

DEPARTMENT OF THE NAVY
SBIR/STTR TRANSITION PROGRAM
SPOTLIGHT

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Rock West Builds Ceramic Nose Radomes for the Navy SSST

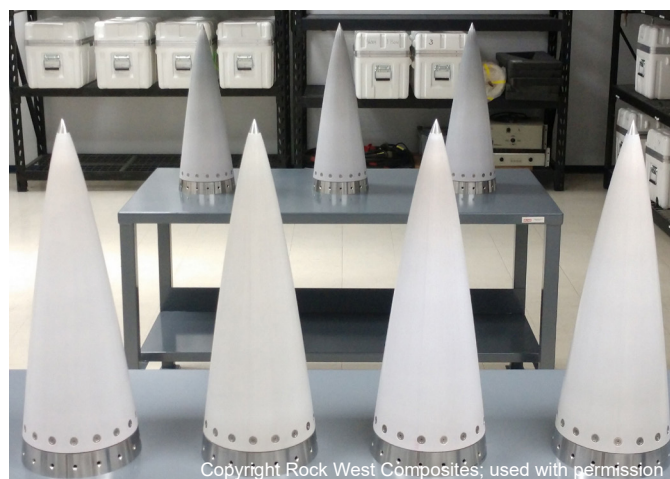
By Jennifer Reisch

Rock West Composites (Rock West) has been awarded a multi-year Phase III SBIR Basic Ordering Agreement (BOA) for NAWC-PMA-208, building ceramic nose radomes for the GQM-163A Supersonic Sea Skimming Target (SSST), also known as Coyote.

The company's ceramic nose radome improves RF performance, enables faster (hotter) flight profiles, and is significantly less expensive than the traditional composite radome it replaced. Under SBIR topic NI01-034, Affordable Broadband High Speed Radomes, Rock West developed a new process to build ceramic radomes without requiring expensive precision machining that is typically required for such structures.

The path for this SBIR project was not a straight one, however. "After successful completion of our Phase II for the radomes, the Navy indicated that they did not have an immediate need for our product. However, about two and a half years later, in late 2016, they called. They were having trouble acquiring new radomes for the SSST," said Keith Loss, co-founder and vice president of Rock West.

SSSTs are targets the Navy uses to simulate enemy missiles and train against them. "They need to communicate and do other things by transmitting radio signals straight out the tip of the really sharp nose and radar energy does not want to go out those really shallow angles. The Navy wanted better performance, and the heritage composite materials were becoming obsolete. They reconnected with a specific need for our ceramic nose radome which led to Phase



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Rock West's ceramic nose radome improves RF performance and enables faster, and therefore hotter, flight profiles for the SSST.

II.5 funding to qualify our design, and then our Phase III production contract award in 2019," Loss explained.

After successful Navy-sponsored qualifying tests, new requirements became apparent, requiring innovative design modifications to the radome base to address higher loads. "The Navy was absolutely collaborative; we worked with multiple agencies within the Navy and everyone was always pulling in the same direction to achieve a successful end result," Loss said. "David Jakubowski and James Winafeld, our sponsors at Navy PMA-208, and Neil Decker at NAWC-Pt. Mugu were instrumental to the success of this program."

Now Rock West is delivering multiple radomes per year to the Navy through a five-year BOA. The Navy supplies the radomes to Northrop Grumman's (NG's) Launch and Missile Defense Systems in Chandler, Ariz., where NG builds the

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SSST. Rock West works closely with COI-Ceramics who makes the ceramic shells, II-VI Aerospace & Defense, who applies the glaze, and Q-3 CNC who makes the steel adapter for the radome,

According to Loss, the SBIR program was helpful in the growth of the company. “We started as literally two guys in a garage in 2007. SBIRs provided some important small contracts in our early days. Today we employ over 180 fulltime workers at four sites. SBIR has been a key part of our growth going from truly a start up to a significant player in aerospace and defense. Our mission is to help our customers solve hard problems using materials technology.

“About half of our revenue is Department of Defense and half of it is commercial in fields as diverse as energy, space, drones, sporting goods, and medical products. We have also started an online business of stock composite products, such as carbon fiber tubes, composite plates, and small order-quantity prepreg. We believe we

are the largest business making stock composite products in the country now.”

The Department of Navy SBIR/STTR Transition Program (Navy STP) also helped Rock West grow. “Participating in Navy STP broadened our network with large aerospace companies and led to other projects we were able to win in unrelated technologies. The networking we achieved at the conference and the briefings were a big boost,” Loss said.

Rock West sells carbon tubes and fittings for a large range of stock sizes including telescoping tubes, zero-coefficient of thermal expansion tubes, and tubes built for high torque as well as axial forces for applications ranging from sports to space. However, most of its sales come from products that are build-to-print or build-to-specification to meet unique needs for each structure in quantities ranging from one to thousands. For more information on Rock West, visit the company website at <https://www.rockwestcomposites.com/>.



U.S. Navy courtesy photo by the Royal Navy

The SSST is a supersonic sea-skimming vehicle used by the Navy. The Coyote provides support in defense research and fleet training exercises.