

F-15 EAGLE

A U.S. Air Force F-15 Eagle takes off from Elmendorf Air Force Base, Alaska, for an alert-response mission during a homeland defense/homeland security exercise.



U.S. AIR FORCE PHOTO BY AIRMAN 1ST CLASS ANTHONY NELSON JR.

Power, worldwide

Global Strike Systems team delivers frontline fighters, weapons, ordnance

By KATHY COOK

In the Gulf of Oman, a U.S. Navy lieutenant leaves the briefing room and heads out to the carrier deck, flight helmet in hand, ready to start the day's sortie. Today, she will climb into her Super Hornet for a reconnaissance flight and cruise at 20,000 feet, watching for potential threats in the area. While others might view her job as thrilling and dangerous, for her it's a routine flight—one she's carried out hundreds of times over land and water.

Thousands of miles away, a Republic of Korea Air Force pilot readies his F-15K fighter plane for a similar mission to help keep the skies above his country safe. While he and the U.S. Navy pilot are separated by geography and language, they

have one thing in common: They get to fly one of the world's most advanced fighter aircraft.

These vignettes illustrate what Boeing's Global Strike Systems organization is about. It designs and manufactures fighters, bombers, weapons and unmanned systems that deliver persistent, precision assault against targets on land, in the air and at sea around the world. The customers of these products and systems might be U.S.-allied defense departments around the globe. But ultimately, GSS products are there to support freedom worldwide.

That global nature means that at any time, GSS products are being used around the world. It also means that GSS products make up a significant portion of the products and services Integrated Defense Systems provides to its customers—which in turn affects Boeing's bottom line and the company's value to stakeholders.

In 2006, GSS revenues represented more than 20 percent of the overall IDS revenues of \$32.4 billion. By the latest figures available, if GSS was a separate company, it would rank 322nd in the Fortune 1000 rankings, ahead of companies such as Monsanto or

EA-18G GROWLER

The first EA-18G Growler takes to the sky with jamming pods. This electronic attack aircraft will enable warfighters to perform various airborne electronic attack missions.



KEVIN ELYNN PHOTO

A powerful portfolio

Here's a glance at the products and systems Global Strike Systems currently provides to U.S. Armed Forces and international customers:

Aircraft and aircraft support

- **F-15E Strike Eagle.** This tactical fighter aircraft can perform air-to-ground and air-to-air missions and fighting at low altitude during day or night and in inclement weather. Boeing has produced more than 1,500 F-15s in the last 30 years. Customers include the U.S. Air Force and Japan, Saudi Arabia, Israel, Korea and Singapore.
- **F/A-18E/F Super Hornet Block II.** The most advanced multirole fighter aircraft available today for the U.S. Navy. The aircraft is able to perform virtually any tactical mission, including air superiority, day/night strike with precision-guided weapons, fighter escort, close air support, suppression of enemy air defense, maritime strike, reconnaissance, forward air control and tanker.
- **F-22 Raptor.** With its combination of stealth, supercruise, agility and integrated avionics, the U.S. Air Force's F-22 fighter represents an exponential leap in warfighting capabilities. The Raptor performs both air-to-air and air-to-ground missions and is designed to project air dominance rapidly and at great distances. Boeing supplies the F-22's wings and aft fuselage, integrates the advanced avionics, and leads the pilot- and maintenance-training programs.
- **T-45 Training System.** The first totally integrated training system developed for and used by the U.S. Navy. It includes the Boeing-built T-45 Goshawk aircraft, advanced flight simulators, computer-assisted instructional programs, a computerized training integration system, and a contractor logistics support package.
- **Joint Helmet-Mounted Cueing System.** A multirole system that enhances pilot situational awareness and provides head-out control of aircraft targeting systems and sensors.

