rule 7 – ‘Risk of Collision’
 - All available means
 - Proper use of radar
 - Rule 8 – Action to avoid collision
 - Effectiveness to be carefully checked
 - Section II – Conduct of vessel in sight of each other
 - Rule 13 to Rule 17
- Incorrect use of VHF for collision avoidance



LOOKING AHEAD TO AUTONOMOUS SHIPS

- Maritime Autonomous Surface Ships (MASS)
 - Four degrees of autonomy (Manning / Control / Decision)
- IMO Regulatory Scoping Exercise
- Other industry research to consider possible changes
 - Barriers to COLREGs with MASS implementation
- Definitions
 - Master's responsibilities
 - Vessel – manned or unmanned
 - Early / substantial / as soon as becomes apparent / if the circumstances of the case admit
- Changes
 - Separate traffic Lanes
 - Identification – lights, AIS, shapes
- Quantification – CPA / TCPA
- Conclusion – Some changes required but algorithms for MASS ships can comply with current COLREGs
- Manned ships and MASS will need to navigate together
- Litigation



THANK YOU

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