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## Northrop Grumman Aerospace Systems

Volume 1, Number 5

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The El Segundo, Palmdale and Space Park sites were recently recognized by Southern California Edison (SCE) in the inaugural year of its "Demand Response and Energy Efficiency" program. Together, the sites reduced 1.1 million pounds of greenhouse gas emissions in 2008.





Gary Ervin  
Sector President  
Aerospace Systems



## My Quality Is the Difference

What is quality? If I asked 100 of us to define it, would I get 100 different answers? Does quality mean the same thing to the systems engineer working on a program with a cost-plus contract as it does to the software engineer working on a program with a fixed-price contract? Would a business development manager and an HR administrator agree on a common definition for quality?

In recognition of National Quality Awareness month, this edition focuses on our efforts to create a Culture of Quality across the sector. We created our Quality, Safety and Mission Assurance organization to help us achieve this goal because quality requires a common vision, collaboration and communication. However, quality is up to each of us, no matter what we do for Aerospace Systems.

Defense Secretary Gates talks of moving away from exquisite programs to those that are "good enough." A Pentagon acquisition official recently spoke of taking more of a "Walmart approach than a Gucci approach." Those words could be construed as taking the pressure off being perfect but, in fact, quality matters now more than ever. It is our responsibility to always dedicate ourselves to meet or exceed our customers' expectations. Delivering on "good enough" requires us to be outstanding in how we manage risk, define metrics, focus on affordability and deliver quality products.

We are working in an era in which making good on our commitments is ever more challenging. However, creating a culture of quality will go a long way to enabling future success, especially when each of us focuses on our own commitment to quality. Because like you, I believe my quality is the difference.

### Ron Sugar Announces Retirement; Wes Bush Elected Chief Executive Officer and President

Ronald D. Sugar, chairman and chief executive officer of Northrop Grumman Corporation since 2003, has announced his plan to retire from the company in June 2010, following 29 years of service to Northrop Grumman and its predecessor companies. The Northrop Grumman Board of Directors has elected Wesley G. Bush, currently president and chief operating officer, to the position of chief executive officer and president, effective January 1, 2010. Bush was also elected to the Northrop Grumman Board of Directors, effective immediately.

### Euro Hawk® Unveiled

The first Euro Hawk® unmanned plane, a transatlantic cooperation between Northrop Grumman and Germany's EADS Defence & Security was unveiled at the corporation's facility in Palmdale, Calif., on Thursday, Oct. 8. With a wingspan larger than a commercial airliner and endurance projected at up to 30 hours, the Euro Hawk will serve as the German Air Force's high-altitude, long-endurance signals intelligence (SIGINT) system. The Euro Hawk is a derivative of the Block 20 Global Hawk and will be equipped with a new SIGINT mission system developed by EADS Defence & Security. EuroHawk GmbH, a 50-50 joint venture of Northrop Grumman and EADS Defence & Security, is responsible for the development and manufacturing of the Euro Hawk systems and will act as the national prime contractor for the German Ministry of Defence through the system's entire lifecycle. The aircraft is scheduled for its first flight in early 2010.

### Wesser Named QMS Representative for Space Park

Christopher Cool, sector vice president, Quality, Safety and Mission Assurance, has announced the assignment of Craig Wesser as the Quality Management System (QMS) representative. Wesser, divisional director of SSD Quality Safety & Mission Assurance, will report to Space Park senior management on the performance of the management system and promote awareness of customer requirements throughout the organization. As QMS representative, he also has the organizational freedom to resolve quality matters.

### Risk Reduction

Northrop Grumman Corporation has inaugurated a critical tool that will reduce the risk associated with developing the spacecraft for the National Polar-orbiting Operational Environmental Satellite System (NPOESS) program. The Electrical Engineering Model Test Bed is a high-fidelity electrical model of the NPOESS satellite, consisting of subsystem engineering models and sensor engineering development units integrated in a flight-like electrical configuration. It is capable of "test as you fly," real-time, closed-loop testing to validate the spacecraft design and substantially reduce risk during integration and test. The nation's next-generation, low-Earth orbiting operational weather and climate monitoring system, NPOESS is designed and being built to provide vast improvements in the timeliness, accuracy and fidelity of critical information for both defense and civil needs.

### Proud Partnership

Northrop Grumman Corporation has partnered with the National Environmental Education Foundation (NEEF) to promote year-round public land conservation through the Public Lands Program, and to sponsor NEEF's National Public Lands Day (NPLD). This annual event focused on improving and enhancing the nation's public lands. National Public Lands Day, held this year on Saturday, Sept. 26, provided volunteers around the country with the opportunity to participate in projects to beautify and protect public spaces. As part of its partnership with NEEF, Northrop Grumman will create online training resources and networking opportunities between public land managers and nonprofit support groups.

### Unmanned Workhorse

Northrop Grumman Corporation's Hunter Unmanned Aircraft System (UAS), in use with the U.S. Army since 1996, has successfully completed testing of the new GPS-guided Viper Strike (VS) weapons system at White Sands Missile Range, N.M. GPS VS will soon deploy to theater on-board Hunter in support of contingency operations. GPS VS aids the weapons guidance by providing proximity based on coordinates while maintaining pinpoint accuracy with laser guidance. While previous VS systems required the

Hunter to be directly overhead, GPS VS offers the advantage of nearly six miles of stand-off range. GPS VS can also hone in on both moving and stationary targets. The MQ-5B Hunter, which is currently deployed in contingency operations, provides warfighters with state-of-the-art reconnaissance, surveillance and target acquisition (RSTA), communications relay, signal intelligence and weapons delivery.

### Interoperability Summit

Northrop Grumman Corporation and The Boeing Company are teaming up for a Global Product Data Interoperability Summit in Mesa, Ariz., Nov. 9-12, 2009. It is the first time the companies have co-hosted such an event, which this year combines three previous separate conferences into one: The Boeing Product Data Exchange Conference, the Boeing Service-Oriented Architecture (SOA) Deep Dive and the Northrop Grumman Product Lifecycle Management (PLM) Summit. The summit's theme, "Common Information in a Changing World," reflects its focus on SOA, PLM and the shared data standards on which these product development solutions depend.

### BILL Maintains Steady Performance

The Beacon Illuminator Laser (BILL), one of the low-power lasers on-board the U.S. Missile Defense Agency's Airborne Laser (ABL) aircraft, has been a steady and reliable, if unsung, contributor to the directed energy weapon system's performance during ground-based and in-flight tests. As part of ABL's targeting system, BILL has been fired 282 times during recent high-power tests, 49 of which occurred in-flight. This kilowatt-class, illuminator laser is used to measure atmospheric conditions, a critical task that allows compensation for atmospheric turbulence by the beam control / fire control system that points and focuses the high-energy laser's beam on its target with pinpoint accuracy.

### E-2D Program On-Track

Northrop Grumman's E-2D Advanced Hawkeye, which took its first flight in August 2007, is on a steady and successful course to deliver this revolutionary Airborne Early Warning weapons system to the warfighter. With its newly developed An/APY-9 radar, the Advanced Hawkeye works in concert with surface combatants equipped with the Aegis combat system to detect, track and defeat cruise missile threats at extended range.

# Your Quality Is the Difference

## Reflections on Quality Awareness Week



### CHRISTOPHER COOL

Quality Awareness Week, which starts Oct. 26, is a good time to reflect on our role in establishing a culture of quality. Quality is a corporate value we must embrace and oversee daily in our own jobs. I know we each take that obligation seriously — we must, given the critical nature of what we do and who we do it for.

The theme for the 2009 Quality Awareness Week is *My Quality is the Difference*. Your actions and decisions will help us reach three common goals:

1. Provide superior products and services
2. Meet Quality commitments, and
3. Help our enterprise keep ahead of the competition

I'd like to share how our Quality, Safety & Mission Assurance organization is supporting you, and our company, so together we can achieve these goals. Our portfolio consists of three areas: process architecture, mission assurance and sector operating factors.

#### Process Architecture: Structuring Excellence and Affordability

Fixing a quality, cost or schedule issue almost always comes back to addressing a process, and that requires understanding the requirements of the users, stakeholders or owners. We need to document the process in our Command Media, and then measure if key processes are satisfying requirements. We can't wait to check a process at the finish line. Whether we're contracting and building

satellites, ships, radars or aircraft — whether we're managing or supporting employees, whether we're posing the questions or finding the answers — we must constantly check and adapt our work and improve our processes.

So process owners can understand, manage and improve process performance, our Affordability and Competitive Excellence organization is providing tools that enable commonality and integration of documented plans and improvements. Process Architecture is at the center of all this. We are developing a numbering process for all the things we do to run our enterprise, and each process is linked to a single sector process owner. This satisfies the needs of multiple users as well as multiple demands from our business. We've also organized process performance metrics

around key processes that ensure mission success. Key processes will be matured to ensure consistently high quality for users. We'll carry out our process excellence and affordability strategies through process architecture.

#### Mission Assurance: Identifying and Mitigating Risks

Mission Assurance allows the sector to have an independent arm look at every element in the value stream and identify risks to mission success. Risks that are rated significant in our corporate risk process are investigated and mitigated. There are various levels of Mission Assurance — design assurance, process assurance, safety assurance and supplier assurance along with a technical capability to

assist engineering when requested. Our organization plays a support role, helping program managers and the sector as required while assessing issues, root causes and corrective actions that cross multiple programs or diverse process owners.

#### Improving Quality on Two SOF Fronts

Quality is so interwoven into our fabric that two of our Sector Operating Factors (SOFs) call for actions directly related to our organization and essential to everyone's long-term success.

