



Delivering the Goods

News from the U.S. Coast Guard Acquisition Directorate

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Third National Security Cutter Stratton Builds on Lessons Learned from NSC Construction and Testing

By Linda M. Johnson

WASHINGTON—The U.S. Coast Guard is making several significant improvements to its third National Security Cutter, *Stratton*, based on lessons learned from sea trials and analysis on its first NSC, USCGC *Bertholf*. These improvements include construction process efficiencies, enhanced functionality and better hull design.

The Coast Guard just completed its design review of the structural enhancement changes in early December and expects to make four significant improvements to *Stratton* over the next year, according to Cmdr. Douglas M. Schofield in the project resident office at the Northrop Grumman shipyard in Pascagoula, Miss.

Stratton is the Coast Guard's first white-hull patrol cutter to be named after a woman in 20 years. The third of eight NSCs, she is slated for delivery in 2011. A ceremony marking the start of fabrication work, which is typically celebrated after the first 100 tons of steel are cut for a ship, was held this past September and construction on *Stratton* began this past July.

Design Improvements

Stratton incorporates a number of efficiencies and process improvements from the construction of the first two NSCs: *Bertholf*, which was delivered in May 2008, and *Waesche*, which is on track for delivery in 2009.

"We will continue to capitalize on lessons learned and efficiencies based on the first two NSCs," said Capt. Michael Haycock, the NSC project manager.

One of the most significant process improvements being made to *Stratton* is a 50 percent reduction in the number of grand blocks used to assemble the ship's hull. The Coast Guard used 29 grand blocks, which are multiple units stacked together in large assembly halls away from the waterfront, to assemble *Bertholf* but expects to use only 14 grand blocks to assemble *Stratton*.

"Using 14 grand blocks instead of 29 will potentially reduce construction hours and make it more efficient to build out the units on the *Stratton*," Schofield explained.

As Haycock put it, the reduction in the number of grand blocks "will allow us to put more modules together under one roof, in controlled circumstances and protected from the weather."

Another improvement *Stratton* is an enhanced replenishment at sea station, meaning a redesigned refueling area that will be more efficient and more ergonomic for cutter personnel.

The third enhancement to *Stratton* is an improved gas turbine removal route that will make it easier to remove and repair the gas turbine modules that power the cutter.

Lastly, *Stratton* will benefit from enhanced fatigue structural modifications that will reduce the risk of structural fatigue over the cutter's 30-year life cycle. These ongoing modifications involve installing high strength steel reinforcements at the cutter's fatigue points based on computerized models.

continued on page 2



Lt. Cmdr. (later Capt.) Dorothy Stratton, USCGR, in her service dress white uniform, 1943. *Stratton*, professor and dean for women at Purdue University, in 1942 was the first woman accepted into the Coast Guard women's reserve (the SPARs), which she led during World War II. *Stratton's* namesake is the third National Security Cutter, now under construction at Pascagoula, Miss. U.S. Coast Guard photo

inside:

- Ocean Sentry Project.....pg 3
- Master Chief Q&A.....pg 4

continued from page 1

"The Coast Guard's Technical Authority will also conduct tests on *Bertholf* over the next several years to further validate and improve the model that we are using to predict fatigue life," Haycock explained.

According to Schofield, "this is an art more than a science as computer models [of a ship's fatigue points are fairly new and]... aren't 100 percent accurate."

Fatigue Life Assessment Project

The Coast Guard chairs a new international team of government and industry experts that is assessing the fatigue life of Coast Guard cutters by comparing the ship's actual fatigue points from testing during sea trials to analytical fatigue models.

Known as the Fatigue Life Assessment Project, the team is conducting a structural monitoring campaign and maintenance validation work on *Bertholf* to further improve the understanding of ship fatigue life, increase the confidence level in predicting fatigue life for future ship designs and forecast the structural maintenance needs of Legend-class Coast Guard cutters.

The first-of-its-kind project team, which was formed last year, includes 10 participating organizations: the American Bureau of Shipping, Bassin Dessais des Carenes, Bureau Veritas, Royal Dutch Navy, Lloyd's Register, Northrop Grumman Ship Systems, the U.S. Navy's Office of Naval Research, Schelde Naval Shipbuilding, MARIN (Maritime Research Institute Netherlands) and the Coast Guard.

Project participants will gain insight into the physics and operational factors that govern ship fatigue damage, data from sea trials and model testing to validate tools, and detailed insight into the validity of contemporary fatigue assessment concepts and tools.

The project is important to the global shipbuilding community because it will provide a significant set of



PACIFIC OCEAN—Coast Guard Cutter *Bertholf*, first National Security Cutter, makes way alongside Coast Guard Cutter *Boutwell*, one of the service's 378-foot High Endurance Cutters. *Bertholf* and sister ships such as *Stratton*, are among the newest and most capable patrol cutters the Coast Guard has ever built. U.S. Coast Guard photo by Petty Officer 3rd Class Michael Anderson

real-world combatant structure and ship motion data correlated with environmental conditions such as waves and wind.

