



Air Test and Evaluation Squadron 21

Story and Photos by Ted Carlson

Keeping up to date with technology and implementing state-of-the-art systems into military aircraft that give the United States an edge is vital to the security of the nation and aircrews. Air Test and Evaluation Squadron (HX) 21, based at NAS Patuxent River, Md., evaluates new rotary-winged aircraft and upcoming fleet upgrades for the Navy, Marine Corps, and Coast Guard.

Established on 21 July 1995 as the Naval Rotary Wing Aircraft Test Squadron, the squadron was

renamed HX-21 on 1 May 2002. Today the Blackjacks fly many new helicopter types, such as the AH-1Z Super Cobra and UH-1Y Huey upgrades; MH-60R and MH-60S Seahawk variants; and the MV-22B Osprey. Other assets on hand include the AH-1W Super Cobra, UH-1N Huey, NVH-3A Sea King, CH-53E Super Stallion, TH-57C Jet Ranger, and the SH-60F Seahawk. The squadron also performs test and evaluation of unmanned aerial vehicles (UAV). The squadron supports some other aircraft that are not part of its own inventory, such as the CH-53D, HH-60J, HH-65A/B/C, S-70, and the UH-60L/M. In addition, it hosts other aircraft such as the Australian Navy SH-2G, and supports the homeland defense mission through its work with various Coast Guard and police agency helicopters.





The unit's aggressive test schedule helps keep acquisition programs moving in the right direction, and HX-21 works closely with the Navy program offices and manufacturers of the various airframes to ensure the Navy, Marine Corps, and Coast Guard get the best and most refined product possible. In the last year, the squadron conducted nearly twice the average number of flight and ground test hours as in the previous twenty years.

In their developmental test and evaluation role, HX-21 performs an incredible variety of tests, both on the ground and in the air. Airframe tests include airframe/drive system/rotor stability and development; power plant and airframe structure performance; load and vibration limits; drive system

Previous pages, an HX-21 MH-60R, foreground, and an HSL-41 SH-60B perform a test flight over the Pacific Ocean in July 2004. HX-21 has worked extensively on the Romeo's airframe and systems. Above, the Blackjacks are instrumental in the H-1 upgrades program, testing the AH-1Z Super Cobra, above, and the UH-1Y Huey, facing page, top.

torsion stability; fuel, fire detection and extinguishing systems; maximum and minimum temperature monitoring plus heat and cooling surveys; icing systems development; engine inlet distortion; ground and air resonance; and radar cross section testing. Flight performance tests include sea trials to evaluate launch and recovery wind envelope development, handling qualities, and performance; development of automatic flight control systems; expanding the full flight envelope; and aerial refueling.

HX-21 covers the entire spectrum of ordnance testing to include safe jettison separation, delivery and accuracy testing, night thermal imaging systems, helmet mounted

continued on page 14



Above, the squadron's two TH-57C Jet Rangers are used to test modifications to fleet helos, as chase aircraft, and in proficiency training. Left, as part of the H-1 upgrades program, HX-21 tests the Helmet Mounted Sight and Display. Below, the Fire Scout unmanned aerial vehicle is one of several UAVs under evaluation at Pax River. Following pages, HX-21 has seven MV-22B Ospreys. In addition to testing the Osprey's performance in shipboard testing and icing conditions, the squadron is developing tactics, techniques, and procedures for the new aircraft.





night vision and head up display systems, target sighting systems development, and stores jettison validation. The squadron tests the weapons as well as their compatibility with a particular airframe. Supercavitating projectiles, with the ability to hit underwater mines, have been tested, as well as the Advanced Precision Kill Weapon System and a laser-guided 2.75-inch folding fin aerial rocket.

Communications and avionics equipment are also developed under HX-21's watchful eye, such as glass

cockpits, electronic warfare technologies, infrared suppressors, integrated maintenance diagnostics, radar systems, electronic support measures, navigation and collision avoidance systems, and ground proximity warning systems.

HX-21 CO Lt. Col. Keith Danel summed up the key to the squadron's success. "The people here—the pilots, engineers, aircrew, and maintainers, and how they professionally partner with each other—allow us to



accomplish our test mission very effectively. They are dedicated, have great experience, and get it done the right way.”✈

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