One is to improve in-process and end-product quality by 50 percent over the next five years. Key processes critical to developing, producing and operating our products and services include contracting, subcontract management, integrating master schedules, change management, hardware/software design and systems



Christopher Cool

engineering requirements. During the past 2½ years, we've been working with these process owners to measure both historic and real-time performance. The data they've gathered helped us create a baseline, which is being used to improve process output. By the end of 2008, NGAS had improved key processes by a combined 20.8 percent. Thanks to the dedicated efforts of people across our sector and the continued reporting of quality performance data, we're on track to exceed the 50 percent goal by 2011.

On another SOF — improving process performance of program management — I'd like to hold up as an example a team from Planning and Scheduling. Led by Barbara Loftsgard and Dan McCasland, the group developed an assessment tool that is helping programs better integrate and use the master scheduling process. Based on a set of criteria provided by our DCMA partners, this tool checks existing master planning schedules in a program's inventory and reports on integration, span times, critical paths and other data that assess the quality of the master schedule versus requirements. Now this metric is proving useful to our earned value management system as well as for program managers. At a recent corporate peer review, this tool was named a company best practice and was endorsed by corporate program leaders and by the Corporate Quality Council.

This team figured out what to measure and how to verify a quality product, not just for their immediate clients, but for future customers. That's something we can all do. ■

## NGAS Quality Awards

As part of Quality Awareness Week, we will be presenting the NGAS Quality Awards in two categories on Thursday, Oct. 29.



### Internal and External Customer Satisfaction

Exceptional program-related efforts that enhance our reputation as the most trusted provider of systems and technologies. Examples of what our award winners may have achieved:

- Significant growth on existing programs and/or with other sectors
- Working collaboratively with the customer to solve a significant issue not caused by NGC or our subcontractor
- New business growth
- Enhanced assurance of mission success through process innovation or improvement

### Continuous Improvement

Exceptional efforts that enhance Aerospace Systems' reputation as the most trusted and affordable provider of systems and technologies. Candidates should show significant improvement in procedures, processes, practices and/or services resulting in more competitive cost structures, reduced cycle time and/or greater efficiency. Examples include:

- Positive impact on product quality
- Mitigation of threats to organizational success
- Significant enhancements to personnel and/or system safety
- Leveraging the strength of Northrop Grumman's portfolio
- Bottom-line performance and/or top-line growth
- Cross-sector collaboration and integration of best practices
- Enhanced reputation or competitive position
- Improved growth position of the company
- Outstanding contribution to process improvement

Learn who they are and what they've done to help build a culture of quality. Come visit Quality, Safety and Mission Assurance at <http://qss.is.northgrum.com/>.

# Virtual Empire

## Manned and Unmanned Platforms Demonstrate Interoperability During Empire Challenge



Speaking with local media during Empire Challenge 2009, Chris Frangos, SEIT chief architect, explained how Northrop Grumman is testing emerging technologies in a real-world environment before they are fielded to troops in combat.

### KIRSTI DUNN, DEBBIE BOHACS

As the leader in intelligence, surveillance and reconnaissance, Northrop Grumman demonstrated the interoperability of Joint STARS

demonstration, executed by U.S. Joint Forces Command (USJFCOM), was aimed at illustrating how U.S. and coalition forces can better work together to collect, analyze and share relevant reconnaissance

information. "The ability to collect and share real-time ISR at the theatre and the tactical level quickly and accurately is crucial to ensure battle commanders have the enhanced situational

awareness required for successful mission completion," said Tom Vice, sector vice president and general manager, Battle Management and Engagement Systems Division. "During Empire

Challenge, we successfully demonstrated how manned command and control aircraft can direct and manage unmanned aircraft to enhance image collection and target identification. We will take what we've learned through this collaborative exercise to continue to mature our ISR capabilities to ensure our warfighters have the mission critical information they need when they need it."

During the monthlong exercise in July, virtual physics-based and operational flight program simulations of both the E-8C Joint Surveillance Target Attack Radar System (Joint STARS) and E-2 Hawkeye airborne early warning and control aircraft worked collaboratively to achieve interoperability between multiple manned and unmanned aircraft via an airborne Web services architecture.

In addition to the virtual Joint STARS and E-2 Hawkeye platforms, other Aerospace Systems assets participating included: the RQ-4 Global Hawk unmanned aircraft reconnaissance system, the MQ-8B Fire Scout vertical takeoff and landing unmanned system, and the MQ-5B Hunter medium altitude unmanned aerial system.

The virtual, human-in-the-loop war-game environment used in Empire Challenge was built by Northrop Grumman and developed with the company's Cyber Warfare Integration Network. Based at the USJFCOM Joint Intelligence Laboratory in Suffolk, Va., the virtual platforms were linked to the "live-fly" exercise at the Naval Air Weapons Station in China Lake, Calif., as well as the Combined Air Operations

**Virtual Empire** continued on page 34

# Seaworthy Recruit

## Northrop Grumman Awarded Airborne Sensor Demonstration Contract

### SHERRI PINEDA

Recently, Northrop Grumman Corporation was awarded a contract to conduct a maritime airborne sensor demonstration using a company owned MQ-8B Fire Scout tactical Unmanned Aircraft System (UAS) by ABS Group, a Systems Engineering Technical Assistance (SETA) contractor for the U.S. Coast Guard Research and Development Center. The test will take place in the Chesapeake Bay conducted from the Naval Air Station at Patuxent River, Md., Webster Outlying Field.

The purpose of the test is to verify and validate ship deployed UAS aircraft and pay-

load capabilities. During the test, Fire Scout will use the U.S. Navy baseline payload, the FLIR Systems, Inc. BriteStar II electro-optical/infrared/laser designator range finder (EO/IR/LDRF) payload. The radar will be an off-the-shelf Telephonics 1700B search, surveillance, tracking and imaging radar system, which was integrated on Fire Scout under an internal research and development cooperative funding program between Northrop Grumman and Telephonics in early 2008. The test is scheduled to occur later this year.

"This is a great opportunity to demonstrate

that Fire Scout is a mature UAS that has the capability, modularity and flexibility to provide a wide area surveillance capability for the domestic and international customers, including the U.S. Coast Guard. A great example of where this capability will be vitally important is aboard the Coast Guard's new National Security Cutter." said Doug Fronius, director of Tactical Unmanned Systems for Northrop Grumman's Aerospace Systems sector.

The U.S. Navy Fire Scout will complete Operational Evaluation by year end and is slated to deploy aboard USS McInerney (FFG-8). ■



**"The ultimate goal of the exercise was to gain a better understanding of the challenges that irregular warfare brings to our warfighters and how Northrop Grumman platforms, technologies and architectures provide solutions to these challenges."**

**- Chris Frangos, chief architect, Systems Engineering Integration & Test**

and E-2 Hawkeye between manned and unmanned platforms during Empire Challenge '09, a virtual joint military demonstration. The successful

# Management Pros

## Getting It Right From the Start

**BROOKS MCKINNEY**

With those words, Northrop Grumman Chairman and Chief Executive Officer Ron Sugar set the tone for the second annual Enterprise Program Management (PM) Conference, a three-day, companywide gathering of program managers designed to broaden and enrich the managers' understanding of their pivotal role in the long-term success of the company.

Presented by the company's Corporate Program Management Council (CPMC) and hosted by the Aerospace Systems sector, the conference was held Aug. 11-13 at the sector's Aerospace Presentation Center in Redondo Beach, Calif. It brought together 80 program managers representing all five sectors.

"The PM forum reflects the company's growing desire to expand its succession planning process to include the program management function," explained Jim Phillips, corporate director of Program Management Learning and Development. "We want to get this next level of management started thinking earlier about how best to make the company successful."

In his keynote remarks, Sugar urged the PM Conference attendees to focus their thinking on his three top priorities for the company: (1) program performance, (2) risk management, and (3) growth. Improvement in all three areas, he explained, is central not only to improving customer satisfaction in an increasingly cost-sensitive business environment, but also to improving shareholder value and the company's stock



Chairman and CEO Dr. Ron Sugar reminded the program managers that people's lives depend on the quality of the products and services they provide.

price.

"We are here to do well for our shareholders by doing good things for the country," said Sugar.

The attendees also heard from Ian Ziskin, corporate vice president and Northrop Grumman's chief Human Resources and Administrative officer. He outlined for them the key characteristics of highly effective leaders: credibility (do what you say you're going to do); collaboration (get things on the table and talk about them openly); courage (push back on things that don't make sense and have the conviction to fight for things that you believe in); and competency (take personal responsibility for improving your skills).

In between executive presentations, conference attendees also heard real-life program management experiences from members of the CPMC and "outsider" views of the company from people such as Wall Street Analyst Pierre Chao.

For CPMC member Dave Rosener, vice president of programs for Northrop Grumman Information Systems, for example, successful program management is all about margin. "You must create it, nurture it, grow it, maintain it and, when appropriate, use it," he explained. "As program managers you have the responsibility to deliver the goods, make them work, deliver them on time, and make money. That's what makes the job hard. That's what makes the job worth doing."

For Jason Park, development program manager from Northrop Grumman Electronic Systems, the best part of the three-day conference was having the opportunity to network with program managers from across the company. "We're so big, so diverse that without an event like this, you'd never meet each other or find out that there are others (program managers) experiencing the same issues."

**"Our aim is to work to get better at performing the deal ... running each of our programs from start to finish as if it were a business."**

"It's definitely a sign of corporate values when the CEO and the leadership come out," said Monte Burgett, director of Performance and Program Management for Northrop Grumman Information Systems. "For me that was a very positive sign that the corporation believes in its PMs and their value to the company."