Weapons

- **Harpoon Block II.** The world's most successful anti-ship missile provides accurate long-range attack of land and ship targets.
- **Joint Direct Attack Munition.** A guidance kit that converts existing unguided free-fall bombs into accurately guided "smart" weapons. The U.S. Department of Defense plans to procure about 226,000 JDAM kits.
- **Standoff Land Attack Missile-Expanded Response.** A highly adaptable day/night, all-weather, over-the-horizon precision-strike missile capable of hitting stationary or moving targets on land or at sea. It's recognized by the U.S. Navy as the most accurate weapon in its inventory.
- **Small Diameter Bomb.** A precision-strike weapon system that's loaded in internal bays or on external stations of manned or unmanned platforms. With the SDB, platforms can carry four individually targeted, low-collateral-damage weapons in a space that previously could accommodate only a single weapon.
- **Conventional Air-Launched Cruise Missile.** An affordable, long-range (standoff) missile that's been proven in combat by the U.S. Air Force. It's produced by converting surplus nuclear-armed AGM-86B missiles into the AGM-86C/D missile, which is the basis for CALCMs. This nonnuclear missile is powered by a turbofan jet engine that propels it at subsonic speeds. Once launched, the CALCM deploys its folded wings, tail surfaces and engine inlets to fly complicated, low-altitude routes.
- **Brimstone.** An autonomous air-to-surface guided missile that independently finds, tracks and attacks targets day or night in any weather. The Brimstone—made by Boeing and the British company MBDA—provides quick response and low collateral damage.

BOEING ILLUSTRATION



SMALL DIAMETER BOMB

A computer-aided-design rendering of the Small Diameter Bomb Increment I. The SDB lets platforms carry four individually targeted, low-collateral-damage weapons in a space that could formerly hold only one weapon.

Starbucks. Several GSS programs have been hailed as "best practices" by both industry and customers, and the continued performance of these programs has earned Boeing outstanding award fee payments from the U.S. government in a time when the government is carefully scrutinizing such payments.

In short, GSS provides value across the board: to the warfighter, to the taxpayer and to Boeing stakeholders.

"Global Strike Systems answers an emerging requirement of the U.S. Defense Department, and increasingly of international customers," said Chris Chadwick, GSS vice president and general manager. "These products allow warfighters to efficiently and potently carry out missions to safeguard their nation's people and freedom."

Chadwick takes great pride in the success of GSS products and systems—for the crucial role they play in combat, for the part they play in IDS and Boeing success, and for how they reflect the values and workmanship of his team. That team includes 6,400 employees at nine sites around the United States, including St. Louis, St. Charles, Mo., Patuxent River, Md., and the Puget Sound region of Washington state.

"I really think people are the company's most valuable asset," said Chadwick. "Every employee brings something unique to the table. Ninety-nine times out of 100, employees have the right answers if they're given the help they need to clear barriers, provided freedom to voice their ideas and take risks, and given opportunities to succeed."

Chadwick believes those opportunities need to extend to every area and level of the GSS organization from engineering and program management to the office and factory floor. "We've made it a point to create opportunities for employees with diverse backgrounds to excel in project management, systems engineering and production operations, to name just a few," Chadwick said.

Judging by a host of GSS successes, employees have taken full advantage of the opportunities.

In 2006, GSS delivered 42 F/A-18E/F Super Hornet Block 2 aircraft to the U.S. Navy, 14 F-15K Slam Eagles to Korea, 13 T-45C



An eye on the future

Here's a look at some Global Strike Systems products in development.

- EA-18G Growler. The U.S. Navy's newest electronic attack aircraft will enable warfighters to perform an array of airborne electronic attack missions (including jamming or suppressing enemy radar and communications). It operates from either the deck of an aircraft carrier or from land-based fields.
- X-45N. This autonomous combat air vehicle for the U.S. Navy flies long-endurance, high-risk operational missions and delivers precision weapons on target. The X-45N is highly adaptable to changing battle conditions and provides intelligence, surveillance and reconnaissance gathering.
- Laser JDAM. A laser sensor kit is installed in the field to the front of existing JDAM weapons, improving JDAM's current near-precision accuracy to precision accuracy against fixed and moving targets.
- Small Diameter Bomb II. Variant of SDB that will also provide a robust capability against moving targets in all weather from stand-off ranges.
- Brimstone 2 (Laser Brimstone). Incorporates the highly successful Semi Active Laser seeker onto the existing Brimstone missile system.
- Harpoon Block III. This version of the world's most successful anti-ship missile (Harpoon Block II) features a robust data-link system. This system permits more control after the weapon is released through in-flight target updates and positive terminal control. Also, it has connectivity with future network architecture.

