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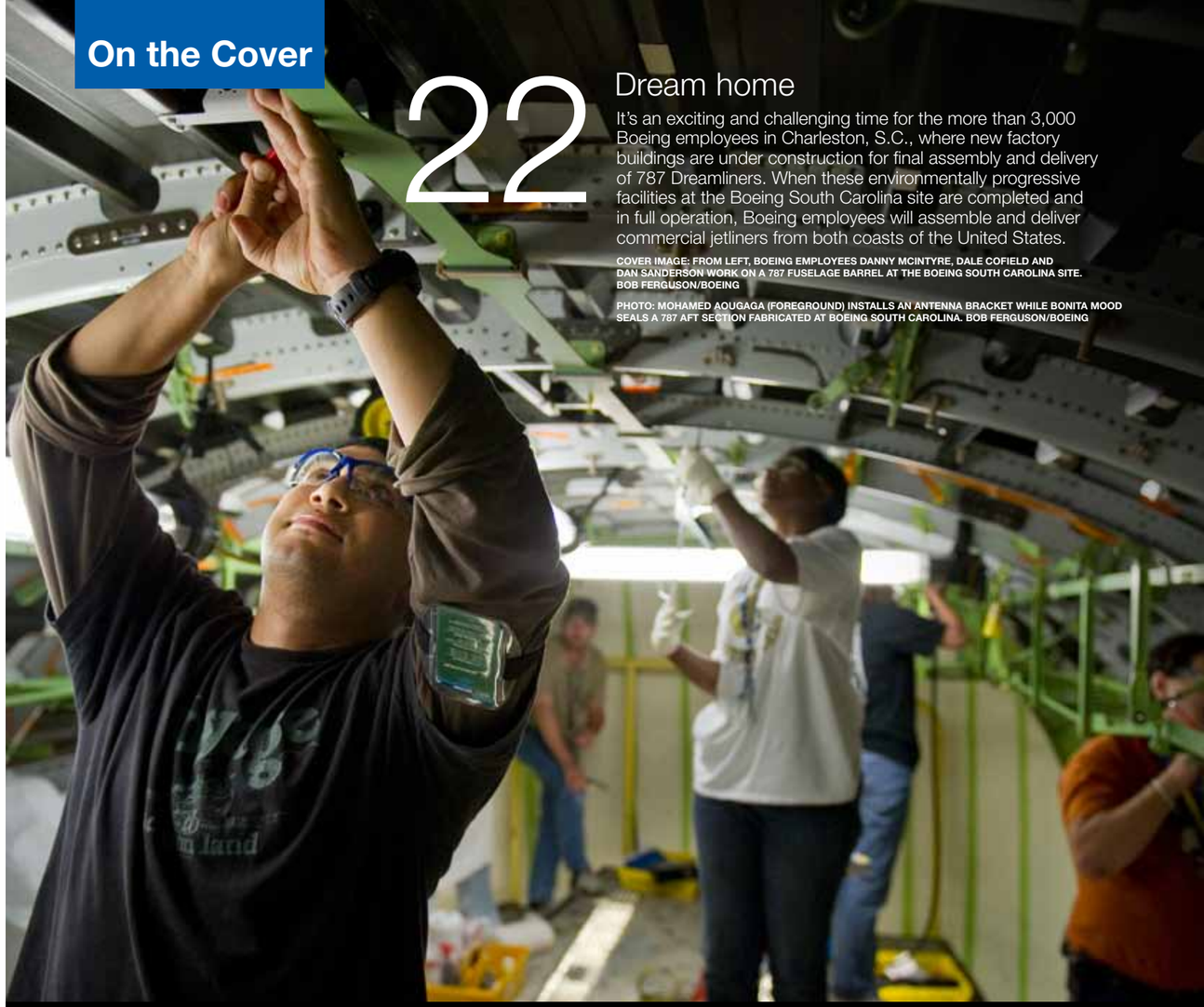
Working on a dream