On the last day of the conference, sector-based teams of program managers reported out on three to five things they planned to do to support Sugar's three business imperatives. The "Oscar" for these presentations went to the Shipbuilding sector, which featured an impassioned plea for quality by Tony Q. Taylor, general superintendent for Sector Cable, Gulf Coast, and a retired officer in the Army National Guard.

"When I'm serving, I expect my (Northrop Grumman-built) system to operate like it's supposed to. I do not expect it to fail because of (poor) quality," he told the audience. "When I come back (from military service), you will see my name one of two ways: in the Northrop Grumman global directory or on a headstone. If you see it on a headstone, please do not let it be because you sacrificed quality when you built my system."

There could be no clearer way to underline the importance of good program management to the future of Northrop Grumman, the nation or the brave soldiers who defend it. ■

The PM forum included an interactive segment called World Café, a conversational process based on the discovery that people have deeper, richer conversations when they discuss ideas in groups of four or less. Tony Taylor (center), Shipbuilding; and Dave Wegmann, Information Systems; share ideas with their colleagues on ways to improve program performance within their sectors.



Ian Ziskin encouraged the PM conference participants to not get "addicted" to the "drug" of tactical firefighting. Focus on "proactive discovery" instead of "reactive recovery," he advised.



# Gilded Wings

## Air Mobility Tested at USAF Rodeo



Photo courtesy Northrop Grumman Corporation

Bill Welsler, vice president, Business Development, KC-45 Tanker, (second from left) presents the "Best Air Mobility Team" award to the 62nd Airlift Wing from McChord AFB, Wash., at the recent Air Mobility Command Rodeo Competition. U.S. Air Force Gen. Arthur Lichte, AMC commander, (right) congratulates the team. Northrop Grumman sponsored more than a dozen trophies for the international air mobility competition.

### DEBBIE BOHACS

Gathering wings from active duty, reserve and Air National Guard units from across the U.S. and around the world to test and improve air mobility tactics in a competitive environment, the 2009 Air Mobility Rodeo recently took place at McChord Air Force Base, Wash. More than 2,500 service members and service leaders participated in this international airlift competition hosted by the U.S. Air Force Air Mobility Command (AMC).

The rodeo, which takes place every other year, is a weeklong mobility readiness competition that focuses on improving core professional abilities. More than 40 aircraft competed in airdrops, aerial refueling and other events. The rodeo is also a way for airmen to share ideas and learn from each other.

Industry representatives attending the event included Northrop Grumman, EADS-North America, General Electric, Lockheed Martin, Boeing and L3.

Northrop Grumman sponsored trophies for more than a dozen competitions and partnered with EADS to sponsor five more — including "best air mobility team." The award went to members of the 62nd Airlift Wing, from McChord AFB.

This year's competitions featured an aerial port loading and offloading of an aircraft with engines running, a security force's obstacle course, a timed aeromedical evacuation configuration challenge and a timed aircraft egress.



USAF Rodeo continued on page 34

# Intelligence Seeker

## Land-Based MQ-8B Fire Scout Completes RSTA/ISR Demonstration

### SHERRI PINEDA

A Northrop Grumman Corporation-owned, land-based MQ-8B Fire Scout Vertical Unmanned Aircraft System (VUAS), designated P7, successfully demonstrated its reconnaissance surveillance and target acquisition/intelligence, surveillance and reconnaissance (RSTA/ISR) capabilities at Yuma Proving Ground, Yuma, Ariz. The demonstrations occurred the week of August 3, 2009.

Fire Scout's RSTA/ISR demonstration at Yuma Proving Ground continues to illustrate its readiness to support the warfighter, highlighting its capability to provide critical, real-time RSTA to brigade combat teams (BCT). Fire Scout provides the commander with the most comprehensive view of a selected area across all wavelength spectrums enabling decision-making and integration of soldiers' actions with supporting BCT fires and effects.

"Fire Scout's ability to move at reduced

rates of speed and its multifunctional plug-and-play payload suite provide the warfighter greater options compared to other unmanned aircraft systems," said Mike Howell, Business Development manager for Army systems at Northrop Grumman's Aerospace Systems sector. "Fire Scout's ability to operate at low ground speeds and ability to operate in remote, unprepared landing zones allow it to move with the brigade and easily acquire and track targets in complex and urban terrain."

This RSTA/ISR demonstration was conducted with the use of a high-magnification electro-optical, infrared (EO/IR) payload, which includes a long-range laser designator and rangefinder (LR/LD). Full-motion video was relayed down to ground operators in real-time over a Tactical Common Data Link (TCDL). After an autonomous launch, Fire Scout demonstrated its ability to find, fix and track hostile forces during a real-time

operational scenario in complex terrain at night. Fire Scout has the capability to support several different RSTA payloads including FLIR Systems' BRITE Star II EO/IR/LR/LD, Northrop Grumman's ASTAMIDS EO/IR/LR/LD (which also provides countermeasure capabilities), and FLIR System's Star SAFIRE III EO/IR/LR. Additional payloads can be easily integrated using Fire Scout's robust open systems modular payload architecture. This flexibility also enhances Fire Scout's ability to support the warfighter.

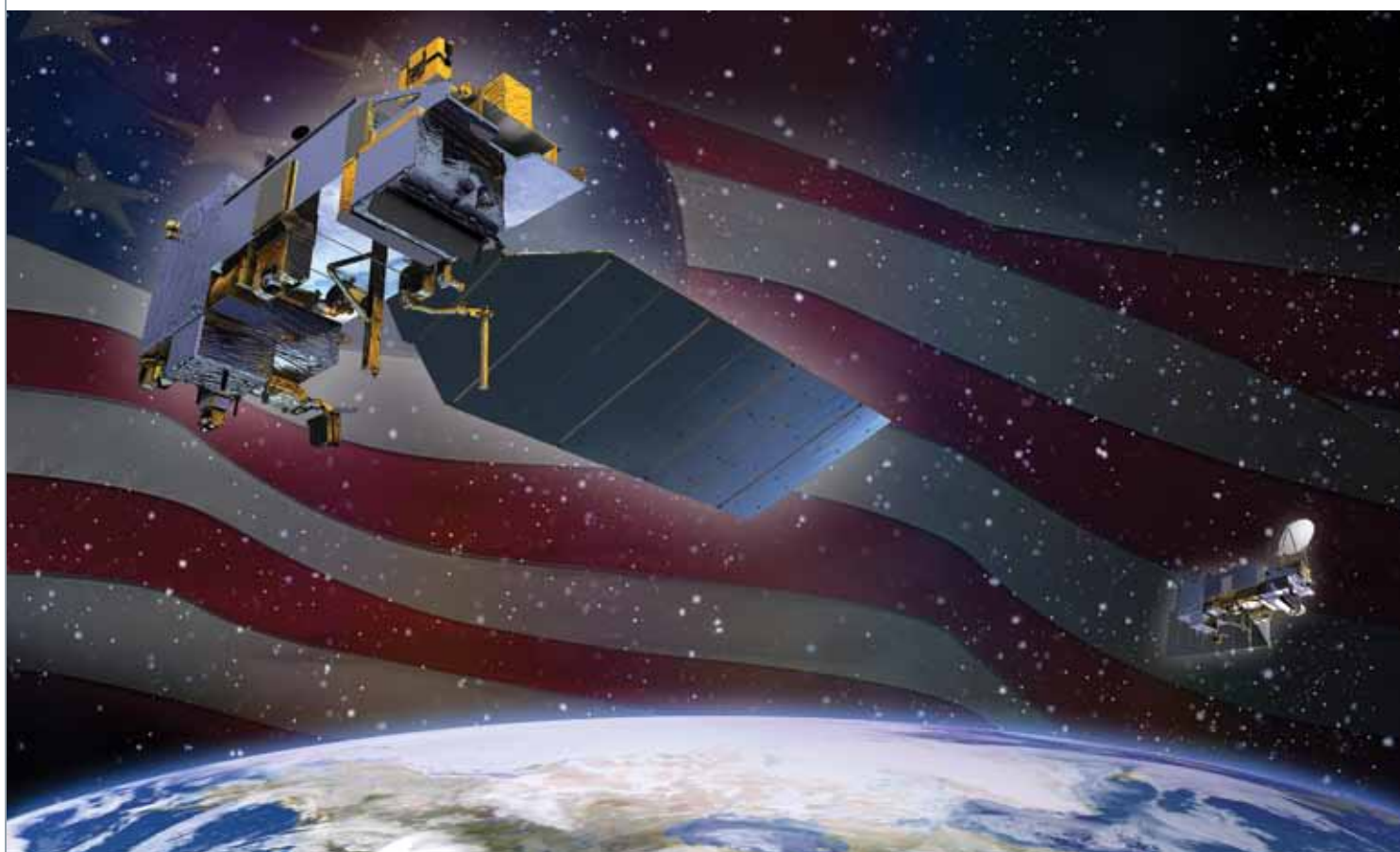
The P7 Fire Scout capability demonstrations will continue throughout the summer with missions focused on advantages the VUAS will provide to land-component warfighters. Continued simultaneous flight operations of P7 and the maritime-configured P6 underscore MQ-8B Fire Scout's versatility, readiness for deployment and its joint role as a program of record for both the Navy and the Army. ■



Photo credit: Richard Andriano

# Micro Package, Macro Success

Microelectronics Perform on NPOESS Sensor



## CHRIS BOYD

Northrop Grumman Aerospace Systems has successfully developed critical monolithic microwave integrated circuit (MMIC) components for the Advanced Technology Microwave Sounder (ATMS), an instrument that will operate on the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

Built at the Aerospace Systems

Microelectronics foundry in Manhattan Beach, Calif., these advanced MMICs enable higher performance and better efficiency than any other available technology. Based on indium phosphide and gallium nitride semiconductors, they offer specific advantages with respect to high-speed, low-noise and low-power consumption. "They drive the sensitivity performance of these

instruments," said Aerospace Systems' Rich Lai.