Goshawks, 24 F-22 wing sets, 26 F-22 aft fuselages and more than 31,000 weapons to customers. Additionally, GSS recently rolled out the first EA-18G Growler, the Navy's newest airborne electronic attack aircraft. And the F-22 program delivered its 100th wing set. In addition, several GSS programs performed several key tests and demonstrations to illustrate the capabilities of GSS products.

During the EA-18G rollout ceremony, Chief of Naval Operations Adm. Michael Mullen summed up the customer's feeling about the

MK-84 JDAM

U.S. Air Force Test pilot Lt. Col. Troy Fontaine and Maj. Kevin Stefenson, a weapons system officer, drop five MK-84 Joint Direct Attack Munitions from their F-15 Eagle over the U.S. Navy's China Lake test range near Edwards Air Force Base, Calif.



U.S. AIR FORCE PHOTO



U.S. AIR FORCE PHOTO

F-22 RAPTOR

A U.S. Air Force F-22 Raptor flies over the Sierra Madre mountains in California. Boeing supplies the fighter's wings and aft fuselage, integrates the advanced avionics, and leads the pilot- and maintenance-training programs.

team, referring to them as among the world's best artisans and experts in their craft. "There's no job these people can't do; they rise to every challenge we can throw at them," he said.

SUPPORTING LEAN+

On a smaller scale than major program wins, but equally important to the success of the organization, GSS employees in St. Louis have developed solutions to streamline and improve factory processes. These improvements have created significant time and cost reductions—and help support the Lean+ companywide growth and productivity initiative.

Among these improvements:

- The F/A-18E/F team redesigned an assembly area—a project that took nearly two years to complete—and converted the factory from a static assembly setup into a pulse line. By incorporating Lean strategies, the team reduced cycle time by 55 percent and unit costs by 80 percent. The team's lean efforts also cut the pro-

duction footprint 20 percent by reallocating floor space. This let the team move final assembly operations for both the F-15 and the T-45 into the same building that housed F/A-18E/F production.

- A team of employees, organized as a High Performance Work Organization (HPWO), recently secured its second patent for a process using fluorescent dye to prevent foreign objects from being left in an aircraft during production. (An HPWO is a group of co-workers who are responsible for a common function or product, share common goals and exercise self-determination in continuously improving the quality of their output and the efficiency of their processes.)

- Another team (also an HPWO) designed and built a time-saving tool for workers to access engines during ramp operations without removing the entire engine bay door multiple times.

- One of the latest innovations for GSS involves integrating the work instructions needed for F/A-18E/F flight ramp checkout. A team of HPWO and Support Systems personnel integrated the instructions into a memory card inserted in an existing memory-card slot in the aircraft's cockpit. This enables the ramp personnel to see the instructions on the cockpit displays, replacing the paper instructions they used previously. This lean effort has resulted in enhanced repeatability and assembly performance, and the team is already working on expanding the capabilities of the product.

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Who's on the team

Global Strike Systems' success is the product of its 6,400 teammates at various Boeing locations. Here's a look at a few of these teammates.



Arlene Moore

Sheet metal assembler, riveter, F/A-18

Work philosophy:

Do the best I can. Work toward on-time, first-time quality, and staying under cost. This is something we have to work at together. If someone is out or a little behind, you don't leave them hanging; you move in and help get the job done. We're all reaching for the same mark: to provide our customers with a product we're proud of.



Alex Niere

Business analyst

Small Diameter Bomb and Joint Direct Attack Munition programs

Most memorable work experience:

During my first month at Boeing, we had a few picnics and an annual Fall Sports Challenge. It made me think every week was going to be a picnic!

