

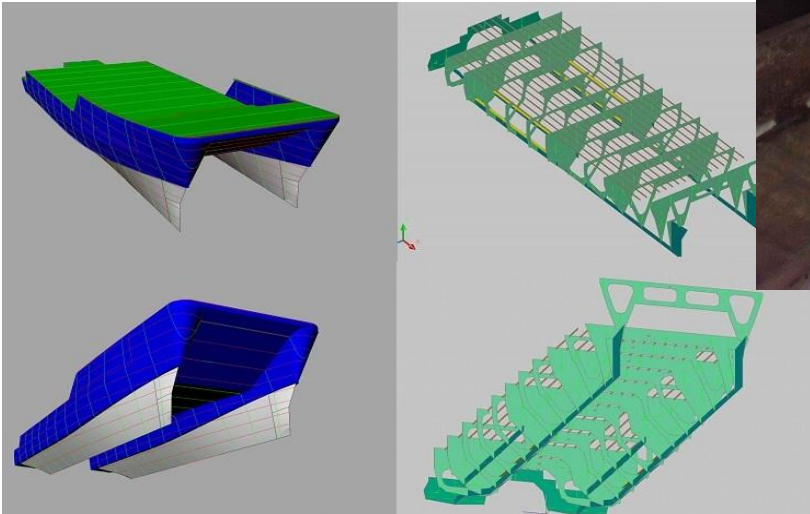
UK Maritime - Autonomous Systems Conference 2019

Vessel Standards

Alan Cartwright – Chair, IMarEST Small Ships Group



IMarEST Small Ships Group – Who are We?



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- The SSG is linked to the inter-institutional Small Craft Surveyors' Forum, for discussion of technical, regulatory and operational issues;
- The SSG is associated with other similar bodies, overseas, with which the IMarEST has affiliation or a suitable MoU;
- Members of the SSG represent the IMarEST on a variety of Regulatory and UK/EU/ISO Standards Committees;
- Non-IMarEST members involved in the profession and industry are welcome to attend meetings / training seminars;
- Most activity is undertaken by email discussion, with useful information posted on the IMarEST website SSG page.



Regulatory and Operational Developments for Autonomous Vessels

- Autonomous vessels are in use by a number of operators: L3 ASV, Thales, Qinetiq and many others here today;
- Purposes range from target vessels, hydrographic, oceanographic and seismic survey to experimental cargo and passenger vessels;
- Regulation (MCA Regulations, Class Society Rules, etc.) have not anticipated autonomous operation:
 - UKMASRWG has provided a 'Code of Practice' (now 2nd edition) for construction standards applicable, registration and operation;
 - Lloyd's Register has provided a Code of Practice, for design;
 - Bureau Veritas has provided guidelines for design;
 - Understood that DNV-GL has introduced guidance.



Regulatory and Operational Developments for Autonomous Vessels

- Britain is a leading authority in autonomy at sea, with 51 operational sites identified.
- In absence of other regulations or rules, the MASRWG Code of Practice (now at 2nd edition) should be used as a guidance document for ‘best practice’;
- Adoption of industry-led ‘best practice’ demonstrates clarity of safety-led culture and operations.
- Certification of your vessel ensures that demonstrable standards are achieved by your vessel.



Autonomous Vessel Standards – Best Practice



- For vessels over 24m on the Load Line: Follow Classification Society Guidelines on vessel design and cyber-security, e.g. LR:
 - <https://www.lr.org/en/unmanned-code>
 - <https://www.lr.org/en/cyber-safe-for-marine/>
- For vessels under 24m on Load Line:
 - The MCA ‘Workboat Code 2’ (now published) is recommended:
<https://www.gov.uk/government/publications/the-workboat-code-edition-2>
 - From February 2019, the voluntary Industry Technical Standard published in 2014, MGN280(M) and the Code for Sport and Pleasure Vessels (when published) will **not be allowed** for certification of vessels that are primarily ‘workboats’.
- If a vessel is ‘doing work’, rather than being used for ‘Sport or Pleasure’ (as defined in Merchant Shipping Regulations), **then it is a ‘Workboat’**.



Vessel Standards – Hull, Machinery and Systems Design and Survey



- For vessels over 24m on Load Line, hull, machinery and systems design and construction should be to standards recognised under Classification Rules:
 - MCA-approved IACS Classification Society Rules (e.g. LR Rules for Special Service Craft);
- For vessels under 24m on Load Line, hull, machinery and systems design and construction should be to standards recognised in the Workboat Code:
 - Classification Society Standards (e.g. LR Rules for Special Service Craft);
 - Standards called up under the EU Recreational Craft Directive (e.g. ISO12215, ISO 12216, etc. as appropriate to the hull, machine and system).
- Where an autonomous vessel is to be manned for part or (in support) the whole of its operation, then safety equipment and appliances must be provided, in accordance with UK Merchant Shipping Regulations.



Vessel Standards – Safety Equipment & Appliances

- When an autonomous vessel is unmanned for its operation, then consideration should be given to the essentiality of safety equipment and appliances, such that UK Merchant Shipping Regulations are complied with, for such times that the vessel may have personnel onboard.
- Target vessels provide an interesting example of when such consideration is necessary, for prevention of maritime pollution, following damage from operations:
 - Life-rafts, life-saving appliances and navigation equipment may all cause pollution.



Recent Small Ship Code Activity with the UK MCA



- IMarEST SSG members sit on a number of Working Parties with the UK MCA:
 - The Industry Technical Standard Working Group (revising the 1998 ‘Brown’ Code, for workboats and pilot boats): a voluntary Technical Standard was published in 2014. MCA ‘Workboat Code 2’ is now published;
 - The Harmonisation of Codes Working Party: Revisions for ‘Sport and Leisure’ vessels are being considered by RYA and YDSA, to update MGN280(M) the ‘Harmonised Code’;
 - The ‘500GT’ Code, for workboats and cargo vessels greater than 24m on Load Line but less than 500 Gross Tons. This Code was nearing completion for public consultation but MCA support was halted due to other priorities.
- While none of the existing Codes or UK Regulations specifically include scope for maritime autonomy, the MCA is aware of current developments:
 - IMarEST is supporting coordination of MCA Code Vessels and Smart Ships & Automation Policy officers’ work on adapting regulations for autonomous systems.



Autonomous Vessel Standards – MCA Areas of Concern



- The Maritime UK MASRWG Code of Practice (2nd edition) gives valuable information and guidance on vessel standards.
- However, two areas of concern remain to the MCA:
 - Ballast Water (Chapter 15.6); and
 - Carriage and Transfer of Dangerous Cargoes (Chapter 16).
- If your autonomous vessel is likely to carry ballast water or carry / transfer dangerous cargoes, then you **MUST** seek MCA Shipping Policy Department guidance and approval, **prior to design and construction:**

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Vessel Standards – MCA Consultation



- MCA intends to consult with the autonomy industry, to help develop UK regulations that encourage and support this important sector of maritime activity.
- Funding for this work has been provided by UK Government.
- Areas of interest and purpose include:
 - Appropriate regulation and useful guidance;
 - Identification and highlighting existing regulations and guidance that already apply to lower levels of autonomy;
 - Ensuring that UK activity are coordinated and consistent with IMO developments for autonomy, leading and guiding, where appropriate;
 - Encouraging a positive environment and culture for growth of the UK maritime autonomous system sector.
 - Working with MCA, Classification Society and Certifying Authority colleagues, to ensure growth of understanding.



Vessel Standards – Further Guidance



For further guidance and support to ensure that you develop your autonomous system for safe operation, contact your Classification Society / Certifying Authority, or the MCA:

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