

DEPARTMENT OF THE NAVY
SBIR/STTR TRANSITION PROGRAM
SPOTLIGHT

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From Torpedoes to Health Care Workers: PEI Protects What's Important

By Jennifer Reisch

The COVID-19 pandemic made 2020 anything but business as usual. But Pacific Engineering, Inc.'s president, Rear Admiral Osie V. Combs Jr., USN Ret., discovered his technology development philosophy of “build—test—build—test—deploy” still applied.

PEI took technology developed under Department of Navy (DoN) Phase II Contract N00024-12-C-4127 to build cannisters to house and protect torpedoes and transformed them into safe and transportable COVID-19 testing pods that protect healthcare workers and their patients.

“PEI has designed and manufactured a portable point-of-care medical platform for high volume virus testing, safe vaccine and therapeutics distribution, and medical support, using PEI-developed composite technology from our Navy SBIR projects,” said Dexter Myers, the company’s vice president.

The company designed and built a Rapid On Demand-Portable Medical Platform™ (ROD-PMP) that allows patients to meet with health care professionals and receive a limited-contact vaccination or COVID-19 test. The ROD-PMP can also be used for self-administered COVID-19 tests without direct physical contact. The health care worker can observe and coach the patient through proper use of the kit.



Image provided by Pacific Engineering, Inc.

The units are portable and created to fit in a standard parking spot, according to Myers. “The lightweight composites allow the ROD-PMP to be mobile and easily transported while ensuring long service life. The design and materials also provide a secured container to store medical supplies and diagnostic equipment.

“A torpedo needs to be maintained in a certain environment so it’s in a ready-to-fire condition. That’s related to temperature and other environmental factors. Now we are providing environmental protection to health care workers while they’re providing COVID tests. Now instead of protecting torpedoes we’re protecting health care workers,” Myers explained. PEI’s sandwich composites have low heat transfer and are more insulating than metal structures.

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From Torpedoes to Health Care Workers: PEI Protects What's Important...*(continued)*

In 2014 PEI was awarded the prestigious Tibbetts Award—from the Small Business Administration for their work developing and delivering the composite cannisters. In between the torpedo cannister and the medical platform, PEI used that same SBIR technology to design a reconfigurable Marine Corps vehicle trailer bed.

The sandwich composite floor of the trailer readily led to the design of portable platform floors and walls and ceilings. “Just stand it up!” Combs teased, continuing to follow his build—test—build—test—deploy philosophy.

“You build a torpedo canister out of sandwich composite structure. It has an application. You then design a lightweight flatbed trailer.

Sandwich composite has another application. You learn. You test the technology. You improve the technology and build an all-terrain ruggedized trailer. Then you improve the technology and build something else. Through using SBIR awards over the years we can design technology, improve on that technology, and apply the technology.”

As the pandemic affected the United States, PEI wanted to do something to help. “We wanted to apply our military knowledge and technology to the civilian world. We have the expertise and knowledge and said, ‘Let’s apply that to doing something that can benefit

others.’ That’s the attitude that we went into this with. What could we do to engage in combatting COVID? We know we are going to need something for shelter for health care workers. We know it needs to be deployed rapidly. We know weight is important. You start thinking of those things just like when designing and building for a military application and apply that technology and that knowledge toward combatting COVID. That was our purpose,” Combs said.

Some of the skills Combs and Myers built through the Navy’s transition assistance

program, the DoN SBIR/STTR Transition Program (Navy STP), helped get the medical pods into the field, beginning in October 2020, with initial



Image provided by Pacific Engineering, Inc.

deployments to the University of Nebraska Lincoln, the Winnebago Tribe Sovereign Nation, and the Nebraska Department of Health and Human Services. According to Combs, “STP gets you in the mindset that you have to commercialize the technology. You can’t just do SBIR development. What’s the end goal? You have to have somewhere to go. One of the biggest benefits of STP is talking about your potential markets. Where are you going to take this technology? Who are you going to sell to? STP is designed to help small companies grow to be bigger. You’ve got to get it out there. It sounds good to you, but is it marketable and can you sell it?”

PEI has manufactured over 40 units since its initial concept and design.

Fallout from COVID-19 has affected work at PEI even as they are working to help others. "In a manufacturing facility we can't always get the materials we need on schedule. When you can't get workers in, you can't get materials out. Everything has slowed down and it's hard to hold to a schedule. No one can predict when a whole manufacturing plant might shut down. It took a while to understand the new rhythm to working effectively. It's life. We're all human. You have to adjust. Everybody slowed down but we've learned to use technology better. Hopefully we've learned a better way of doing things going forward," Combs said.

"We have to think about what's coming and look ahead. Winter is coming. Tents aren't going to work when it gets really cold and windy. People don't want to go to a hospital for a vaccine—they don't want to get sick there. We can adapt these medical platforms to do other things." PEI's medical platforms allow for service in all seasons and in all locations. The platforms will withstand 120 mph wind gusts, and snow loads.

"The SBIR program forces you to be on the front end of thinking. It's innovative research. That by definition means you are on the front end, trying to come up with new and better

solutions. That's why we do this. SBIR and STP get you out front. You have to think ahead," Combs said.

The company continued its forward thinking in 2021 and evolved its ROD-PMP design to allow greater flexibility in supporting testing and vaccinations for multiple venues, introducing its Rapid On Demand-Portable Mobile Medical Vaccination Platform (ROD-PMMVP) in June.

These PODs can be easily moved to on-site locations and can be set up and broken down in a matter of minutes. Deployment of the ROD-PMMVP is making it easier to reach rural and underserved communities and better facilitate the administration of vaccines and virus testing during all seasons.

As the COVID-19 pandemic continues to spread and evolve,

PEI is evolving and applying its SBIR technology and Navy STP experience in ways that support communities across Nebraska and the nation and demonstrate the value of the SBIR Program.

For more information, visit PEI's website at <https://www.pacificengineeringinc.com/>.



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