Employees at the Boeing South Carolina site streamline processes and prepare for 787 final assembly and delivery



On the Cover

COVER IMAGE: FROM LEFT, BOEING EMPLOYEES DANNY MCINTYRE, DALE COFIELD AND DAN SANDERSON WORK ON A 787 FUSELAGE BARREL AT THE BOEING SOUTH CAROLINA SITE. BOB FERGUSON/BOEING

PHOTO: MOHAMED AOUGAGA (FOREGROUND) INSTALLS AN ANTENNA BRACKET WHILE BONITA MOOD SEALS A 787 AFT SECTION FABRICATED AT BOEING SOUTH CAROLINA. BOB FERGUSON/BOEING

Ad watch

The stories behind the ads in this issue of *Frontiers*.

Inside cover:

This *Flight International* ad was developed to recognize the winner of the Boeing-sponsored Engineering Student of the Year Award. Part of the Flightglobal Achievement Awards, it recognizes an outstanding student working on aeronautical or space technology.

Page 44:

"Real Advantage" is one in a series of NewGen Tanker ads developed as part of a campaign featuring the concept of a competitive scorecard. The ad highlights the NewGen Tanker's advantages over the Airbus A330 tanker. Four additional scorecard ads each address key focus areas of the U.S. Air Force KC-X competition. The ad campaign is running in *The Washington Post*, congressional publications, and key military and trade publications.

Back cover:

This ad, titled "Research & Technology," showcases the creative and unifying activity of building human pyramids. It represents the possibilities that synergy and dedication can bring to a partnership advancing technological innovation in aerospace. The ad was shot in Mumbai, located on the west coast of India.

Frontiers

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Historical Perspective

Boeing's Plant 2 in South Seattle is empty and rundown today, but it was once the busy birthplace for a number of famous Boeing planes, including the B-17, B-52, B-47 and 737 commercial jet. The old factory building is scheduled to be demolished later this year as part of a Boeing environmental project to restore habitat for fish and wildlife along the nearby Duwamish Waterway.

PHOTO: BOEING ARCHIVES

Here comes the sun

Light from the sun will soon be supplying power to a California college campus—thanks to Boeing Energy Solutions. The solar panels being installed at California State University in Northridge feature technology developed at Boeing's Spectrolab that cuts the cost of solar-generated energy by concentrating more sunlight on fewer cells.

PHOTO: PAUL PINNER/BOEING

Lighting the way

Boeing has manufacturing partnerships with a number of community-based organizations such as Lighthouse for the Blind. It's a win-win situation for Boeing and these small businesses: Individuals with disabilities feel a sense of purpose and empowerment holding jobs and performing the work, and Boeing gets top-quality components, whether they're parts for commercial jets or for upgraded KC-135 military tankers.

PHOTO: MARIAN LOCKHART/BOEING

38 Burn notice

Boeing operates one of the largest private fire departments in the world, and the company's more than 400 firefighters routinely undergo "live" fire training at various sites to make them better prepared for any kind of emergency. As a result, Boeing is an industry leader in aircraft rescue and firefighting. PHOTO: THOMAS TATUM/BOEING

Safe passage

Boeing subsidiary Tapestry Solutions plans the routes and helps the U.S. Army keep track of contract truckers delivering everything from food to clothing to medical supplies in Afghanistan. The satellite-based system, which also provides data to help convoys operate more safely in hazardous areas, was first used in Iraq.

PHOTO: LEWIS BYRD/TAPESTRY SOLUTIONS

INSIDE

Snapshot

IN THE COMPANY OF EAGLES
One of four KC-767J tankers that Boeing has delivered to the Japan Air Self Defense Force refuels a Boeing F-15J fighter in the skies near Fairbanks, Alaska, during a recent Red Flag–Alaska military exercise. Japan sent two of its tankers, an E-767 Airborne Warning and Control System, or AWACS, aircraft and several F-15J Eagles to participate. The two tankers completed 15 aerial refueling missions in their first major joint forces deployment. PHOTO: JAPAN AIR SELF DEFENSE FORCE

Quotables

"Had Airbus successfully entered the LCA [large commercial airplane] industry without subsidies, it would be a much different, and we believe a much weaker, LCA manufacturer."