Northrop Grumman Electronic Systems in Azusa, Calif., is assembling ATMS, a key weather sensor on NPOESS. ATMS will provide microwave data, including atmospheric temperature and moisture profiles, to support weather forecasting when the satellite system is operational. ■

# Built-in Quality

Team Makes Microelectronics Reliability Its No. 1 Priority



## CHRIS BOYD

Quality goes into every product delivered by Northrop Grumman employees, and nowhere is the foundation of that quality more evident than in the Aerospace Systems Microelectronics foundry in Manhattan Beach, Calif. It is there that a team of employees worked long hours to develop a standard process to improve the reliability of gallium nitride (GaN) high electron mobility transistors (HEMTs). Team members in 2008 received an IRAD (independent research and development) award for their reliability efforts.

"The GaN team has achieved outstanding reliability results," said Mike Wojtowicz, center manager for Semiconductor Products in Mi-

croelectronics Processes and Products. "That's quality built in from design to fabrication."

Aerospace Systems develops GaN for a variety of applications. A key driver for this development is the Defense Advanced Research Projects Agency's Wide Bandgap Semiconductors for RF Application program, which aims to establish the capability to fabricate high-performance, high-yield and reliable wide bandgap semiconductor monolithic microwave integrated circuits (MMICs).

High electric fields cause degradation in GaN transistors. Though competitors have mitigated the problem with a "Band-Aid solution," Northrop Grumman developed a stable material structure and process, unique to the industry, to eliminate the root cause of the degradation, according to Wojtowicz.

"I don't think other companies have been

able to implement that process," Wojtowicz said. "We maintain device stability with good uniformity and good millimeter-wave performance that gives us an advantage."

The integrated product team spent two years working on the reliability issue and devoted many nights and weekends to the effort. This team operated under strict DARPA guidelines: Money and time were limited. "Things can look kind of bleak until you get that piece of data showing the process works," Wojtowicz said.

Aerospace Systems plans to baseline the GaN process for commercial applications as well. Some of the advantages of GaN include high speed, low noise figure, high power density and high survivability. GaN offers significant performance advantages for both power and low-noise amplifier applications. ■

NPOESS. On the front lines of global weather and climate.

[www.northropgrumman.com/npoess](http://www.northropgrumman.com/npoess)

**NORTHROP GRUMMAN**

# Super Support

*L.A. County Supervisor Tours F/A-18E/F Production Center and Commends Employees*



Los Angeles County Supervisor Don Knabe, center, meets with Northrop Grumman employees Leonard McIntosh and William Roberts on the F/A-18E/F Super Hornet assembly line as Michelle Scarpella, vice president, F/A-18 Programs, looks on. Supervisor Knabe visited Northrop Grumman on Sept. 16 for a tour and a briefing on the Super Hornet program.

**JIM HART**

Interested in the continued production of a major aircraft asset for the U.S. Navy, Los Angeles County Supervisor Don Knabe visited Aerospace Systems' F/A-18E/F Super Hornet assembly line in El Segundo, Calif.

Knabe, chairman of the County Board of Supervisors and a strong advocate for retaining jobs to help the local economy, toured the F/A-18E/F production area on Sept. 16 with Michelle Scarpella, vice president of F/A-18 Programs.

"Hosting Supervisor Knabe was a welcome opportunity to shine a spotlight on the outstanding work of our F/A-18E/F Super Hornet team," Scarpella said. "Northrop Grumman employees are justifiably proud to play a major role in

delivering the U.S. Navy's frontline carrier-based strike fighter."

Northrop Grumman is the principal subcontractor to The Boeing Company for the F/A-18E/F, the U.S. Navy's frontline carrier-based strike fighter. The company produces the aft/center fuselage section and vertical tails and integrates all associated subsystems. Every one of the more than 400 Super Hornets produced so far has been delivered on time and on budget.

"I was extremely impressed during this visit to see the obvious pride and dedication of Northrop Grumman's people who work on the F/A-18E/F program," Knabe said. "They should be commended for their contributions to delivering the Super Hornet

to the men and women in our armed forces who count on it to keep them out of harm's way."

Knabe also noted the F/A-18E/F's record of on-time, on-budget delivery.

"That performance reflects the quality and expertise of the aerospace industry in Los Angeles County, which continues to be a major force in our local economy," Knabe said. "Beyond the work they do, companies like Northrop Grumman are committed to supporting local communities through civic action, employee volunteerism and environmental responsibility."

Northrop Grumman has delivered more than 1,900 fuselage "shipsets" to Boeing since the original F/A-18 program began

**Knabe** *continued on page 34*

# Preservation Through Modernization

*Florida Lt. Gov. Jeff Kottkamp and Maj. Gen. Douglas Burnett, Adjutant General of Florida, Visit Northrop Grumman Manufacturing Center*



(l-r) Northrop Grumman Vice President for Battle Management and Engagement Systems Production Operations and St. Augustine Site Manager Rick Matthews, Florida Lt. Gov. Jeff Kottkamp, Maj. Gen. Douglas Burnett, Adjutant General of Florida, and Northrop Grumman's E-2 Hawkeye Product Build Team Lead Manager Charlie Baldwin.

**DIANNE BAUMERT-MOYIK**

With an eye toward manufacturing modernization and future high technology job growth in the state of Florida to support U.S. military needs, Florida Lt. Gov. Jeff Kottkamp and Maj. Gen. Douglas Burnett, adjutant general of Florida, visited Northrop Grumman Corporation's aircraft manufacturing and flight test center in St. Augustine, Fla., on September 16.

The two officials toured the 288-acre facility with Rick Matthews, vice president, Battle Management and Engagement Systems Production Operations and St. Augustine site manager, to discuss the site's capabilities — from new aircraft production to aircraft overhaul and modification.

Matthews said the group talked about the importance of preserving and growing the high paying manufacturing employment base in the state.

"Northrop Grumman employs 760 dedicated people in St. Johns County," Matthews said. "We have been the largest private industrial employer since we transferred our manufacturing operations down to St. Augustine from Long Island in 1994. An essential element of our business decision back then was tied to affordability for our military customer. That issue stands true for our customers today, and a major element of that affordability includes the need for site modernization in the near future."

Lt. Gov. Kottkamp, who serves as

chairman of the board of Space Florida, said during his visit, "I am very impressed with the work the Northrop Grumman team does in St. Augustine. The team members' contributions to the community are clearly evident in everything they do. We must support their modernization plans, which will help them provide even better support for our military."

"By supporting Northrop-Grumman's expansion plans, we will help maintain Florida's position as a leading state within the defense industry," said Burnett. "Floridians deserve a balanced economy with diverse employment opportunities. Preserving this industry, as well as other aspects of our economy, will improve the quality of life for all our citizens."

**St. Augustine** *continued on page 34*

The following have been recognized for achievements in technical innovation, leadership and performance.

# Measure of Quality

## Award Celebrates Half Century of Quality



Northrop Grumman's Deb Andree (at left) accepted the American Society for Quality (ASQ) Long Island Hall of Fame award from ASQ Long Island Chairman Rick Calabrese.

### BOB SAMPLE

The American Society for Quality (ASQ) recently named Northrop Grumman to its Long Island Hall of Fame. ASQ Long Island announced the award at its 50th anniversary dinner, which took place Sept. 17 in Jericho, N.Y.

"It is a privilege for me to accept this award on behalf of the 120,000 employees of Northrop Grumman — and especially our Long Island team here tonight," said Deb Andree, director, Quality, Safety and Mission Assurance for the Battle Management and Engagement Systems Division, to the 80 people who attended the event. "Quality is a part of everything we do, every day, at Northrop Grumman. We do this for the most important customer in the world: the men and women who serve our United States military."

The Hall of Fame honors companies and individuals who have contributed

significantly to the success of ASQ Long Island through work in business, education and the community. Farmingdale State College, State University of New York will house the ASQ Long Island Hall of Fame, and the ribbon-cutting is scheduled for December.

Andree also praised Aerospace Systems employees Julie Salgo, Mary Sansone, Tony Mule, Carl Holmes and Dane Rasmussen, and retiree John Ricciardi, for service to the ASQ and Northrop Grumman's quality initiatives. She noted that in today's business environment, excellent performance and quality are both vital to satisfying customers. Without them, programs, jobs and local economies are at risk.

"Our laser-like focus on quality has helped us weather the changing defense landscape — because strong quality is an essential part of strong program perfor-

mance and strong program protection," said Andree. "One major way that we have lived up to our commitment to quality is through our 50-year relationship with ASQ Long Island."

For five decades, Northrop Grumman employees have volunteered on ASQ committees, assisted with conferences and other events, served as officers and otherwise helped to sustain the organization. "This Hall of Fame award really goes to all the members of the Northrop Grumman team who have dedicated their lives to ASQ Long Island — and to the art and science of quality," Andree said.

Since the Long Island unit of the ASQ was formed in 1959, three of its chairmen have been Northrop Grumman employees, two have been vice chairs and about 25 other employees have held positions on its board of directors. ■

# Model for Success

## DCMA Rates Sector's Small Business Subcontracting Program Outstanding



### DEBORAH HAWKINS

Every year the Defense Contract Management Agency conducts a review of our small business subcontracting program to assure compliance with applicable laws and regulations. "Few defense contractors achieve this top small business rating," said DeWillican Middleton, DCMA western division chief for Small Business Operations.

