

# AUT 2017

18<sup>th</sup> October 2017



## Post-conference report

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Approved by Session Chairs: Steve Duffield, AHS & Peter Wademan, Woodside Energy

For 14 years, the Australasian Hydrographic Society (AHS) and the Society for Underwater Technology (SUT) have been organising the Autonomous Underwater Technology (AUT) Conference, an invaluable forum for the Oil and Gas (O&G) industry, military and research professionals to interact and share new ideas, experience and knowledge. The 10<sup>th</sup> AUT Technical Conference & Exhibition took place on October 18<sup>th</sup> 2017 at the Pan Pacific Hotel, in Perth (Western Australia) and included an extensive programme of technical presentations and dynamic round-table discussions focusing on the wide range of AUT applications.

This year, the AUT conference saw 95 attendees, almost 5% more than in 2015, coming from over 35 private companies and government institutions. The delegates and the presenters had a mixed background that included academic, industry and military experts, giving the conference a highly professional profile and significance, attracting Australian, as well as international, representatives.

**Norman O'Rourke**, SUT Perth Secretary, opened the conference welcoming the attendees and exhibitors and thanking the Major Sponsors *Fugro Survey Pty. Ltd.* and *Woodside Energy Ltd.* that, with their support made the 10<sup>th</sup> AUT conference possible, the Coffee Cart Sponsor *Blue Ocean Monitoring*, the Delegate Wallet Sponsor *University of Tasmania (UTAS)* and *Australian Maritime College (AMC)* and the Lunch Sponsor *Kongsberg Maritime*. Norman also gave a special acknowledgement to the 9 members of the 2017 Conference Organising Committee: **Shuhong Chai** (AMC UTAS), **Steve Duffield** (AHS), **Pat Fournier** (Neptune), **Ian Hobbs** (Fugro), **Ben Hunt** (Blue Ocean Monitoring), **Nicholas Lake** (Shell), **Simon Tanner** (Chevron), **Peter Wademan** (Woodside Energy) and **Phil Wells** (Neptune).

## Session A.1

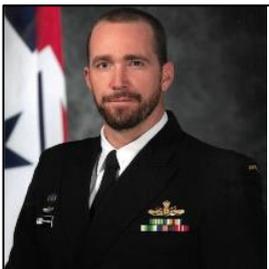
The programme commenced with a very warm welcome from the session chair Steve Duffield (AHS) that, before introducing the keynote speaker, observed the Acknowledgement of Country.



The keynote presenter **Mike Bowler** (Survey Operations Manager, Woodside Energy Ltd) gave an interesting overview of autonomous technology, stretching to autonomous surface vessels (ASVs), hybrid surveys, real-time monitoring, data harvesting. With costs and HSE (health, safety and environment) as the main drivers for technology development, the autonomous systems are challenging opportunities that can be employed in all aspects of a field development, including pre-lay and inspection, up to decommissioning, and provide a cheaper, faster and safer alternative that can help the business.



The first speaker **Jan Ingulfson** (Senior Advisor Survey and AUV Operations, Swire Seabed) came directly from Norway and gave a very technical presentation, introducing the Ocean Infinity's approach in seabed mapping, by using multiple autonomous underwater vehicles (AUVs) and ASVs from one single host vessel. This method aims to achieve greater survey coverage while minimising the overall costs. Jan also introduced the concept of *seabed intelligence* and the challenges in storage, data processing and operation risks while operating unmanned vehicles.



**Ryan Carmichael** (Commanding Officer, Australian Mine Warfare Team 16, Royal Australian Navy - RAN) opened his presentation with humour, saying that the RAN has recently started using "some of your toys", referring to the AUT that most of the attendees operates on daily basis. Ryan's talk highlighted the need of a solid synergy across projects and with different research and educational organisations, pointing out some of the misconceptions about the Navy that should be overcome. The message was clear: RAN endorses collaborations with both private companies and academia, in order to achieve the best common

goals.



