

MASRWG Conference

NOC, Thursday 16 November 2017

Sir Alan Massey Keynote Speech

Introduction

Good morning Ladies and Gentlemen. Thank you for your kind introduction, Ed. It's a real pleasure to join you for this 3rd UK MAS Regulatory Working Group Conference here at the very impressive National Oceanography Centre in Southampton – I'm honoured, once again, to have been invited to deliver my keynote remarks to this very learned and pro-active audience.

It was of course just four years ago that UK Government first identified robotics and autonomous systems as one of the 'Eight Great Technologies' of the future. Fast forward to 2017 - the 'Year of Autonomy' no less – and it's been a particularly exciting year for maritime autonomy within the UK.

Following closely on the success of the Royal Navy's 'Unmanned Warrior' exercise late last year, there have been some quite fundamental developments that have since laid the groundwork for the UK in this emerging area. Highlights here have included:

- The UK's initiative, and subsequent acceptance by the IMO, to undertake a regulatory scoping exercise around Maritime Autonomous Surface Ships (MASS);
- Rolls Royce's demonstration of the world's first unmanned remote-controlled commercial ship – the *Svitzer Hermod*, a 28m long tug in Copenhagen;
- Wärtsilä's remotely piloted test from a control centre in San Diego, California of the *Highland Chief* in the North Sea;
- The launch of the UK's first dedicated MAS testing service, courtesy of the Solent Local Enterprise Partnership and BAE Systems & Partners;
- The first ever registration of an unmanned surface vessel on the UK Ship Register (but more on that later);

- Publication by Lloyds Register, QinetiQ & Southampton University of their *Global Marine Technology Trends 2030* report on Autonomous Systems;
- And finally, of course, today's highly anticipated launch of the MASS Regulatory Working Group's Code of Practice – which I know we'll be hearing more on from Andy Higgins later this morning. This follows the group's Code of Conduct, which was introduced shortly after the first MAS conference in November 2015. My warmest thanks go to Maritime UK for their taking the lead, along with the Society of Maritime Industries, in producing these publications.

Regulatory Framework

But of course, work hasn't ended there. Research and development continues at pace; autonomous systems are of course already out there, operating in commercially viable ways; and as the sector grows, new challenges begin to emerge. And that's exactly why we've gathered over the next couple of days:

- To consider what those challenges might be; and
- To identify what the next phase of MASSS regulatory work needs to address.

And all that, with a view to providing a robust, comprehensive - but importantly, pragmatic - input to the future IMO scoping exercise.

As you might suspect, the pace of technological change provides an ever-increasing challenge for us as regulators. By its very nature, for the regulatory process to be robust, there is a need for solid evidence, careful deliberation as well as thoughtful and considered engagement with the widest possible range of stakeholders – these are things which inevitably take time.

Yet when it comes to new and emerging technologies – just like unmanned vessels and maritime autonomy - we have the added challenge of sometimes trying to put a sensible and proportionate regulatory framework in place before we know exactly what the end stage of those technologies might be.

In this scenario, regulators will, I believe, need to develop a smarter, more contemporary approach. One that allows us to move away from a reactive updating

of regulations, and instead allows us to create some very real, tangible opportunities by working closely with industry to fully understand the 'size of the prize'.

That's why going forwards it will prove so important that we start to fully consider elements like 'big data', simulation, demonstration areas, and vessel trials - as well as creating a regulatory ecosystem in which both manned and unmanned vessels can co-exist; where those who want to embrace new technology can do so, without creating an unwelcome burden on those who choose not to do so at that particular time.

And that's why I am so pleased that the IMO has taken up the challenge here following the paper that we – the UK – and others submitted to the last session of the Maritime Safety Committee. Whilst it should come as no surprise that we are already working with fellow States to prepare the follow-on submission to MSC, we should be clear that this work is only just beginning there. I am sure that as it progresses, it will expand and touch upon a wide swathe of the IMO's business.

And that's why it is so important that the IMO has taken the lead here, so that autonomous ships are provided with the international level-playing field that they require - both in relation to manned vessels, but also to avoid the potential for conflicting national or regional regulations being developed that would force vessels to comply with varying requirements depending on their location.

So, let's not underestimate the task that's been set here. MASS has the potential to arguably demand the biggest regulatory change since the advent of the Steam Ship. The technology is the (relatively) easy part, but ensuring that clarity exists around the various roles and responsibilities – or ultimately where the buck stops when things go wrong – will likely require some creative and collaborative thinking.

After all, in time there will quite likely be a diversity of approaches to autonomy. Some ships will essentially be fully autonomous, whilst many will at some level be remotely controlled. Some will be unmanned, but again many will still have people onboard - even if those people are not actively engaged in the command or navigation of the vessel. Consequently, the regulatory response will need to cover the full range of operating models.

But before even that, however, we will probably need some new terms to describe the roles, responsibilities, and functions associated with unmanned ships. We will also need to give thought to existing definitions – for example “the Master”.

Throughout the existing regulatory framework, the role of the Master is key. Making sure that we identify the right approach to how we understand that role in the context of an autonomous and unmanned ship will be central to providing effective regulation going forward.

UK Industry Code of Practice

So, whilst it's clear that much critical work remains around the regulatory aspects of MASS, we should also recognise and applaud the very good work that industry has already undertaken to get the ball rolling here. With this, I of course, refer to the MAS Regulatory Working Group's Code of Conduct, published last year as well as the brand new - launched today - Code of Practice, of which I believe you all have a copy.