Yet "outstanding" was the rating received by our Northrop Grumman legacy Integrated Systems sector from the DCMA after a rigorous review of overall 2008 performance, contractor compliance, adherence to policies and procedures, outreach efforts and commitment of our executive leadership

team.

The rating means our sector has achieved exceptional success with initiatives to assist, promote and use small, disadvantaged, service-disabled, HUBZone or veteran- or woman-owned small businesses. An outstanding rating signifies the company has an exemplary program that could be used as a model by other contractors in similar industries.

Mark Miller, the DCMA reviewer, specifically cited three Northrop Grumman best practices. One is the cover page template for individual subcontracting plans signed by all major program managers responsible for overseeing

small business program performance. The second is the way subcontract plans are submitted to DoD buying offices, which, according to Miller, "saves the government a lot of time and paperwork." And third is a "quad" scorecard that provides a monthly rating of goal achievements, root causes, corrective actions and implementation of plans/schedules.

In an Aug. 11 letter of congratulations to President Gary Ervin, Middleton wrote: "This rating represents the total commitment ... to the goals and ideals of the Department of Defense Small Business Program." ■

# Career Builders

## Four Employees Receive HENAAC Awards for Advancing Science, Technology, Engineering and Math

### KIMBERLY PRATO

At a ceremony in Long Beach, Calif., on Oct. 9, three Aerospace Systems employees and one Electronic Systems employee won 2009 Hispanic Engineer National Achievement Awards. All awards were in the engineering field.

Now in its 21st year, the Hispanic Engineer National Achievement Awards Corporation (HENAAC) recognizes the most talented and promising engineers and scientists in America. Honorees are part of the Hispanic community and leaders in the advancement of Science, Technology, Engineering and Math (STEM).

HENAAC presented two national awards and two "luminary" awards to Northrop Grumman employees:

Emilio Sovero, a chief scientist for Aerospace Systems, was named the national winner in the outstanding technical achievement category. Sovero, who has a doctorate in applied physics and information sciences, works in new technology development, designing and developing sophisticated hardware for our nation's most critical space missions. Sovero wrote the winning proposal for the DARPA Analog-to-Intelligence program and is managing a team consisting of Northrop Grumman and California Institute of Technology in the development of advanced and novel architectures for nonlinear/sparse sampling of wideband signals.

Teresa Segura, who has a doctorate in astrophysical, planetary and atmospheric sciences, and is a scientist in civil space within AS Business Development, was honored in the most promising engineer category. Segura received the award based on her professional contributions in planetary science and to the sector's

Civil Systems Business Development team as well as her volunteer work in the Hispanic community.

A luminary award went to AS' Rosa Sandoval, for her strides and studies in STEM applications. Sandoval currently works as an electrical systems responsible engineer for the Navy UCAS program. Sandoval prepares and releases component procurement packages for the electrical power generation and distribution equipment. She is also responsible for management of supplier performance including testing and data submittals and has active roles in Connect1NG and Adelante.

Also receiving a luminary award was Ana-Luisa Ramirez of Northrop Grumman Electronic Systems.

Each STEM award winner passed through an extensive peer review before emerging a victor. "I have seen the population of role models grow," said Ray Mellado, chair, CEO and founder of HENAAC. "We need to get their stories back into our communities to foster awareness and inspire youth to pursue careers in STEM." Mellado also expressed gratitude for Northrop Grumman's support.

Aerospace Systems recognizes advances by its Hispanic employees in many ways, including Adelante, a Hispanic networking group formed in 1993. Explains Frank Flores, vice president of Engineering and a longtime HENAAC advocate: "I am proud of our 2009 award winners. This celebration helps provide our community and our youth with mentors and leaders who can motivate individuals to attain success in these fields. Recognizing their stories help mold the engineers and scientists of tomorrow." ■



Pictured from top to bottom: Rosa M. Sandoval, Teresa L. Segura and Emilio A. Sovero.

# Suite Results

## EA-18G Growler Earns High Praise in Navy Evaluation



### BOB SAMPLE

The EA-18G Growler recently completed its operational test and evaluation (OTE). The Navy evaluation team awarded a grade of "operationally effective and operationally suitable" to this newest airborne electronic attack (AEA) aircraft.

The Growler is an AEA derivative of the F/A-18 fighter aircraft. Northrop Grumman developed the Growler's ICAP III AEA suite in Bethpage, N.Y. — the same AEA suite found on its predecessor, the EA-6B Prowler. Engineering and software development takes place in Bethpage; Hollywood, Md.; and Camarillo, Calif., while the gun bay pallet and wing tip pod assemblies are manufactured in St. Augustine, Fla., and rear fuselage assembly takes place in El Segundo, Calif. Boeing is responsible for final assembly and flight test, and performs both in St. Louis.

"These successes continue to demonstrate our industry-leading expertise and long-standing reputation for excellence in airborne electronic attack," said Tom Vice, sector vice president and

general manager of the Battle Management and Engagement Systems Division. "We have been a leading innovator in this high technology market space ever since we developed the Navy's first 'electric Intruder,' the EA-6A in the 1960s. Our technical and program leadership later produced the Navy's EA-6B Prowler and the Air Force's EF-111 Raven.

"In addition, in recent years, our ICAP III-equipped Prowlers have successfully flown thousands of hours in the skies over Iraq and Afghanistan, protecting soldiers and marines on the ground," Vice added.

Vice noted that this is just the latest in a long list of accolades for the EA-18G program. The EA-18G earned the 2008 NAVAIR Commander's Award in research, development, test and evaluation as well as the Association of Old Crows (AOC) award for Integrated Product Team of the Year. In 2008, EA-18G Program Director Steve Hogan received the AOC's Program Manager of the Year Award.

"Our latest AEA success helps us maintain our technology leadership position as the true experts in delivering this vital capability to our troops," Vice noted. "The EA-18G Growler is a key building block in our ability to shape the future AEA market. It is our current showcase to demonstrate our leading-edge ability to design, develop, integrate and test AEA systems that meet or exceed specifications. In addition, the Growler is the proving ground to current and future customers that we do what we say we will do — on time and within budget."

Vice also pointed out that the success of the EA-18G will be beneficial for Northrop Grumman in the pursuit of a Next Generation Jammer. "The Navy is looking to predict and counter the electronic warfare threats of the future," he said. "Our technology leadership coupled with our consistently strong program performance will enable us to win this competition and continue to be the AEA supplier of choice." ■

The following articles in Sector Outreach provide an overview of the organization's activities that focus on enhancing our brand image and promoting interest in prospective employees.

# Exponential Potential

## Northrop Grumman Foundation Helps Make Math Count for Middle Schoolers

In August, the Northrop Grumman Foundation announced the continuation and expansion of its longstanding sponsorship of MATHCOUNTS, a non-profit mathematics education foundation.

Currently in its 27th year, MATHCOUNTS is one of the country's largest and most successful partnerships involving educators, students, industry sponsors and volunteers. Focused on motivating and improving middle school students' achievement in math, MATHCOUNTS reaches more than 7,000 schools and 250,000 students in all 50 states, the District of Columbia, U.S. territories, and Department of Defense and State Department educational activities worldwide.

Northrop Grumman's sponsorship will support the delivery of Web site content to the thousands of visitors who visit [www.mathcounts.org](http://www.mathcounts.org) each year. This Web site offers resources and activities to students, parents and teachers, including a new "math arcade" made possible by the Northrop Grumman Foundation.

The Web site also provides guests with information on MATHCOUNTS programs.

These include two unique programs for middle school teachers and students. One is a recently created "MATHCOUNTS Club Program" that provides schools with the structure and activities to hold regular math club meetings. The second, MATHCOUNTS' flagship program, is its highly popular mathematics competition. Using materials provided by MATHCOUNTS, teachers prepare students for participation in this extended

our relationship," notes Jim Myers, Electronic Systems Navigation Systems Division vice president and general manager and member of MATHCOUNTS board of directors. "By sponsoring the MATHCOUNTS Web site, we will help this organization more effectively reach the tens of thousands of students who participate in its programs and further encourage young people to pursue careers in technical fields."

# MATHCOUNTS®

contest held successively at local, state and national levels. Business and industry partners provide support in the form of coaches for the competing students and assistance in coordinating competitions. They also host local workshops for teachers, minority outreach programs and public awareness events to encourage participation and promote the importance of mathematics. Many of these activities are made possible by employee volunteers of Northrop Grumman and other companies.

"We are very excited about the expansion of

The Northrop Grumman Foundation supports diverse and sustainable national-level programs that enhance the education experience for students and equip teachers with the training and tools they need to be successful in the classroom. Providing high-impact education experiences related to science, technology, engineering and mathematics for students and teachers is a top priority for the Northrop Grumman Foundation. ■

# School Ties

## Northrop Grumman Supports Historically Black Colleges and Universities



Ray Haynes, Aerospace Systems; Dr. Willie Trotty, Prairie View A&M University; Tizoc Loza, Corporate; Gwen Tillman, Corporate; Electronic Systems' Voltaire Walker, Aubrey Wisler and George Reynolds. The Northrop Grumman HBCU program presents a \$5,000 scholarship to Prairie View A&M University.