Best work-related advice:

A long time ago my father, who also works at Boeing, gave me just four words of advice: "Listen to your boss!" It worked then, and it stands true now.



Brian Walls

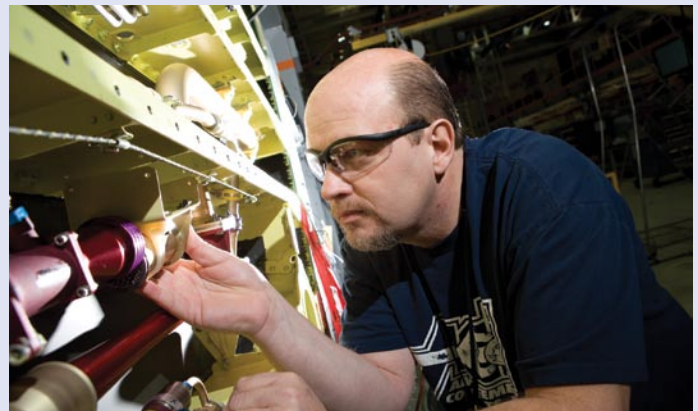
Sheet metal assembler riveter, collateral inspector, F/A-18

My daily philosophy:

Have an open mind, and be patient with people and with the way things work. If you're not patient, you tend to overreact. And that doesn't help anyone.

What everyone should know about my job:

It's not the easiest job in the world. It takes time to perfect your expertise, and you have to work to retain knowledge in certain specifications. When people come by, they may think what we do is easy, but there's a lot to it.



Ron Smith

Mechanic, aircraft production, F/A-18

F/A-18 inner wing skinning

Best work-related advice:

I got a piece of advice from one of the first foremen I worked for, and that was to make yourself wanted or needed. Do that, and you'll always have a job!

Additional profiles on Pages 18 and 19

A U.S. Navy T-45A Goshawk trainer aircraft, assigned to Training Air Wing Two, prepares to land aboard the Nimitz-class aircraft carrier USS Harry S. Truman.

U.S. NAVY PHOTO BY PHOTOGRAPHERS MATE 3RD CLASS RYAN O'CONNOR



T-45 GOSHAWK

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Although the GSS team has a lot on its production plate, the organization's leadership is keenly aware of the need to look beyond today's successes and plan strategically.

"We have to continually adjust and adapt to evolving military requirements and market conditions," Chadwick said. "We have to implement strategies now to ensure that in decades to come Boeing is still delivering frontline fighters, weapons and trainers."

Toward that end, GSS is fully engaged in developing an array of new products such as electronic attack aircraft, autonomous combat

air vehicles, and fighter aircraft with stealth and cruise abilities that will supersede today's most potent fighters (see box on Page 15).

"This team is incredibly energizing," Chadwick said. "Whether it's the stringent focus on execution by program managers, the creativity of engineering, the ingenuity of men and women in the factory, or the practical expertise of office workers, the entire team has made GSS successful. It's their energy and creativity that makes my job enjoyable." ■