It is particularly important to the Coast Guard because the NSC is such a crucial element of the Coast Guard's modernization and recapitalization program. At 418 feet, the NSC is the largest and most technologically advanced white-hull patrol cutter ever developed for the Coast Guard. It is the flagship of the Coast Guard's fleet, capable of speeds in excess of 28 knots and prepared to execute the most challenging maritime safety, security and natural resource stewardship missions.

Naming

With all of these pioneering design changes, it is fitting that the third NSC is named after one of the Coast Guard's true pioneers: Capt. Dorothy C. Stratton.

Stratton served as the founder and first director of SPARS, the Coast Guard's Women's Reserve during World War II. Stratton became the first woman accepted for service as a commissioned officer in the Coast Guard's history when she was transferred from her position as a lieutenant with the Navy's Women Appointed Volunteer Emergency Service to the office of the Commandant in late 1942 to organize the Coast Guard's first Women's Reserve.

Stratton coined the name SPARS as a contraction of the service's motto "Semper Paratus" and its English translation "Always Ready." She has been quoted as saying, "a spar is often a supporting beam and that is what we hope each member of the Women's Reserve will be."

During her four years as director of SPARS, Stratton recruited and led 10,000 enlisted women and 1,000 commissioned officers. She left the Coast Guard shortly before SPARS was demobilized and upon retirement in 1946, was awarded the Legion of Merit medal for her contributions to women in the military. Stratton died in 2006 at the age of 107.

Less than 10 Coast Guard cutters have been named after women in the service's 218-year history, according to Robert Browning in the Coast Guard Historian's Office. Stratton, the first Coast Guard white-hull patrol cutter to be named after a woman in more than 20 years, joins other female namesake vessels in the Coast Guard fleet such as 175-foot Keeper-class buoy tenders *Maria Bray*, *Abbie Burgess*, *Ida Lewis*, *Barbara Mabrity* and *Katherine Walker*. The most famous Coast Guard vessel named after a woman is *Harriet Lane*, a cutter commissioned in 1984 that is still in service out of Portsmouth, Va. ■

Ocean Sentry Project Prepares to Transition Training Stateside, Readies for Additional Aircraft Deliveries

By Hunter C. Keeter

As the Coast Guard prepares to receive its sixth HC-144A Ocean Sentry medium range surveillance aircraft early in the New Year, the service is laying the foundation for a comprehensive training program that will be among the most sophisticated in the Coast Guard.

"Currently, we have six pilots training in Spain and will have one more class of four, starting in February 2009. The curriculum over there includes eight weeks of training on the new aircraft," said Cmdr. Douglas Nash, HC-144A branch chief at Aviation Training Center Mobile, Ala. "That will be the last class in Spain before organic training starts at ATC Mobile."

The Coast Guard now has four HC-144As at ATC Mobile. A fifth is at Aviation Logistics Center, Elizabeth City, N.C., and the sixth due to arrive in at ALC in January. By April 2009, the Coast Guard expects to have eight aircraft in the United States, and has three more on contract for delivery in 2010.

The first complete, U.S.-based Coast Guard training course for HC-144A aircrews is slated to start on Feb. 20, 2009. At the same time, the Coast Guard is developing complementary curriculum at ATC Mobile for training Mission Systems Operators, the MSOs who will use the HC-144A's new Mission System Pallet to perform a variety of command, control, communication, computers, intelligence, surveillance and reconnaissance (or C4ISR) tasks.

According to Nash and others, one benefit from consolidating pilot and MSO training at ATC Mobile will be a unified curriculum that includes specific Coast Guard mission procedures.

Initially, prospective Ocean Sentry pilots are trained at the aircraft manufacturer's facility in Spain, where they learn the basic



HOUSTON, Texas—An HC-144A delivers an HH-60 Jayhawk helicopter crew to Air Station Houston, in response to Hurricane Gustav. The Ocean Sentry is a multi-mission aircraft, capable of maritime patrol and personnel and cargo transport operations. Beginning in February, the Coast Guard will begin establishing a full-spectrum pilot and Mission Systems Operator training program at Aviation Training Center Mobile, Ala. U.S. Coast Guard photo by Petty Officer Patrick D. Kelley

functionality of the HC-144A and the manufacturer's pre-flight checklist.

"The training in Spain does not cover the U.S. Coast Guard's mission specific tactics, checklist protocol or emergency procedures," Nash said. "So, our training program customizes the pilot's skill set by supplementing what they have already learned with the Coast Guard's way of doing missions."