In support of the White House Initiative on Historically Black Colleges and Universities (HBCU), Northrop Grumman's Socio-Economic Business Program Office presented two \$5,000 scholarship awards in September at the kickoff of the annual HBCU conference. The recipients, who received the scholarships in support of their continued education, were randomly selected members of the 105 Voices of History Choir — made up of one student from each of the nation's 105 HBCU's. The choir's mission is to build awareness, enhance resources and sustain our nation's Historically Black Colleges and Universities.

In addition, Tizoc S. Loza, corporate program manager for the Northrop Grumman HBCU program, presented a \$5,000 scholarship to Prairie View A&M University. Dr. Willie Trotty, vice president for Research and Development, accepted the scholarship aimed at helping a graduate student continue innovative and groundbreaking research at the university's Center for Communications Systems Technology



Research. The scholarship also enhances Northrop Grumman's efforts to coordinate comprehensive research in selected technical areas, suggest new curricula and strengthen ties between industry, academia and government.

The HBCU's annual conference was held during National HBCU Week, Aug. 30-Sept. 5, under the theme, "HBCU: Seizing the Capacity to Thrive." The U.S. Congress recognized the event with a resolution honoring the significant contributions these institutions have made to our nation's growth. ■

# Career Initiators

## Beginning Teachers Hone Technical Smarts During Visit

### BOB SAMPLE

A new school year brings a world of distinct experiences for students and teachers alike. As part of that a team of new teachers visited Northrop Grumman recently to learn about the company's initiatives supporting science, technology, engineering and math (STEM) education.

The teachers were from the Bethpage School District on Long Island. This was the fifth year in a row that the Bethpage site has hosted its local district's newcomers for a briefing on its business and its place in the high-technology world.

Northrop Grumman views STEM initiatives as critical for both its business and the nation's overall competitiveness. In part because of its proximity to Northrop Grumman, the Bethpage School District has long participated in a variety of STEM programs including the High School Involvement Partnership (HIP), career days, middle-school mentoring and FIRST Robotics.

Rich Leo, vice president of Business Management for the Battle Management and Engagement Systems Division, praised the Bethpage School District for offering many different ways to interest students in technology. "We're glad to support all that you do," said Leo. "These initiatives are a great way to guide students into technical and business careers."

Leo emphasized that Northrop Grumman's customers — our nation's warfighters who depend on new technology. "That means recruiting your best and brightest students to come to work for us," he said.

STEM programs involving the Bethpage district and Northrop Grumman have grown continuously. "Each year five to eight of our students participate in the High School Involvement Partnership, an internship program at Northrop Grumman," said



Terry Clark (left), superintendent of schools for the Bethpage School District in New York, greets Scott Sparks, manager of Human Resources for Northrop Grumman in Bethpage, and Rich Leo, vice president, Business Management for the Battle Management and Engagement Systems Division.

Terry Clark, superintendent of schools for the Bethpage School District in New York, addresses first-year teachers during a recent visit to Northrop Grumman. Their visit was part of the company's Science, Technology, Engineering and Math (STEM) educational initiative.



Terry Clark, superintendent of schools for the Bethpage School District. "In addition, five of our teachers have flown aboard the Northrop Grumman-sponsored Weightless Flights of Discovery. Northrop Grumman also helps us set up our annual astronomy night and NGC employees mentor our students at the middle- and high-school levels."

The benefit to Northrop Grumman? "Most of our employees in Bethpage grew up on Long Island, and school

systems such as yours help shape our future employees," said Scott Sparks, Human Resources manager for Bethpage.

Clarke seconded that statement. When he visits Northrop Grumman, Clark often encounters former Bethpage students.

"They wave and say, 'Hi, Mr. Clark,'" he noted. "They used to be students of mine, and now they work for Northrop Grumman with bright futures ahead of them. That's a great feeling!" ■

# Comfort Reading

## On-site Book and Magazine Drive Benefits Nonprofits



WiNGS volunteer Sharon Wood packs the used books and magazines donated by Northrop Grumman employees to benefit the Downtown Los Angeles Women's Center and Bob Hope LAX USO, as part of recycling and community outreach efforts by WiNGS in the El Segundo and Redondo Beach, Calif., sites.

### CHRISTY KULL

This past July, the Women in Northrop Grumman (WiNGs) and the Women's Network Group (WNG) teamed with greeNG at the El Segundo and Redondo Beach, Calif., sites to collect used books and magazines to benefit the Downtown Los Angeles Women's Center (DWC) and the Bob Hope LAX USO. GreeNG receptacles, located in lobbies at both locations, overflowed with hundreds of magazines and hard and soft cover books.

"The response from NGC employees was overwhelming," said Marian Fu, WiNGs, Community Outreach co-chair. "I am looking forward to this becoming an annual event."

WiNGs volunteers Sharon Wood and Beth Green separated and boxed the donations and drove the more than 30 boxes to the

DWC where residents helped unload the books and magazines.

"A few of the women hugged us and thanked us — not just for the books, but for caring," said Wood.

The DWC staff welcomed the variety of books and magazines since the organization is moving to a larger facility and additional material was needed.

Katherine Howard, WiNGs chair in El Segundo, said, "The residents were excited to look through the new books and magazines that would soon fill their sparse bookcase."

The mission of the Downtown Women's Center is to provide permanent, supportive housing and a safe and healthy community fostering dignity, respect and personal stabil-

ity, and to advocate ending homelessness for women.

The Bob Hope LAX USO office provides snacks, family spaces and entertainment for deploying soldiers and their families. Books donated during the drive will be used at the office's "lending library."

Mike Teilmann, Brigadier General (Ret) and executive director, LAX/USO, said, "The donated books will be used by the many service men and women who come here daily to relax while waiting for their flights."

Brian Schoening, co-chair of the Space Park greeNG, remarked, "The used book and magazine drive is a great way to divert re-usable materials from landfills and at the same time makes a difference in the lives of others." ■

# Passionate About Service

## Bob Bradley Recognized for Community Service

Bob Bradley, (center) Joint STARS flight crew training analyst, Warner Robins, Ga., was recently honored for his community service as volunteer of the year. Also attending the event is Johnny Wingers, director of the Macon-Bibb County Emergency Management Agency (left) and Gary Hogarth, director, TSSR Operations and Warner Robins site manager.



Photo credit: Macon-Bibb County Emergency Management Agency

### DEBBIE BOHAGS

Ask Bob Bradley what he does in his spare time and he can give you a list — with awards from several community organizations to prove it.

Bradley, a flight crew training analyst for Joint STARS in Warner Robins, Ga., is the Macon-Bibb County Emergency Management Agency's Volunteer of the Year. He also received the Macon Noon Day Optimist Club Respect for Law Commendation in the Emergency Management category and the Emergency Management Award of Appreciation from the Macon Cherry Blossom Commission. The Macon-Bibb County Emergency Management Agency (EMA) recently presented Bradley with yet another award: for the most volunteer hours in emergencies.

In just the past year Bradley volunteered more than 330 hours for the emergency

management agency. He helped search for missing people, fought fires and provided traffic and safety control for road races and parades, to name just a few. He is state-certified for hazardous materials awareness and for rescues.

Bradley also helped the EMA craft a grant request to the Combined Federal Campaign, part of the United Way. Recognition by this organization will enable the agency to receive tax-deductible donations. Such funding is critical because the agency has just four paid employees and a team of 50 volunteers.

Bradley joined Northrop Grumman seven years ago after a 22-year career with the U.S. Air Force as a flight engineer. "I flew 18 of my 22 years with two of them on Joint STARS," he said. He also served on Langley Air Force Base's search and rescue team, which led to his current volunteer activities.

Bradley brings his volunteer experiences to the workplace by training colleagues in emergency preparation best practices.

"Until an emergency develops, most of us are unaware of what is needed — and by then it may be too late," says Bradley. "Since I have assisted at quite a few emergency situations, I have recommendations on preparing for emergencies and natural disasters."

"The work Bob does is very important," said Gary Hogarth, director, TSSR Operations and Warner Robins site manager. "And he does it with the same passion that he displays every day in his Joint STARS flight crew training efforts."

Bradley appreciates the recognition but said he does not volunteer for that reason alone. "It's important for all of us to give back to our communities," he said. "This is my contribution." ■

# Driving Out Hunger

## BM&ES Food Drives Collect 2,400 Pounds in Food Donations



Photo credit: John Germania

Melbourne, Fla., employees Jennifer Bliss and Jarrod Rodamer help load the van for the Second Harvest Food Bank of Central Florida during the recent food drive at several Battle Management and Engagement Systems Division sites.

Several Battle Management and Engagement Systems Division sites hosted a food drive during the month of August. Thanks to the overwhelming generosity of employees, almost 2,400 pounds of food and a \$100 cash offering were donated to local food banks affiliated with Feeding America.

Among the sites that participated were Melbourne, Niceville and St. Augustine, Fla.; Charleston, S.C.; Hollywood, Md.; Warner Robins, Ga.; Bethpage, N.Y.; and Camarillo and Goleta, Calif.

"Although most of us think about food drives during the holiday season, many families in our communities are hungry year-round," said Vicki Payne, Corporate Responsibility representative, Bethpage. "Whatever the season, there truly is never a wrong time to help feed America."

Feeding America is the nation's leading domestic hunger-relief charity. Its mission is to feed America's hungry through a nationwide network of member food banks in the fight to end hunger. The Feeding America network secures and distributes more than 2 billion pounds of donated food and grocery products annually, supporting approximately 63,000 local charitable agencies that distribute food directly to Americans in need. ■

# Beachcombing Blue Crew

*Clean Beach Supports Cleaner Ocean*



A big bunch of blue occurred at California's Dockweiler State Beach on Aug. 15 when Northrop Grumman employees, family members and friends arrived to pick up trash and keep it from reaching the ocean.

