NAWCWD builds Tomahawk warhead capacity to stay ahead of missile production



CHINA LAKE, Calif. – A year ago, the energetics team at Naval Air Warfare Center Weapons Division pulled a Tomahawk warhead case out of a museum. The team mixes explosives and rocket propellants and loads them into Navy weapons.

They cleaned the case. They mixed PBXN-107 explosive and filled the WDU-36/B warhead. Testing, imaging and X-rays confirmed the team filled it correctly.

This fall, the same team filled seven first-article Tomahawk warheads, the first units a new producer builds for inspection. Once they pass, they become China Lake's first production warheads, said Zane Goedert, head of the Energetics Processing Branch.

Those rounds came off a 150-gallon mixer China Lake has run for decades.

On Nov. 9, NAWCWD cut the ribbon on a new 300-gallon mixer in the rebuilt Motor Assembly Compound. Once online around June 2027, the mixer will let the team reach production rate. The goal is warheads ready before Raytheon needs them, helping ensure continuous, on-time Tomahawk deliveries to the fleet.

Patricia Hottowe, director of the Tomahawk Technical Project Office at NAWCWD, said Tomahawk lets ships and submarines fire from safe waters, out of an enemy's range.

"Having an adequate stockpile of those for a peer or near-peer adversary is critical to the nation's defense," Hottowe said.

In August, the Navy awarded Raytheon a $22.9 billion contract to accelerate Tomahawk production.

Faster production calls for more warhead capacity, said Ryan Hunter, head of the Propulsion and Energetics Division. Navy labs at China Lake and at Naval Surface Warfare Center Indian Head Division in Maryland said they could do the work.

But key parts and materials can take up to a year to arrive. During the demonstration build, the team also found the warhead specification needed a major update.

Hottowe said the team spent much of the past year updating the specification and the approved supplier list. The Navy's

technical authority for the warhead must approve each new supplier. Every future producer, Navy or industry, must build to that specification.

NAWCWD also bought long-lead materials ahead of the multiyear contract. That puts material on hand sooner. Hottowe said the team took on the work alongside its day jobs, with little added staff so far.

That is changing. More than a dozen new hires are joining the team. Goedert said they will train under experienced technicians on safety, quality and procedures for about a year before working on their own.

Goedert said loading the warhead is the easiest part. Buying materials, bringing on people and getting answers are harder. Hunter said the challenge comes from a system built for fixed multiyear schedules. Now that system must move faster on a shorter clock.

NAWCWD Executive Director Dan Carreño often sums up the problem in one line: “Weapons take too long, cost too much, and are irrelevant when they get there.”

The chemistry rests on decades of practice.

The branch has filled warheads for SLAM-ER, a Navy air-launched missile, since the mid-1990s. Goedert said his team routinely turns one-of-a-kind prototypes around on short timelines. That experience let the team move faster on Tomahawk.

Raytheon builds Tomahawk as the prime contractor. General Dynamics Ordnance and Tactical Systems machines the warhead cases. L3Harris loads them with explosive today.

Rear Adm. Eric Gardner, principal deputy for the Portfolio Acquisition Executive Munitions, spoke at the ribbon cutting. He said the first-article warheads lay the groundwork for

China Lake to become an additional source of Tomahawk warhead production.

“At PAE Munitions, we know that increasing weapons production takes more than contracts and funding,” Gardner said. “It takes people, infrastructure, materials, and strong partnerships across our Navy, our warfare centers and industry.”

In September, L3Harris and NAWCWD signed a multiyear public-private partnership to manufacture missile components. Under it, Hunter said, NAWCWD plans to produce a portion of the Tomahawk warheads.

Carreño called China Lake’s energetics operation a pilot plant that will keep doing developmental testing. When industry needs NAWCWD, he said, the command now has “the legs and the horsepower to go augment.”

Inside NAWCWD, the warhead effort tied the Tomahawk Technical Project Office tightly to the energetics team. Hunter said he has never seen a closer partnership in his career.

China Lake’s plant layout adds speed.

“Because our plant is dispersed and because we will be curing the warheads in a different area than we’re casting them, we’re able to do simultaneous processes that will get higher throughput,” Hunter said.

The plant’s newest buildings grew out of a rebuild. The July 2019 earthquakes destroyed three energetics compounds in the Salt Wells area of the China Lake Propulsion Laboratory. Naval Facilities Engineering Systems Command broke ground on their replacements, known as the trio, in April 2022. The Nov. 9 ceremony celebrated the trio.

Goedert said the team designed the Motor Assembly Compound to cut handling. Large rocket motors risk damage each time crews

move them after casting. The same layout will speed warhead work.

The new mixer, built by B&P Littleford, works much like a kitchen stand mixer, Goedert said. It is built for thick propellants and explosives.

The mixer's bowl will weigh close to 20,000 pounds. Today, crews mix in one building and cast in another, about half a mile away. In the compound's large mix bay, the bowl will move across the room into a lift. An hourlong move will drop to 15 minutes.

Those minutes count. Once mixed, these explosives start to set. Depending on the mix, crews have a couple of hours to eight or nine hours to cast it. The new layout will give back about 45 minutes of that window.

Even the lift is a China Lake design. Before the team had one, workers hoisted the 150-gallon mixer's 4,000-pound bowl and worked beneath the suspended load. Eric Wooding, a mechanical engineer, helped design a lift for that bowl years ago.

"It was an idea of some people here and nobody would bid it. So we just decided to do it ourselves," Wooding said.

China Lake's machine shop built the frame and parts. The lift worked from the start and has stayed in regular service since 2020. When the 300-gallon mixer went in, the team told the vendor to base the larger lift's design on that concept.

Hunter said the team is ready to "stand in the gap" when the Navy calls.

"When we successfully complete this warhead production and ultimately return it to industry, where production belongs," Hunter said, "we'll be ready to take on the next challenge."

Story by Michael Smith, Naval Air Warfare Center Weapons Division , Nov. 9, 2026