

Coast Guard HC-130H Conversion/Sustainment Project Delivers Prototype Upgrade

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The U.S. Coast Guard accepted the Avionics 1 Upgrade (A1U) prototype aircraft on Nov. 7, 2012, marking a major milestone in the Service's ongoing project to convert and sustain its HC-130H Hercules Long Range Surveillance (LRS) aircraft fleet. The prototype—the first of the fleet of HC-130H aircraft to be fit with modern Common Avionics Architecture System (CAAS) flight deck instruments and new avionics equipment—has now moved to the Naval Air Systems Command test flight squadron VX-20 at Naval Air Station Patuxent River, Md., where it begins a nine month developmental test and evaluation program.



U.S. Marine Corps Capt. Robert Hurst, left, and Coast Guard Cmdr. Douglas Williams deliver the HC-130H Hercules A1U prototype aircraft to the Naval Air Systems Command test flight squadron at Naval Air Station Patuxent River, Md. The prototype aircraft—seen here with its upgraded flight deck—already has begun a nine month developmental test and evaluation program. U.S. Navy photo by Kelly Schindler.

While the Coast Guard has begun replacement of older HC-130H aircraft with new, more capable HC-130J Super Hercules, the conversion/sustainment project will equip the HC-130Hs with system upgrades and structural improvements necessary to support operations until their planned replacement – currently projected in 2027. The project is necessary for the Service to maintain its required quantity of LRS assets, so the Acquisition Directorate is modernizing the legacy C-130 fleet through a program of phases called Discrete Segments (DS).

The Coast Guard has completed Discrete Segment 1 (DS1), which involved the replacement of the Hercules' surface search radar system with the new Selex Galileo Seaspray 7500E radar system at the vendor's facility in Kiln, Miss.

“All aircraft have been modified, and that portion of the project has moved into the sustainment phase,” said Lt. Cmdr. Randy Meador, HC-130H deputy project manager. “We are now well into Discrete Segment 2 (DS2) with the acceptance of the A1U prototype aircraft.”

DS2: Avionics 1 Upgrade

The A1U addresses obsolescence of the aircraft's avionics. In order to comply with new Federal Aviation Administration (FAA) requirements, the Coast Guard is installing new navigation components, radios, weather radar, autopilot and other equipment into the LRS platforms.

“Essentially, we're taking the entire flight deck, gutting it and installing a modern CAAS flight deck,” Meador said.

Most of the legacy control heads and switches have been removed, and much of the equipment is now controlled through a Rockwell Collins' CDU-7000 flight management system. The new layout provides pilots with much more situational awareness and consolidates information that was once spread around the instrument panel into just a few multifunction displays, according to Cmdr. Douglas Williams, who is the lead representative for LRS emerging technology requirements and certified pilot on the A1U prototype.

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"All aircraft have been modified, and that portion of the project has moved into the sustainment phase," said Lt. Cmdr. Randy Meador, HC-130H deputy project manager. "We are now well into Discrete Segment 2 (DS2) with the acceptance of the A1U prototype aircraft."

DS2: Avionics 1 Upgrade

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The result is a significant increase in aircrews' ability to display and manage mission and flight information.

"I think I can speak for the fleet pilots and say that we're very excited for the upgrade to arrive in the field," Williams said. "The ability to fly GPS approaches and utilize night vision goggles will be a tremendous increase to the C-130H's capabilities, especially when coupled with the new autopilot and flight management system."

In addition, the ground proximity warning system, real-time weather, moving maps and a new caution and warning system will improve safety.

In situations like the Haiti earthquake or Hurricane Katrina, one of the major obstacles to immediate response is the lack of operating ground-based navigation aids. GPS allows an aircrew to fly an instrument approach to most airports in the world without relying on ground equipment.

"This self-contained ability, matched with night vision goggles and the C-130's ability to operate in austere environments, will be a force multiplier for the operational commander," Williams noted.

DS3: Center Wing Box Replacement

Simultaneous with system upgrades under DS2, the Coast Guard has begun work on Discrete Segment 3 (DS3) to replace center wing boxes (CWB) from select CC-130H aircraft. The center wing box connects the fuselage of the aircraft to the wings and is the backbone of the HC-130H.

The Coast Guard has identified six aircraft to undergo CWB replacement. The first was completed on Aug. 12, 2012, in partnership with the U.S. Air Force's 402nd Maintenance Support Group at Robins Air Force Base, Ga. The second CWB replacement commenced in November with work expected to take approximately 10 months to complete.

The Coast Guard plans to accomplish the CWB upgrades by the end of 2017, and to continue installations in conjunction with regularly scheduled maintenance to minimize the amount of time that aircraft are removed from service.

Scheduling and Training

One of the major challenges facing the Acquisition Directorate and partners in the aviation logistics community is how to schedule the aircraft conversion/sustainment effort around operational requirements. Another is the need to train operators and maintainers on the new equipment being installed in the legacy aircraft. Overcoming these challenges requires a well-orchestrated collaboration between three Coast Guard departments: Aviation Operations, Aircraft Maintenance and Acquisitions.

Work scheduling is coordinated between engineers and operators, who create timelines and determine which operations will be impacted. Timelines also take into account the planned procurement and delivery of HC-130J and HC-144A Ocean Sentry maritime patrol aircraft that provide the Coast Guard with additional fixed-wing surveillance capability to lessen the impact of temporarily removing HC-130Hs from service.

Because fleet operators have been included in the scheduling process from the beginning, the team has been able to get a significant head start on curriculum and publications development for both operators' and maintainers' training programs, with the goal of providing a finished product to the fleet's aircrews before the aircraft attains initial operating capability.

"We're on track to meet our goals, and we've been given opportunities along the way to contribute to the design and human machine interface of the new flight deck," said Williams. "We're very happy with the result; everything feels like it's in the right place on the prototype, and I think that's a testament to the close relationship between the acquisitions team, engineers, and aircrew throughout the process. We hope the fleet feels the same way and can begin leveraging the new capabilities from day one."

The HC-130H has been operational in the Coast Guard for more than 50 years, and the original design of the Hercules dates to the mid-1950s. There are more than 40 models of the C-130 design currently in service, including those operated by the U.S. Air Force, Navy, Marine Corps, and more than 60 foreign governments worldwide.

"The A1U upgrade matches some of the most advanced safety equipment available in the industry with an airframe legendary for resilience and dependability," said Williams.