For example, as the Coast Guard began developmental and operational testing and evaluation for the HC-144A project, ATC Mobile reviewed the aircraft checklist protocol. In the Coast Guard, aircrews must stand alert to complete their checklists and get airborne within 30 minutes. The service determined that it was necessary to change the sequence of events on the checklist provided by EADS-CASA, the HC-144A's manufacturer. Changes to the standard checklist include bringing some systems online at different times to speed up the process.

"We are doing extensive testing to make sure that when we put one item

on the checklist ahead of another, we know what other systems may be affected," Nash noted.

Another example of the Coast Guard's training adaptation can be found in the HC-144A's emergency procedures. Flying low and searching for a target in the water reduces an aircrew's reaction time for some types of emergencies. Typically, pilots flying at higher altitude have more time to analyze problems and determine the best courses of action. If a life-threatening emergency occurs on an aircraft flying low, pilots and crew may not have enough time to respond.

"So we have to change the way we handle the aircraft, such as including procedures for gaining altitude in emergencies, to buy more time for the aircrew," Nash said. "We have to make sure that we have steps in place so that our crews can respond effectively to emergencies at 200 feet altitude as well as they would at 10,000 feet."

The Coast Guard is also adapting the

continued on page 4

continued from page 3

EADS-CASA Multimedia Interactive Trainer, which is a computer-based program that guides students through the aircraft's operating manual and tests them on various systems as they study them. This training is coupled with lectures from ATC Mobile staff, and then hands-on practice with the HC-144A aircraft based there.

The current transition training course consists of 22 flights. When a new simulator facility is brought online, the Coast Guard will be able to reduce the number of training flights to eight.

"That will result in big efficiencies, because we will be able to reduce operating costs and wear-and-tear on the aircraft, as well as being able to run the simulator 'round the clock and in all environmental conditions," Nash said.

High Fidelity Simulation

Cmdr. Joseph E. Deer, HC-144A platform manager in the Coast Guard's sponsor's office, noted that

constructing and certifying the new simulator facility is a high priority for the Coast Guard.

"An HC-144A simulator building ... should be ready at ATC Mobile by summer 2010," Deer said. "That will be the home for future pilots' and mission systems operators' training. Mobile already is the Coast Guard's training center of excellence for all aircraft."

When completed, the simulator building will house both an aircraft trainer and an MSO training system, which will be linked together so trainee pilots and Mission Systems Operators will be able to "fly" missions together, replicating with high fidelity the actual functions of the plane and its equipment.

"We bought the HC-144A as a system ... not just an airplane and not just a Mission System Pallet," Deer said. "So the idea is that we will be training pilots and mission systems operators using the [systems] approach. The MSOs will work closely with the pilots, as they train to operate the advanced onboard sensors."

The simulator will feature state-of-the-art graphics, superior to any platform emulation device in the Coast Guard, Nash noted.

"The HC-144 simulator will be built to meet the FAA Level D certification requirements, a standard so high that pilots can complete their initial training without ever touching the aircraft itself," he said. "This will be a first for the Coast Guard: having a multi-task, two subject area instruction system built to the highest available level of fidelity."

The first group of pilots learning to fly the HC-144A will come from the ranks of the Coast Guard's HU-25 Guardian community. Once these experienced pilots have completed the transition course in the Ocean Sentry, they will be invited to critique the training program at ATC Mobile. Their [input] will be an important element in improving the products developed for future trainees, especially those will come to the Ocean Sentry fresh from naval pilot training at Pensacola, Fla., without the benefit of prior operational experience. ■

Dear Master Chief Ayer,

Why is the Ocean Sentry going active when we haven't worked the bugs out of the C4ISR system yet?

The HC-144A Ocean Sentry Maritime Patrol Aircraft (MPA) is the newest addition to our aviation fleet. We currently have five of these in our inventory. Based on the proven EADS CASA CN-235, the HC-144A is a multi mission patrol aircraft with the capability to be outfitted with a removable C4ISR Mission Systems Pallet that will give it eyes and ears that no other aircraft in our inventory has had in the past. The HC-144 is currently undergoing operational testing and evaluation (OT&E). As with any new program, this OT&E is part of the acquisition process used to "work the bugs out" of new technology.

The Missions System Pallet is only one component of a multi-mission platform. Without the systems pallet installed, the MPA is still a very capable and proven aircraft that can perform all our traditional missions, including some that our current HU-25 Falcon cannot. So in short, we have them and they work, so let's use them. Meanwhile, OT&E will continue, and as part of it, we will continue to work with the contractor to correct "the bugs" as we find them.

[To submit a question for an upcoming Acquisition Directorate newsletter, please email Master Chief Brett F. Ayer directly at: Brett.F.Ayer@uscg.mil or acquisitionwebsite@uscg.mil.]

