



The MH-60T Jayhawk features a Common Avionics Architecture System (CAAS) “glass” cockpit, comprised of five multi-function displays that present a variety of information to the aircrew. In addition to the new avionics, the MH-60T also features an electro-optical/infrared sensor system and other life-saving equipment. U.S. Coast Guard photo by Petty Officer 3rd Class Charly Hengen.

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## **Guard Pilots, Maintenance Crews Train for the MH-60T Jayhawk**

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As the Coast Guard completes the transition of its medium range recovery helicopter fleet to the new MH-60T standard, the acquisition and logistics communities have developed effective training programs that prepare pilots and maintainers for the aircraft’s enhanced capabilities. An important feature of those programs is hands-on instruction that builds users’ confidence in the state-of-the-market electronics that have transformed the Jayhawks for service in the 21st century Coast Guard.

“We were approved for full-rate production on the upgrade in March 2011,” said Stephen Kellogg, the Coast Guard’s H-60 conversion project manager. “We are in the process of transitioning the last air station, Clearwater, Fla., from the earlier model HH-60J to the MH-60T.”

So far, the Coast Guard has upgraded 30 of its 42 HH-60Js to the MH-60T standard. The upgrade has provided the Common Avionics Architecture System (CAAS) cockpit – changing the designation from the HH-60J to HH-60T – and an Electro-Optical/Infrared (EO/IR) sensor system. A separately funded project added airborne use of force capabilities and changed the helicopters’ designation from HH to MH. Additional sustainment will ensure that the Jayhawks keep flying through the end of their planned service life.

Nationwide, the Coast Guard has seven operational air stations equipped with the Jayhawk. Additionally, some MH-60Ts are located at the Aviation Training Center (ATC) Mobile, Ala., where crews learn to fly them. Other helicopters are located at Elizabeth City, N.C., at the Aviation technical training Center (ATTTC), where

maintenance personnel learn to sustain them alongside the same facility where the MH-60Ts are modernized.

As of December 2012, the Coast Guard has qualified 219 MH-60T pilots. Additionally, according to the ATTC, the Service has qualified most of its H-60 aircraft electricians on the new systems.

### **Fire Hose**

While the converted MH-60T shares the same airframe, engines and rotors as its predecessor, the cockpit avionics and other mission equipment (including an electro-optical/infrared thermal imaging sensor) are new. According to Deputy Project Manager Lt. Cmdr. Patrick Bacher, the man-to-machine interface is about 80 percent different from the HH-60J, requiring development of a suite of new training programs.

The most visible difference in the MH-60T's CAAS "glass cockpit" is the use of five Multi-Function Displays (MFD). These flat panel screens present a variety of information to both pilots and maintenance crews, including computer-generated flight instruments, aircraft status, navigational maps, and imagery from the helicopter's sensors.

"I can tell you from firsthand experience: it looks like [an HH-60J] on the outside, but when you jump in the cockpit, it is significantly different," Bacher said. "In the J-model, pilots were looking at steam gauges for altitude and airspeed indications. Now you are looking at MFDs with computer-generated indicators."

At the ATC, Coast Guard naval aviators qualified on the HH-60J enroll in a three-week qualification course to experience the new features of the MH-60T. During the first week, pilots take classroom instruction, working with mock-ups of the CAAS MFDs and the helicopter's flight computer.

In the second week, pilots move on to the full-motion simulator, which has been online at Mobile for about six months. Bacher, who before coming to Washington was a senior instructor at the ATC, said the simulator allows pilots to fly missions and review emergency procedures in a virtual environment before logging their first flight hours in the converted airframe, which occurs during the course's third week.

"It is a fire hose approach," Bacher said. "They learn a lot and later, after they have gone back to their units and had a chance to fly the aircraft for another month or so, [instructors] go up to the pilots' home unit and provide what we call an 'assist visit.' That is an opportunity to show them some of the more advanced features of the aircraft."

### **Hands On**

Classroom and simulator time, even check-rides with qualified instructors, can only take pilots part way to their goal of becoming fully familiar with the MH-60T. The rest of the journey happens at their home units, where they learn on the job. According to Kellogg

and Bacher, that's where many of those who may have, at first, been skeptical of the new technology become more confident about what the converted Jayhawks can do.

Back at Elizabeth City, the maintenance and sustainment community has undergone a similar evolution in creating a syllabus to train ground crews to support the MH-60T. Under the skin, the MH-60T shares much with its predecessor: electrical wiring, engines, etc. Here again, the new cockpit avionics make the difference.

One of the first challenges for the training program is to teach maintainers how the MH-60T's avionics package and sensor systems function, and how these interact with the flight computer. Personnel are instructed how the new electronics convert analog inputs from the original hardware into a digital language, which is processed and displayed in a completely new way. By switching modes, maintainers also are able to use the aircraft's MFDs to determine the "health" of the helicopter's components and trouble-shoot solutions.

"Part of the learning process is to understand how the MFDs process and display information; that is one of the biggest learning curves," said Chief Petty Officer Christopher Tuttle, a senior aviation electrician and instructor at the ATTC. "This is a totally different system from the analogue displays we used on the J-model."

At the ATTC, the training syllabus includes two courses: avionics and electrical systems, with four classes of each course held annually. For those in the field, Tuttle and his colleagues travel to air stations and offer a week of instruction on-site.

### **Accept No Substitutes**

While the technology aboard the MH-60T is a significant improvement, Bacher and his colleagues point out that hardware and software will never replace the earned skills of human pilots and maintainers. While the new technologies can help accomplish Coast Guard missions, pilots and ground crew still need their basic skills to direct the machine effectively.

"You need to know what you are doing before you program the system," Bacher said. "At Mobile, I taught pilots to do the calculations themselves and make sure that the numbers match up with what they were seeing on the flight computer and displays. The system can calculate fuel requirements or whether the aircraft will have enough power available to accomplish a given mission; [however,] there is no substitute for the pilot."

The same is true for the Coast Guard's skilled aviation electronics technicians. With the rapid pace of computer evolution (for example, the project office already is working on a software update to meet FAA requirements), both operators and maintainers need to adopt an attitude of continuous learning.

"The guys that have come through our training program are thoroughly impressed as far as the troubleshooting and other features available on the MH-60T," Tuttle said. "At first, I was one of the old-school guys skeptical about the technology, but I have built

confidence in it. We have to keep learning, though. The challenge we face is in making sure that we stay on top of the technology ourselves; we are learning the advanced capabilities of the new systems at the same time.”