

# AUTONOMY AT SEA – THE FUTURE?



**Maritime Autonomous Systems (MAS) technology in the marine and oil and gas sector has advanced rapidly in the last 20 years. Indeed a report prepared by the energy consultants, Douglas-Westwood<sup>1</sup>, suggests the demand for autonomous underwater vehicles (AUVs) is expected to grow by 49% in the next four years. The military sector will remain the greatest user of AUVs (73% of total demand), however, the commercial sector, including oil and gas, is expected to see the greatest growth in usage.**

The drive to improve safety and reduce risks and costs has driven MAS to the forefront of operations, and AUVs are already being used successfully in carrying out surveys of pipelines for example.

One of the biggest topics under discussion in shipping circles at the moment is the development of Autonomous Surface Vessels (ASVs) for which the growth, at least for the time being, is unlikely

to be as rapid as that for AUVs, mainly owing to regulatory challenges.

Given the success of AUVs in the oil and gas sector, it is perhaps not surprising that consideration is also being given to the use of autonomous offshore support vessels (AOSVs). While AOSVs are not currently anticipated to carry out larger tasks such as heavy lift, they are expected to be able to carry limited deck cargo and potentially support remotely operated underwater vehicles. With no requirement for manned spaces and accommodation, these vessels are expected to be cheaper to build with lower operating costs.

Rolls-Royce Marine and Automated Ships Ltd/ Kongsberg, for example, are already looking to develop AOSVs with the latter looking to enter into operation an AOSV in 2018<sup>2</sup>; although this AOSV will be remote-controlled initially with full autonomy to follow after extensive testing.

1 World AUV Market Forecast 2016-2020 (<http://www.douglas-westwood.com/report/oil-and-gas/world-auv-market-forecast-2016-2020/>)

2 <http://www.automatedshipsLtd.com/>



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PAUL DEAN, PARTNER AND GLOBAL HEAD OF OFFSHORE

Of course, the implications of such technological advances are enormous and will require an amendment to the existing legal structures and regulations, perhaps paving way for a new regulatory regime to deal with liabilities; for example around those arising from collisions. In 2016, over 75% of insured marine losses arose from human error<sup>3</sup>, so if autonomy helps to reduce these risks it will be attractive to both hull and P&I insurers alike and we anticipate insurance cover will be reviewed and new insurance products introduced to accommodate the new technology.

A number of projects, such as the EU's Maritime Uncrewed Navigation through Intelligence Networks (MUNIN) and the Rolls-Royce-led Advanced Autonomous Waterborne Applications (AAWA) initiative have clearly helped to overcome the technical challenges faced by ASVs. For example, autonomous collision avoidance

systems have been successfully demonstrated on a number of test craft.

However, the biggest hurdle facing developers of ASVs is not the technology but the regulatory issues. While there is no statutory definition of ship under the Merchant Shipping Act 1995, it is our view that an ASV would still be considered a "ship" under English law or most other international maritime conventions, despite the existing regulations having been written with conventional crewed ships in mind.

So, taking autonomous collision avoidance systems, would these be able to fully comply with the Convention on the International Regulations for Preventing Collisions at Sea 1972? Probably not. Compliance with Rule 2 in particular would be difficult, because this requires real-time human judgment to consider making a departure from the Rules necessary to avoid immediate danger. Similarly, keeping a proper

visual lookout under Rule 5 would be problematic. Therefore, as matters stand, it is our view that algorithms in existing autonomous collision avoidance systems would be unable to comply with these Rules although arguably a suitably trained shore-based controller would be able to fulfil the requirements.

The only way to achieve proper integration of ASVs with existing regulations is by developing acceptable industry standards and an international legal and regulatory framework that is acceptable to what has traditionally been a very conservative industry. The UK Marine Industries Alliance has already set up a UK MAS Regulatory Working Group to develop industry standards and practices with the first draft expected to be appear later this year. On the international front, the Comité Maritime International set up an International Working Group for Maritime Law and Unmanned Craft to produce a draft code of conduct, although a lot of work remains to be done before an international consensus will be reached.

We will publish updates as developments take place with this rapidly evolving and exciting frontier technology.

## Related events

Partner, Tom Walters and Associate, Jonathan Goulding will be attending the Autonomous Ship Technology Symposium in Amsterdam on 6 and 7 June 2017, where Jonathan will be speaking on "Unmanned ships – legal liabilities and considerations for manufacturers and operators".



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