NAVAIR

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News Release

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News Release No. 5-11
Date: 19 May 2003
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New Spreader Designed

NAVAIR Lakehurst team improves launch capabilities of Navy's Aircraft Carriers

A total team effort on the part of design engineers, manufacturers and test engineers at NAVAIR Lakehurst has reduced the possibility of human error in launching aircraft from aircraft carriers. Occasionally, an aircraft launch from a carrier would abort because the critical aircraft launch bar was not accurately placed into the catapult receiving unit called a spreader.

As a result, the spreader, with its finger like projections, could not withstand the misplaced load of accelerating a 50-ton aircraft to 150 miles per hour in 100 yards. "Try placing a bowling ball behind your neck with two fingers in two of the holes and hurl it forward at 120 mph attached only by your fingers in the holes." explained public affairs officer Thomas Worsdale. "Your fingers are going to break before the ball gets much acceleration, so will a spreader." The Fleet was encountering such a problem and they came to the experts at NAVAIR Lakehurst to find a solution.

Modification of this critical spreader would normally require vast testing, resources and funding. A NAVAIR Lakehurst team of engineers analyzed the problem and built a newly designed spreader, along with a versatile launch simulator to avoid an expensive and time consuming testing process.

The NAVAIR Lakehurst team saw an opportunity to improve this catapult spreader and ran with the chance. Engineers reshaped and built a new spreader so the launch bar stays in the proper place. The new design even incorporated the side plates of the old spreader into the new spreader body to reduce maintenance.

For necessary testing, a team modified an existing deadload to mount an F-18 style aircraft nose gear on its front. Artisans manufactured a special adjustable length holdback to simulate required distances and a moveable weight to simulate various aircraft nose wheel conditions. This allowed the one test vehicle, dubbed the STV (Simulated Test Vehicle), to represent many of the aircraft in the Navy inventory. It can simulate the: S-3: F/A-18C and F/A-18D: F/A-18E and F/A-18F: F-14A, F-14B, and F-14D: EA-6B: E-2C AND E-2C+: C-2: and T-45 aircraft for catapult hook-up and launch.

Test site work consisted of "taxiing" the deadload onto the catapult, fully engaging the nose gear system and allowing the launch bar to track in and drop in front of the newly designed spreader. This taxi, hookup, and tension sequence was repeated at the extreme alignment tolerances for each aircraft type.

The initial series of tests with the in-service spreader resulted in the need for minor changes in the spreader. The Engineering Team quickly accomplished this and the Manufacturing and Prototyping Division fashioned the redesign. An additional, 1,340 prototype spreader tests by the Test Division demonstrated and validated the improvements throughout the taxi, hookup, and tension phases of the launch sequence. A final pre-production version spreader will now be used for aircraft hookup/launch tests aboard an aircraft carrier.

Whether it involves the design of new equipment or operating systems, or the repair or redesign of existing infrastructure dealing with the launch and recovery of aircraft aboard ships at sea, the men and women at NAVAIR

Lakehurst have been the integral players in this process for more than 50 years. NAVAIR Lakehurst continues to provide one-of-a-kind service to the Fleet.

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The Simulator Test Vehicle (STV), pictured here, will not fly but it will make launching aircraft safer through better engineering. Versatile, the ungainly looking STV can represent any carrier-launched aircraft as they are hooked up to the catapult. The improved spreader is barely visible sticking through the deck in front of the two nose wheels.

"NAVAIR provides advanced warfare technology through the efforts of a seamless, integrated, worldwide network of aviation technology experts. From professional training to carrier launch; from sensor data to precision targeting; from aircraft and weapons development to successful deployment; from real-time communication to aircraft recovery NAVAIR provides dominant combat effects and matchless capabilities to the American warfighter."