



Testimony

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Blue Technologies:
Use of New Maritime Technologies to Improve Efficiency and Mission Performance
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Good morning, my name is Christopher Coyle.

I want to thank the committee for giving me the opportunity to speak with you today about future blue technologies; a very exciting field.

Today, I am representing IOSTIA (IO-sha), the International Ocean Science and Technology Industry Association, which represents marine technology businesses and organizations that provide technology and services for sectors that sustainably and commercially utilize the oceans.

And, as an example of this hearing, IOSTIA also provides a unified public policy voice for those in our ocean technology space.

During the day, I am the Chief Strategy and Revenue Officer for Exocetus Autonomous Systems, of Wallingford, CT, which designs, manufactures and services deep-sea robots, Autonomous Underwater Vehicles or AUVs.

I also lead the company's data and analytic initiative for the company's XPRIZE entry. In fact, Exocetus was named a semi-finalist in the Shell Ocean Discovery XPRIZE for mapping the ocean floor. We were one of only 19 teams selected from around world, out of 1,400 entrants, so we are extremely proud of this moon-shot award. In addition, Exocetus is a finalist in NOAA's prize for detecting chemical and biological signals underwater.

Our oceans cover 70% of the planet yet only 5% of the ocean floor has been mapped. We know more about the surface of the moon, than we know about what lies below the surface of our waters.

How is that possible?

Elon Musk, Jeff Bezos and Richard Branson have spent billions of dollars of their own wealth and billions more from investors to explore space. It's sexy and exciting. They have re-energized the planet's interest in outer space, intergalactic travel, and potential colonization of other planets. But it is entirely misguided.

The final frontier to be discovered is our oceans!

The next space race is our oceans!

Our planet depends on the access to healthy and plentiful oceans.

Our oceans and blue tech should be the focus; not space.

As population growth climbs, as migration to concentrated coastal urban areas continues, as farmlands around the world shrink, as more and more people become dependent on fish protein, as seas play a more herculean role in carbon capture, oceans need to be today's focus for emerging technology, investments, and U.S. government attention.

And so blue tech is the critical technology to encourage as our children grow into adults and take on leadership roles.

This past week, I came across an article entitled "**Can the U.S. Navy Brave the Waves of Autonomous Warfare**". I'll hand the article to your staff in case you'd like to include it in the hearing record.

The article's thesis is that AUVs offer great efficiency, mission range, and lower cost of capital than other more traditional naval means.

AUVs will prove to be cheaper to operate, put fewer seamen in harm's way, and therefore assume greater levels of risk.

AUVs are more expendable and can augment a fleet to do search and reconnaissance.

Last July, DARPA contracted BAE Systems to build small AUVs that can detect enemy subs. Today, AUVs are working on sea sensing and mine counter measure tasks.

By 2025, the Navy's AUV fleet will support undersea warfare by going into denied waters that are either too deep or too shallow for manned platforms.

AUVs will continue to provide greater benefit to the U.S. Coast Guard for port and waterway security, maintaining navigation, marine environmental protection, oil spill protection and response, marine pollution, fisheries, ocean shipping lanes, and in support of key components of the Coast Guard Authorization Act of 2017.

My company, Exocetus, is a quintessential example of a successful and sound U.S. government collaboration.

Exocetus was started with a \$15M federal grant to develop its buoyance engine. This government investment resulted in three (3) patents on the engine design and one (1) on the retrieval system.

Today, we are proud to say that both the Navy and Coast Guard are presently using our AUVs.

To me, the most exciting thing about AUVs are the sensors and the integration of all the emerging technologies such as cloud computing, artificial intelligence, machine learning, and blockchain to process the big data/analytics that will provide essential information and intelligence for our national defense, coastal erosion, port security, shipping lanes, laying fiber optic cables for communication, internet & media companies, and meteorological disturbances – to name just a few.

The future for blue technology is bright.

The million-dollar question is, are we going to seize this amazing opportunity and support and invest in brand new technologies, that will create high paying jobs of the future, or won't we? I can assure you that Russia and China will.

I am convinced that the blue economy, sparked by advances in blue tech, will be the next biggest revolution.

The best way to predict the future is to create it!

Thank you and I look forward to answering any of your questions.