**Rich Rickett** (Director, Seatools Pty Ltd) intrigued the audience presenting a new hybrid system consisting in a 3-in-1 underwater robot, combining AUV, ROV (remotely operated underwater vehicle) and diver propulsion capabilities. With this technical talk, Rich drew attention to the multiple uses that this man-portable equipment has in both military and commercial projects.

## Morning tea break

The morning break enabled the delegates to discuss about the presentations and ask a few more questions to the first four presenters, while networking and visiting the 5 stands of the exhibitors (Fastwave, Fugro Survey, Kongsberg Maritime, Neptune Marine Services & Western Advance) and sipping a good coffee in *Blue Ocean Monitoring* reusable and environmental-friendly mugs.

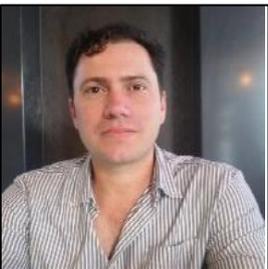
## Session A.2



The morning session resumed with the talk given by **Steve Hall** (Chief Executive, Society for Underwater Technology). His presentation was a brilliant photographic gallery of various examples of MASSMO (Marine Autonomous Systems in Support of Marine Observations) projects, carried out by the UK's National Oceanography Centre (NOC). His talk also outlined the numerous NOC collaborations and their lessons learnt, including quality control, management and storage of a large amount of data. Lastly, he emphasised the concept that underwater and surface vehicles can (and *should*) work together.



**Grant Judson**' presentation (Principal Advisor Navigation, Australian Maritime Safety Authority) dealt with one of the "hottest topics" associated with the growing application of unmanned vehicles, specifically safety issues and Australian maritime regulators. Conversely from the traditional vessels, when considering an unmanned vehicle, especially an ASV, the most dangerous operations are nearshore, hence the development of standards for navigation is a priority, in order to operate every equipment in a safely manner, for vessels, people and environment.



With his visual presentation, **Cory Brooks** (Marine Divisional Manager, Western Advance) showed several case studies of different applications of ASVs from around the world, from Alaska and Louisiana to Egypt and Perth. ASVs are currently increasingly employed in a broad spectrum of projects, including with environmental and military purposes. As standalone or in conjunction with other more traditional methods, ASVs represent a cost-effective and safe new practise to acquire data.

## Lunch break

The lunch break represented another significant opportunity for delegates and exhibitors to continue their networking and mingle with the presenters, while enjoying great food offered by *Kongsberg Maritime*, before heading for the evening session.

## Session B.1

The session' Chair **Peter Wademan** (Woodside Energy Ltd) reaffirmed the recognition of the AUT conference that over the years has achieved an exceptionally high level of quality and maturity.



**Paul Hornsby** (Chairman, Australia On The Map) opened the afternoon session with a short and informal presentation on AUVs capabilities and trends, emphasising the prominent role of unmanned and autonomous vehicles as revolutionary technologies designed to solve a variety of multi-domain (including surveillance) and multi-national challenges.

## Panel Discussion

The session' Chair **Peter Wademan** also presided over the panel discussion, one of the highlights of the conference. Together with **Ross Dinsdale**, **Peter King** and **Grant Judson**, the four panellists shared their opinions and expertise, answering numerous questions about unmanned and autonomous vehicles. The audience was particularly keen to widening the matter about Australian regulations and laws in regard to AUT. Among the discussed topics was the classification of gliders as marine debris and their freedom to drift in international waters. Another key topic of the panel discussion was the relation between AUT and marine fauna, which monitoring is still on going. This “round table” discussion provided an interactive and informal learning environment, engaging all the delegates.



**Che Keong (CK) Lee** (Sales Subsea Manager, Kongsberg Maritime) introduced for the first time the Eelume, a versatile snake-like subsea robot, capable of “swim like an eel, cruise like an AUV and hover like a ROV”. CK also presented several fascinating videos of the Eelume potentialities, like pipeline and subsea inspection, including its role as a resident robot that could stay up to 6 months in a subsea environment.