## GEORGEANN WYATT

There was lots of blue on the sand at Dockweiler State Beach near Los Angeles Airport in California on Saturday morning, Aug. 15. Don't worry; it was not a blue whale or a beached boat. It was 189 employees, family members and friends in their distinctive blue Northrop Grumman volunteer T-shirts.

They were at the sixth annual cleanup event on the beach. Starting at 8 a.m., people fanned out over two miles of sand and shrubs with gloves and plastic bags to pick up debris. In addition to making the beach nicer for visitors, cleaning up

means less garbage drifting into the ocean, where it can injure marine life. This year, the entertaining finds included one Clucking Duck keychain, several CDs, a full outfit of clothes and a bunch of nails, among the usual plastic and paper scraps and cigarette butts. And one "prize" was found — a Jonas Brothers fan bracelet, which was awarded to a dad who had recently accompanied his daughters to a concert by the group.

"I felt the effort at the Dockweiler Beach cleanup was a stellar example of our employees giving to the community and

the environment on their own time," said Christopher Cool, sector vice president, Quality, Safety and Mission Assurance. "To get almost 200 people out on a Saturday for labor is a tribute to these amazing people. (Actually my family and I had a great time.) The beach had an NGC-blue comb run through it, and it shined when they were done."

Representatives of Heal the Bay, a local nonprofit organization that works to preserve and improve Southern California coastal waters and watersheds, provided an educational talk for participants.

This year, the event was co-sponsored by greeNG, the Connect1NG employee resource group, the Aerospace Systems Management Club and the Corporate Citizenship department. Many of the volunteers were repeat cleaners with several years of experience at this fun event.

Breakfast, lunch and beverages were provided for the volunteers. Christy Kull from Environmental, Safety, Health & Medical and a leader of the greeNG employee resource group at the El Segundo site said all of the food boxes and bottles were collected and recycled, to continue Northrop Grumman's part in keeping the beaches clean. ■



Searching for debris to pick up are members of a Northrop Grumman group that left a two-mile stretch of California beach free from litter.

## Top 10 Ways to Heal the Bay



- 1. Keep Your Litter Out of the Gutter!** – Keep trash, yard trimmings, and other litter off the street and out of the storm drains so they don't end up in the ocean. Clean up after your dog, cat, or horse to keep the waste out of the storm drain and away from your favorite beach.
- 2. Don't Be a Drip** – Overwatering is wasteful and moves trash and toxins to the ocean. Conserving water also helps the sewage treatment plant do a better job.
- 3. Hold on to Your Balloons**
- 4. Beware of Six-Pack Rings** – Avoid buying them, or cut them up before you throw them out. Marine animals choke on garbage and get tangled in trash.
- 5. Go Non-Toxic!** – Avoid buying products like liquid drain openers. Use pesticides as little as possible and look for non-toxic alternatives. Use compost instead of chemical fertilizers.
- 6. Sack the Plastic Bags** – Instead of taking plastic bags at the grocery store, bring your own bag.
- 7. Make a Clean Sweep** – Use a broom, not a hose, to clean sidewalks and driveways. Watering the driveway won't make it grow!
- 8. Recycle Used Motor Oil** – You can recycle your used motor oil at gas stations, auto parts stores and garages. Never pour it down the drain, in the gutter or on the ground.
- 9. Go to a Car Wash** – Most car washes recycle their water. If you clean your car at home, wash it on the lawn. Use a bucket to conserve water and use biodegradable soap.
- 10. Become a Part of Heal the Bay** – By volunteering or becoming a member, you'll help us continue to protect the Santa Monica Bay and all of California's coastal waters.

# Ride Makes Fundraising a Breeze

## Employees Ride to Help Turn the Tide and Fund Leukemia Research

ADAM GROSS

It had been one great ride. The cyclist had seen seriously beautiful scenery, everything from wide ocean vistas to million dollar homes perched high in the hills above Montecito, Calif. There were rest stops with nourishing food and cool breezes just as advertised. But somewhere along the old Pacific Coast Highway, heading south and still eight miles from the finish, she started to flag. Hunched over her handlebars, her backside smarting and her legs tiring as the lactic acid built up in her muscles, she rode on and pushed thoughts of quitting out of her head. At times like this she remembered she wasn't just riding for the fun of it. She was riding for a cause — raising funds for the Leukemia & Lymphoma Society. And after all, those with cancer have a much tougher last 10 miles to travel.

This intrepid rider wasn't alone. A total of 125 cyclists from Aerospace Systems took to the roads of the California coast on Saturday, Aug. 15, to ride the 15th annual Cool Breeze. They rode for fun but also in support of the families and patients fighting blood cancers. This year saw Space Systems Division join with the Strike and Surveillance Systems Division to sponsor riders. With the two divisions riding as one team, the squad was able to raise more than \$65,000 for the LLS. The sector synergy resulted in the team surpassing last year's fundraising total at the former Space Technology sector by more than \$25,000.

"This was our second year sponsoring a team for the Cool Breeze," said Dave DiCarlo, sector vice president and general manager, Space Systems Division. "This year it had the added dimension of a multi-division event, so I got to meet a number of the SSSD riders and members of their families. Most importantly, it was another successful fundraiser for a very important cause, and I thank everyone who rode, contributed or volunteered their time." DiCarlo, who served as executive co-sponsor of the Northrop Grumman team, showed the great form he has earned on tough climbs on the Palos Verdes Peninsula near Los Angeles and rode the full 102-mile century.



The team's other executive co-sponsor, Duke Dufresne, sector vice president and general manager, Strike and Surveillance Systems Division, rode the mini-metric 38-mile course with his wife, daughter-in-law, and son, Deven, an NGAS employee; all part of the family peloton. Dufresne noted, "This was my first experience with the Cool Breeze and also my first bike ride of any significant length. It was an uplifting experience to see so many of our employees support such a worthwhile event. I can't say I'm ready to give Lance Armstrong a run for his money but I plan to be here again next year."

So, no doubt, will many of this year's riders and some new ones as well. The fight against leukemia and lymphoma continues and still needs our support. And the ice pops at the final rest stop, a Cool Breeze tradition, are mighty tasty indeed and keep riders coming back for more year after year.

The Cool Breeze Century ride is organized by the Channel Islands Bicycle Club, in Ventura County, Calif. The Northrop Grumman team adds its own fundraising element to benefit the Leukemia and Lymphoma Society. ■

The greeNG / Safety / Security News section highlights the active role the sector and its employees play in conservation and supporting workplace safety and security.

# Greener and Leaner

## Cyclist Mike Newfield Makes 'Green' a Commuting Routine



Rancho Bernardo employee Mike Newfield put the brakes on high fuel costs by commuting to work. His nearly 20-mile commute not only saves money, but puts a healthy spin on reducing pollutants from vehicle emissions.

CANDICE BERRY

Social movements often begin with just one person. In Rancho Bernardo, Calif., Mike Newfield has for several years pioneered an activity that he hopes will one day be commonplace: getting to work by bicycle.

Newfield, who works in Administrative/Media Services, has ridden his bike to work since 2005. "When gas prices started climbing toward \$3 per gallon and beyond, I began riding my bike to save money," Newfield said. "Last year, as fuel went past \$4.50 a gallon, I estimated that I could save one-and-a-half house payments each year by riding my bike to work!"

While fuel costs have moderated somewhat since then, saving money is just one benefit from riding a bicycle to work. For starters, cycling gives you a great workout. "I no longer have to make time to exercise at a gym each day," said Newfield, whose one-way commute

is roughly 9 1/2 miles. "My commute provides it to me for free."

That has lasting benefits for individuals. Headlines point to obesity as a growing problem in the U.S., along with stress-related medical problems. Cycling mitigates the effects of both in a way most people will enjoy.

Still, this alternative method of commuting is not without its perils. "Rain and heat can pose challenges, but traffic is the biggest problem," said Newfield. "Every day at intersections, I see both cars and people on bikes blaze through red lights, which is crazy!"

In Newfield's view, most places in the U.S. need better city planning to make room for larger numbers of bicycle commuters. Communities lack dedicated bike lanes and proper signage. That makes it difficult for cyclists to navigate automobile traffic and, in turn, makes bicyclists hard for drivers to spot.

"Some communities have built networks of bicycling roads from which cars and trucks

are absent," Newfield said. "These bike roads connect with major streets but overall, make bicycle commuting less precarious."

In spite of these challenges, Newfield encourages fellow Northrop Grumman employees to bike to work. He said more of his Rancho Bernardo colleagues arrive at work on bikes. He convinced his daughter, Michelle, to commute to her classes by bike when she is away at college.

"Biking to work is easy and fun, which makes the difficulties of riding in traffic easier to endure," he said. "The first Earth Day in 1970 had a huge impact on me. By biking to work I do my part to help keep the Earth clean."

"Planes, trains and automobiles are wonderful conveniences that we take for granted in our society," he added. "Maybe we all need to do a little hard work first to appreciate these modern wonders — and help make the world better for generations to come." ■

# Down with Energy

*Bright Ideas Lead to Energy Savings Award*



Mike Anthony of Southern California Edison presented Frank Murphy, Facilities site manager for El Segundo (left), an award for the site's efforts to save energy and help protect the environment. Similar awards were presented to the Space Park and Palmdale sites.

**A**t Northrop Grumman mental energy is maintained at a high rate every day by some of the brightest minds in the industry. On a different level, though, it is important to reduce energy usage and that is exactly what employees at three Aerospace Systems California sites did — reduce energy levels, which in turn, decreases greenhouse gases and lightens the demand for electricity.

