Legal framework for unmanned vessels

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E-guided vessels: The 'autonomous' ship
Risk perspective – initial research

- Technology reliability
- Messages latency
- Crew: education, fatigue
- Navigation
- Collision
- Maintenance
- Emissions, engine efficiency
- Standards: current => unmanned
- No redundancy
- Foreseeability
- International regimes
- Regulation
- Liability/Compensation
- National regimes
- Insurance
Legal Issues

1. Navigation
2. Manning
3. Construction/Design/Equipment
4. Liability
5. Insurance
1. Navigation

Collision regulations: specific requirements of “human look out” or “human sight”

- Rule 5: “proper look out” to be kept at all times “by sight and hearing”
  ⇒ can a non-human look out be justified?
  ⇒ “by all available means”

- Rule 6: determination of a “safe speed”-
  ⇒ no “human” factor specifically required
  ⇒ The ANS has to be capable of determining: state of visibility, traffic density, manoeuvrability of the vessel (stopping and turning), background light, state of wind, sea, current and proximity of navigational hazard, and draught.
1. Navigation

- **Rule 7 (+ 12, 14, 15, 17, 18): identification of a risk of collision** - no “human” factor specifically required

  ⇒ “assumptions shall not be made on the basis of scanty information, especially scanty radar information”.

  ⇒ cautious, non-complaisant, continuous and repeated assessment of the situation around the vessel, on the basis of the information provided by on-board electronic equipment, but also complimented by more traditional modes of plotting when necessary.

- **Rule 8: actions to avoid collision** - no “human” factor specifically required
1. Navigation

- **BUT** Section II applies to “vessels in sight of each other”? (rule 3k defines this squarely on the basis of visual observation)- will the unmanned ship comply?
- Section III applies to vessels in “restricted visibility” – will the unmanned ship comply?
1. Navigation

- Key navigational issues and standards for the MUNIN unmanned ship:
  - Integration of sensors
  - Reliability of satellite communication
  - Usability/interface
  - Cyber security
2. Manning

- **STCW Conventions**: impose training and certification requirements. Can these be transferred to the staff in the SCC?

- **2006 Labour Convention**: imposes actual minimum staffing levels for the safe, efficient and secure operation of ships. Is the unmanned ship exempt? Or can there be derogations?

- **ISM Code** – for example, the obligations, responsibility and authority of the master of the ship (Part A(5)). Can these be transferred to a master in the SCC? Or will there be several masters? A ‘virtual’ master?
2. Manning

- **Seaworthiness and due diligence**: normal conditions of seaworthiness include manning requirements – this will be an important issue, to show that the unmanned ship is safe to undertake the journey and to carry the contract cargo.

- **Search and Rescue Obligations**: Article 98 UNCLOS, Regulation V/33 SOLAS, SAR Convention (+ other IMO instruments), 1951 Convention on the Status of Refugees: how can the unmanned ship assist?
2. Manning

- Key manning issues and standards for the MUNIN ship:
  - Standards of training of SCC personnel
  - Manning levels in SCC
  - SAR manning issues
  - Liability of the ship master
3. Construction, Design, Equipment

- SOLAS, MARPOL, Load Lines conventions impose specific CDE standards (for example for Bulk carriers) – the question is whether the unmanned ship maybe exempt when those requirements are arguably irrelevant.

- CDE standards are also linked to manning and navigational issues
3. Construction, Design, Equipment

- Key MUNIN CDE issues and standards
- Review of major conventions
- Maintenance
- Redundancy
4. Liability

- Ship master
- Shipowner:
  - Vicarious liability in case of collision, prudent seamanship of the crew
  - Contractual liability in case of breach of seaworthiness warrantee
- Others?
5. Insurance

- Off the record comments made by P&I clubs
- Insurance should not be an obstacle for the unmanned ship
- No significant increase in premiums
- In future, potentially lower levels of premiums of better safety records demonstrated by unmanned ships
Views of States

- Questionnaire drafted and circulated to States’ legal services to ascertain their views on the unmanned ship.
- Interesting answers showing the priority issues, and those less important.
- “social acceptability” : points that may make the unmanned ship “look” riskier than a traditional manned ship
  - Pollution incident (discharge or operational leak) detected in SCC
  - Piracy- unmanned ship could be an easy target for pirates
  - Cyber piracy – new area for the marine insurance industry
  - Lack of master on board – liability insurance is already available for unmanned aerial vehicles, unmanned cars and satellites. Arguably there is a lower risk as no loss of life.
Conclusions

1. International Standards: Navigation/Manning/CDE
2. Coping with Change: liability and insurance
3. Necessary Modifications: amendments v. novel interpretation?
4. Only the future will tell!
Thank you

Questions can be emailed to:

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