Also **Anthony Gleeson** (Vice President, Sonardyne International) showed remarkable footages, especially extraordinary if considering that they were real-time videos; specifically they were examples of how acoustic and optical instruments are able to transfer large volumes of data, such as multiple video channels, over a thousand meters. This new technology enables an intelligent and instantaneous interaction between operators (on the host vessel) and AUV in marine environment.



**Paul Georgeson** (Managing Director, A60N) opened his presentation with a clever and effective comparison between power plugs and subsea telecommunications: as different countries have different plugs and sockets, also in underwater technology there are many types of connectors. A joint project between Norwegian and Brazilian companies are developing a universal pin-less system to interface AUVs and cabled subsea communication applications for bi-directional power and data transfer. This new technology can be employed in both O&G and environmental monitoring.



During his talk, **Peter King** (AUV Facility Coordinator, Australian Maritime College) showed several examples of the AMC suite of AUV simulation tools, crucial for planning, analysis and development. Simulators are in fact invaluable for later evaluations, training and modelling, allowing safe and cost-effective trials of AUVs.

### Afternoon tea break

Once again, this break was a constructive social gathering with the exhibitors and a great networking opportunity.

### Session B.2



**Ross Dinsdale** (General Manager Asia-Pacific, Blue Ocean Monitoring) focused his presentation on several geochemical investigations undertaken with autonomous Slocum gliders. These particular gliders, equipped with fluorometers, are designed to detect methane and crude oil from natural seeps. They can be considered an excellent and safe ground truth method, to use also in conjunction with geophysical surveys and core sampling.



**Giovanni De Vita** (GIS & Data Management Coordinator, DOF Subsea), with a technical and entertaining presentation, demonstrated how *Orange is the new Yellow*, in other words how the AUVs are overtaking the ROVs in almost every aspect of a field development, at any depth. In particular, pipeline inspection has become more efficient and cost-effective thanks to autonomous vehicles that provide, under the same time synchronisation, geophysical and environmental data with high-resolution imageries. This information is then streamlined during the post-processing and delivered as a single GIS database.



For his second speech, **Peter King** presented a scientific and fascinating use of AUVs: the exploration under the Antarctic ice. Especially designed for polar environments by the AMC, in collaboration with International Submarine Engineering, these exceptional AUVs can dive under meters of thick sea ice and ice shelves to investigate and study areas of a hostile and under-explored environment. The ground-breaking new information can also help scientists to better understand any impact that the global warming has already had on the ice thickness and predict future melting trends.

### **Closing remarks**

Steve Duffield concluded the conference thanking once again the sponsors, exhibitors, session chairs, panellists and delegates. He also mentioned the invaluable contribution of SUT Perth personnel (**Jennifer Maninin, Corelle Charles, Fiona Allan and Marketa Mesman**) in helping to affirm the AUT conference as an event of high international standard.

Steve concluded saying that the AUT conference and the remarkable presentations made him smarter, more educated and reinvigorated and closed the proceedings by inviting all conference participants to the 8<sup>th</sup> Annual Subsea Suppliers Forum, a post-conference event arranged by Subsea Energy Australia, to have the final opportunity to network in a relaxed and social environment.

## Photos from AUT Conference 2017



Session A.1 Speakers

Keynote Speaker



Session A.2 Speakers



Session B.1 Speakers



Session B.2 Speakers



Panel Discussion



AUT Conference Delegates



AUT Conference Delegates



Fastwave Exhibition Stand



Fugro Survey Exhibition Stand



Kongsberg Maritime Exhibition Stand



Neptune Marine Services Exhibition Stand



Western Advance Exhibition Stand



AUT Conference Organising Committee



Delegates venturing to the SEA Suppliers Forum

Ice Breaker Function