Produced with the support of my own organisation, the Code of Practice is an important early step by industry to consider the challenges and implications of MASS deployment and operation. And I must say, I've been impressed. Not just by the quality of the final product, but by the tenacity and enthusiasm of this forward-looking industry, in voluntarily producing a Code of this type.

This is the culmination of several years hard work, and there is some very good guidance contained within. And whilst it has no inherent legal force, it correctly doesn't try to second guess the outcome of the IMO scoping exercise. What it does do, however – and this is where its true value lies – is to provide operators with a contemporary first-order Code to support and enable MASS adoption across the growing list of uses being identified for them. This is really a very good example of responsible, self-regulation by industry, which I'm sure will be warmly received both at home and in international circles.

UK Maritime Autonomy Programme

Changing tack, and focussing on UK Government for a moment, it should be clear by now that MASS continues to enjoy strong support from Westminster. Whilst individually, inputs from the likes of BEIS, MoD, FCO and the DfT have to-date been quite modest, collectively this has represented sizeable Government investment that has generated some very real momentum around MASS. Nowhere has this been more apparent recently, than at London International Shipping Week, where MASS was the focus not only of a week-long display at the UK Department for Transport, but also a discussion point at DfT's Executive Committee.

What does this mean? Well, critically we believe that a clear direction of travel has now been set. Maritime autonomy has been identified as an important and integral part of the future maritime sector. Consequently, colleagues within both the MCA and DfT are currently hard at work building and developing an ambitious pan-Government maritime autonomy work programme, with a view to establishing the UK as a world leader in this field.

Now rest assured, we're not blind to the fact that change is already happening at pace here and indeed elsewhere in the world. The key, therefore, is to ensure that the UK is ready for autonomy, and able to fully leverage the right skills (both human and technological), infrastructure and regulation to capitalise on the benefits - in addition to ensuring the safe and successful operation of all types of vessels, including MASS, in an already busy sea-space.

Whilst it's too early to provide you with the detail here, it's important to note that this activity is taking place - particularly with a view to better aligning and enabling UK MASS ambitions into the future.

Test / Demonstration Areas

So, with this in mind, one of the next big practical challenges, centres around industry's need for test or demonstration areas. Whilst we have seen early industry-backed activity here in the form of BAE's MAS Testing Service in the Solent, and Thales's recent announcement of their Maritime Autonomy Trials and Training

Centre in Plymouth, there remains unrealised opportunity to better facilitate – and encourage – MASS testing around the UK, with a view both to enabling our industries and to raising our national profile in the MASS technologies.

Of course, creating space for national test or demonstration areas is essential and not just for experimenting with, and proving the capabilities of MASS. They will also be crucial for developing and enhancing our understanding of just what MASS means and how, perhaps, we need to evolve our thinking. In this connection, I'm very glad that the MAS Regulatory Working Group are now working on this question.

We have recently seen similar activity amongst our international neighbours here, where Denmark, Finland and Norway have each launched their own autonomous ship test areas – focussed largely on shortsea shipping but attracting considerable wider profile.

Around the UK, however, it is my feeling that some very different opportunities may exist, and perhaps with close engagement between industry and Government, we can begin to explore just what those opportunities may be. And not least, do some detailed thinking around just what constitutes a MASS demonstration area, what minimum criteria, facilities and infrastructure may be required, and just what kind of control conditions would be advantageous to fully test or maintain these craft in situ.

Registration

Now of course, another challenge that lies ahead is the registration of MASS for commercial operations. And again, I'm very encouraged to learn that this is also on the MAS Regulatory Working Group's to-do list, following direction by Maritime UK's MAS Steering Group.

Whilst I'm delighted to announce that the UK Ship Register was recently able to flag-in its first semi-autonomous vessel – an ASV Global C-Worker 7 – there is still much work left to do to fully consider what MASS registration needs to look like.

Aware of the challenges faced by the CAA when they first began to consider the registration and licensing of aerial drones, there are likely lessons learnt there from which we might doubtless benefit. Clearly, there may be opportunity for us to get

ahead of the game and replicate existing procedures rather than inventing new MASS-specific ones.

But in so doing, we shouldn't be afraid to fully bottom out what the scope of MASS registration may need to address – the vessel ? The pilot ? The owner/operator ? Or perhaps the whole enterprise ? These are just some of the very important questions that we at the MCA are beginning to consider, and I suspect we'll work closely with colleagues on the MAS Regulatory Working Group, as we begin to take this work forward.

End

I began my remarks earlier by highlighting just how important 2017 has been for MASS in the UK. In years to come, we may well look back and view the last 12-months as a real turning point for all the good work that follows. Whilst there is clearly a vast volume and important work left to do, I'm encouraged by the successes we've had thus far, and by the early - yet crucial - relationships that have been established between Government and industry, both at home and overseas.

And on that note, I'm particularly proud of the strong collaborative ties that the MCA has developed with the MAS Regulatory Working Group – the fruits of our labours are plain to see. We get a lot of good business done, and it is my expectation that this will continue in earnest as we begin to grow and explore other facets of what maritime autonomy means for the UK.

Now, before I close, let me just take a moment to talk about the next two days. This Conference - now in its 3rd year - does a superb job of bringing this community together – you, the authoritative and respected voices from industry, academia, from operators, manufacturers and from Government. That's a lot of like-minded folk in the same place, at the same time, and it presents us with a very real opportunity to engage and inform one another's thinking. Please do ensure that you make the most of it – I certainly intend to.

Thank you for your attention.