PRESS RELEASE (Contractor) (PRCON)

SemQuest and NIWC Pacific Achieve Major Milestone in Pulsed High-Energy Laser Measurement Technology

Collaboration records >100 MW peak power and >1,000 kW/cm² irradiance with no physical damage, marking key progress toward future operational measurement systems.

[Colorado Springs, Colorado] — [12/01/2025] — SemQuest Inc. announced today that it has achieved a major milestone in its development of pulsed high-energy laser (HEL) measurement technology. Working under an active Cooperative Research and Development Agreement (CRADA) with Navy Information Warfare Center (NIWC) Pacific, the company successfully demonstrated survivable, high-fidelity measurement of extreme-power pulsed HEL engagements — a critical achievement advancing toward future commercial-off-the-shelf (COTS) measurement systems for test ranges.

Testing conducted throughout 2025 involved SemQuest's experimental Copper SLIM system, a proof-of-concept adaptation of the company's established Small Laser Irradiance Measurement (SLIM) target board technology. SemQuest's **reusable** target boards are already known for enduring thousands of continuous-wave (CW) shots without performance degradation, a capability now being extended into the far harsher pulsed-laser regime.

The Copper SLIM system endured **peak powers exceeding 100 megawatts** and **irradiance levels above 1,000 kW/cm²**, conditions known to generate damaging plasma near the point of engagement. Over the course of a single day, the target board withstood **more than 1,000 pulsed-laser shots** without physical damage while recording **high-dynamic-range irradiance measurements and beam profile data**.

"Pulsed HEL systems introduce extreme conditions that can rapidly destroy conventional measurement equipment. These successful results demonstrate that our target board technology can evolve to keep pace with the next generation of directed-energy weapons. This progress required substantial innovation, and we are proud of the cooperative work with NIWC Pacific that made it possible." **David Ward, President of SemQuest Inc.**

"Developing the next generation sensor systems for pulsed laser measurements is required to directly measure overall system effectiveness. This collaboration continues to advance the state of the art in pulsed laser measurement for laboratory and field testing." Dr. Kyle Drexler, NIWC Pacific.

While the Copper SLIM system served as an R&D platform, the achievement represents one of the most challenging steps toward a future SemQuest product line tailored specifically for pulsed-laser measurement. Remaining development areas include pulse-to-detector synchronization, advanced calibration processes, and ultimately achieving NIST traceability required for operational deployment. The ongoing CRADA with NIWC

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continues to support these efforts, and SemQuest is collaborating with additional laboratories to expand pulsed-laser testing.

Pulsed HEL systems are gaining prominence as defense organizations explore new directed-energy concepts. These systems demand measurement tools that combine **survivability and operational relevance**, requirements that traditional laboratory equipment cannot reliably meet. SemQuest's target board technology is engineered for real-world use on test ranges, airborne platforms, missile bodies, and other demanding environments where repeatable, real-time measurement is essential.

"This work represents a major milestone toward future COTS pulsed HEL measurement solutions," Ward added. "We are committed to supporting the test and evaluation community as pulsed laser systems evolve, and we look forward to continued collaboration with our partners."

SemQuest's progress aligns with the measurement and test-support needs outlined in the 2022 National Defense Strategy, particularly in directed energy and hypersonic systems. As development continues, the company intends to make pulsed HEL measurement capabilities available in multiple variants across its established target board families.

About SemQuest Inc.

SemQuest develops innovative hardware-and-software solutions that enable accurate, real-time measurement of advanced military systems. The company specializes in high-energy laser (HEL) target boards designed for test ranges and operationally relevant environments, providing data that helps improve HEL weapon performance and build confidence in emerging technologies. SemQuest's systems are engineered for ease of deployment, reliability, and the evolving needs of the defense test and evaluation community.

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David Ward pictured here working with the Copper SLIM target board

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