The El Segundo, Palmdale and Space Park sites were recently recognized by Southern California Edison (SCE) in the inaugural year of its "Demand Response and Energy Efficiency" program. Together, the sites

reduced 1,015,524 pounds of greenhouse gas emissions in 2008.

"Northrop Grumman has been one of SCE's top customers in delivering energy efficiency results and participating in energy efficiency programs," said Mike Anthony, of Southern California Edison. "This is evident in Northrop Grumman winning the Flex Your Power Award."

Among ongoing projects that save electricity at the Aerospace Systems sites are reflective, white "cool roofs" to help keep building interiors cooler, changing light fixtures to more energy-efficient alternatives and making energy efficiency a factor in decisions for replacing or upgrading equipment.

Additionally, employees throughout

the sector have been encouraged by the greeNG initiative to turn lights off in conference rooms after use, shut down coffee makers after the morning rush and set computers to power-save mode when not in use.

Marisa Thomas in the Facilities department at Palmdale said, "I am proud to be part of the corporation's greeNG energy team and helping reach our reduction goals by reporting the figures and tracking trends at the Antelope Valley sites. I am especially proud that our actions here save energy and have reduced 140,015 pounds of CO<sub>2</sub> greenhouse gas emissions. We will continue to work hard and do our part." ■

# Green Practices Save Green Bucks

## BOB SAMPLE

"Going green" by adopting more environmentally friendly practices is more than just a socially conscious trend. In addition to boosting the company's environmental profile and its standing in the communities in which Northrop Grumman operates, "green" saves money.

Reporting big savings from green practices is Northrop Grumman's Bethpage complex, which in 2005 began a program to trim energy use. The program has so far saved 8 megawatts (enough electricity to power approximately 750 average-sized American homes for a year) from a variety of both large- and small-scale upgrades at the site.

Saving energy is good business anywhere, but the need is particularly important on Long Island, N.Y., which has some of the nation's highest energy costs.

"Site management made a commitment in 2004 to invest in energy-saving initiatives said Bill Trillo, director of Facilities Services-Site Management East. "This has had a direct impact on operating costs, lowering our overhead rates and making us more competitive in the government-contracting world."

Trillo points to Bethpage's now-complete Green Lighting Initiative as an example of how significant savings can be realized from simple, relatively inexpensive measures.

"We began replacing lighting ballasts and lamps with new energy-efficient equipment," said Trillo, "which consume one-fourth the electricity of the old equipment. That program finished at the end of last year." A ballast is a device that maintains a constant electrical

current through a fluorescent lamp, and as such enables such lamps to perform their most essential function: providing constant, flicker-free lighting.

In a related change, two buildings now utilize computerized central lighting controls with another such system soon to be up and running in a third building.

"In areas that had no controls in the past, where lighting remained on 24/7, we now have remote-control capability," said Trillo. "Lights are automatically shut off after our cleaning crew leaves, giving us approximately six hours of off-time that translates into a big energy savings over time."

A more complex change has been the installation of variable frequency drives on heating, ventilation and air-conditioning (HVAC) equipment in Bethpage and at other sites. These drives make the powering up of HVAC equipment much more gradual, which decreases electrical demand and reduces wear and tear on electrical motors.

"Utility costs are a significant component of our overhead rates," said Trillo. "By saving on electricity, we are able to make ourselves more competitive on both our existing programs and any new business that we propose."



The New York Independent System Operator (ISO) oversees how utilities are managed within New York State. It solicits Northrop Grumman's cooperation in twice-yearly energy demand-reduction exercises. On each of two randomly selected days, Northrop Grumman voluntarily reduces its energy consumption for one hour at the Bethpage complex. The company earns a rebate by meeting an energy-savings target established between the two parties.

Similar efforts have been implemented and continue at other Aerospace Systems sites.

"We continually assess equipment condition and related life expectancy," said Trillo, "and when replacement is required, Facilities always looks to install energy-efficient equipment."

Trillo welcomes new ideas and suggestions. To contact him, send an e-mail to [bill.trillo@ngc.com](mailto:bill.trillo@ngc.com), or call 516-575-0315. ■

**Virtual Empire** *continued from pg 8*

Center-Experimental at Langley Air Force Base, Va.

"The ultimate goal of the exercise," explained Chris Frangos, chief architect, Systems Engineering, Integration & Test, "was to gain a better understanding of the challenges that irregular warfare brings to our warfighters and how Northrop Grumman platforms, technologies and architectures provide solutions to these challenges."

One key to interoperability success was an E-2 Hawkeye developmental test bed. The test bed is based on the robust capability of the U.S. Navy's E-2 Hawkeye mission computing system, which enabled it to successfully operate the Electrical Optical (EO) sensor onboard both manned and unmanned aerial vehicles (UAVs) in response to requests from ground commanders. Using machine-to-machine command interfaces, the E-2 test bed was able to cue each UAV simulator to provide imagery of both static and dynamic ground tracks for target identification. Image request messages were transmitted via machine-to-machine interfaces, replacing the need for voice and manual chat, improving the response time.

The virtual Joint STARS integrated the Battle Management Command and Control (BMC2) architecture with UAV control and multi-level security capability sets. This demonstrated an expanded ISR role including automated UAV image collection and the development of target quality solutions to support strike engagements.

Sensor imagery received from the UAVs via Joint STARS was provided to an image analyst who examined each image and determined which one should be included in the image product library. Images in the IPL were used to populate the Global Command and Control System. Once threats were identified, the E-2 test bed managed the F-18s and EA-6Bs assets conducting precision strike missions.

The net effect of this ISR sensor tasking and command and control network was a reduction in both the kill-chain, the time it takes to find, identify and engage a target, and the operator workload required to accomplish the task.

"The Northrop Grumman team established a unique working relationship with USJFCOM under

our cooperative research and development agreement," said Frangos, "We have gained valuable insight into our customer's perspective of the operational challenges associated with irregular warfare. And we've helped outline solutions to meet immediate needs. The results of this effort have led to changes in how intelligence, surveillance and reconnaissance operations are conducted in theater today, improving the overall effectiveness of military operations."

With the Empire Challenge team still celebrating the successes of 2009, planning has already started for the 2010 event. ■

**USAF Rodeo** *continued from pg 12*

"It's an honor for Northrop Grumman to participate in this event," said Bill Welser, vice president, Business Development, KC-45 Tanker. "We are proud to support the Air Mobility Command as it recognizes the best teams."

Among those on hand from the U.S. Air Force were Gen. Arthur Lichte, AMC commander and Maj. Gen. Brooks Bash, AMC director of Operations and this year's Rodeo commander.

"Rodeo showcases AMC's best of the best and allows us to train and learn through spirited competition," said Bash. "Not only does this world-class competition train mobility forces for the fight, it provides a forum for airmen and international partners to share best tactics and techniques." ■

**Knabe** *continued from pg 16*

in the 1970s. The current F/A-18E/F program accounts for about 1,200 jobs at Northrop Grumman and more than 10,000 jobs in California at more than 700 suppliers. The Super Hornet industry team includes Boeing, Northrop Grumman, GE Aircraft Engines, the Raytheon Company and more than 1,900 suppliers in the United States and Canada.

The F/A-18E/F entered service with the U.S. Navy in 2001. The Navy is expected to acquire a minimum of 506 Super Hornets and 88 EA-18G Growlers. In addition, the Royal Australian Air Force has ordered 24 Super Hornets. ■

**St. Augustine** *continued from pg 17*

Northrop Grumman's St. Augustine site is the "Home of the Hawkeye," producing the new E-2D Advanced Hawkeye, the latest in airborne early warning and battle management command and control aircraft for the U.S. Navy. Two

E-2D Advanced Hawkeye aircraft are currently in flight test with the U.S. Navy as part of Hawkeye system design and demonstration program. They have successfully completed more than 1,000 hours of flight time. There are three pilot production aircraft currently in production, and the company is now in low rate initial production of the aircraft for the U.S. Navy.

Based on the current Navy program of record, Northrop Grumman expects to build 70 more E-2D aircraft. The company also hopes to sell the Hawkeye to international allies.

In addition to the E-2D Advanced Hawkeye, the site produces the Hawkeye E-2C/Hawkeye 2000 airborne early warning system for the U.S. Navy and international customers. The site's highly skilled aircraft production employees also manufacture aircraft components and modify and upgrade operational aircraft and aircraft systems. ■

**In the Next Issue**

*Women of Color Science, Technology, Engineering and Match (STEM) honor Dr. Patty Chang-Chien with Technical Innovation award*

*Lunar CRater Observation and Sensing Satellite (LCROSS) returns to the moon*

*Cal Poly San Luis Obispo faculty visits Aerospace Systems alumni*

*Space Tracking and Surveillance Systems (STSS) demonstration satellites on track following launch*

*Eyes in the Sky for Boots on the Ground.*

[www.northropgrumman.com/jointstars](http://www.northropgrumman.com/jointstars)

**▼ E-8C JOINT STARS**

The U.S. Air Force E-8C Joint Surveillance Target Attack Radar System aircraft, now with the Beyond-Line-of-Sight communications upgrade, gives the warfighter the edge in mountainous terrain. Joint STARS' wide area surveillance and communication interface gives the warfighter access to information, imagery, chat capability, and other support when and where it is needed. These Eyes in the Sky for Boots on the Ground allow our troops to maintain direct communication with battle managers and all the resources at their disposal to see around corners, over mountains, and into valleys. It's the only system available that provides our troops with the vital "Eyes in the Sky" needed for wide area surveillance and battlefield management.

Northrop Grumman Joint STARS:  
*We're watching...*

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