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Who's on the team

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Lauribel Lowe

Office administrator

F/A-18 international business development

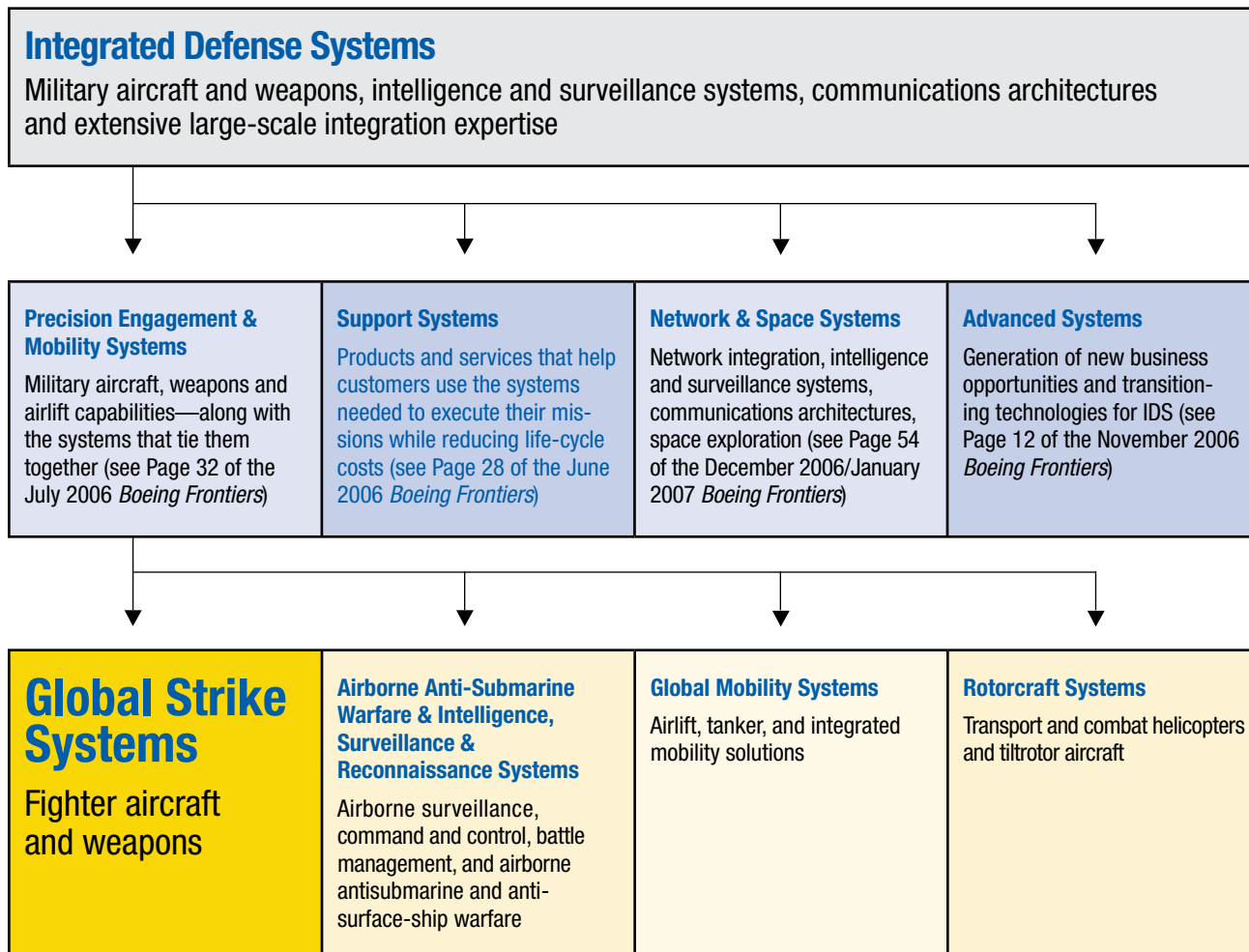
How do you view your job?

As an office administrator, I see myself as a type of an ambassador in the sense that I represent others. I'm usually the first person people come in contact with before they see my boss. Their initial contact with this team is me—either in person, on the phone or through e-mail. So it's important that I be customer-focused and have a positive attitude.



Where GSS fits in IDS

Global Strike Systems is one of four divisions of the Integrated Defense Systems business known as Precision Engagement & Mobility Systems. PE&MS was formed in the January 2006 reorganization of IDS. Here's a quick schematic look at this part of IDS.



Chris Chadwick

Vice president and general manager, Global Strike Systems

Most inspiring leader:

[Former General Electric chairman and CEO] Jack Welch said, “See reality as it is, not as you want it to be.” Those words have always resonated with me. It drives everything I do, whether it’s a leadership challenge, a people issue, a strategic opportunity or an execution risk.

Favorite novel:

“Einstein’s Dreams” by Alan Lightman. It offers unique perspectives on a situation and stretches your imagination.