– From the World Trade Organization ruling, issued June 30, that Airbus received illegal government subsidies to develop its commercial jetliners.

"The best airplane is merely the expression of human thinking and dreaming."

– Joe Sutter, at the Farnborough International Airshow, where Flight International *magazine honored Sutter with its inaugural Flightglobal Lifetime Achievement Award. In the 1960s, Sutter led the Boeing engineering team that designed and developed the 747.*

'How can we be better?'

The company's ultimate success depends on the most important thing about Boeing—its people

Jim Albaugh

President and chief executive officer
Boeing Commercial Airplanes
PHOTO: GREG THON/BOEING

Leadership Message

This is an amazing time to be at Boeing. The aerospace industry is rebounding, demand for new airplanes is increasing, and game-changing products like the 787 and 747-8 are in flight test, nearing delivery to customers.

As the world's premier aerospace-based company, we do uniquely great things that benefit individuals, armed services and businesses around the globe.

While we have every reason to be proud of what we accomplish together, it's important to remember that success is not an entitlement. We have to earn the loyalty and trust of our customers each and every day. They have a right to expect the safest and most efficient aircraft, unbeatable life-cycle costs, industry-leading reliability, and lasting value. We owe them no less.

Our commercial aviation business is intensely competitive. We are moving from a duopoly to a market with multiple competitors, not only in Europe but in China, Brazil, Canada and elsewhere. To compete, we must continue finding ways to work smarter and more efficiently. We must always ask ourselves, "How can we be better?"

We have a long tradition of employee involvement and engagement at Boeing. I see it at every Boeing site I visit, from Everett to Renton, Boeing Field to Auburn, Frederickson to South Carolina, which is profiled on Page 22 of this issue. Boeing employees are enthusiastic, motivated to excel and proud to be part of a company that continues to revolutionize flight.

We are improving our processes and production methods, focusing on growth opportunities and the disciplined execution of our business plan. But ultimately, our success depends on the single, most important thing about Boeing—our people. Boeing people are the heart and soul of our business.

Every day we draw upon our diverse backgrounds, talent and perspectives as we work toward common goals. We benefit from a broad range of ideas, experience, knowledge and creativity as we meet and overcome our challenges.

I've always believed that Boeing employees understand best how our work gets done, and know the most about how to improve it. Our job as leaders is to engage and empower them to do just that.

To that end, we must do everything we can to shape a company culture that is open, respectful and inclusive—where asking for help is seen as a strength and not a weakness, and there is no fear of reprisals. We must create an environment where everyone feels comfortable raising issues and objections and discussing problems.

The world continues to change at an astounding pace and we must change with it or risk being left behind, in the wake of others more nimble and adaptive. We must be leaders of change.

The 787 Dreamliner is aptly named; with that airplane, we have challenged the world to dream again. And we have challenged ourselves to explore and develop better ways of working, making the most of the best aerospace employees in the world. By continuing to draw upon our collective excellence, I am confident that we will succeed. ■

A healthy understanding

New health care law will bring changes in medical care for Boeing employees

By Jill Gulbrandsen

This article is the next in a series to help Boeing employees and their families understand how changes in health care may affect them in 2011 and beyond.

With the recent passage by Congress of the health care law, sweeping changes will be taking place in medical care that companies such as Boeing offer employees and their families.

The Patient Protection and Affordable Care Act became U.S. law in March and is intended to broaden access to care to more than 32 million uninsured Americans. Before the law's passage, Boeing participated in reform discussions with members of Congress and the administration through the company's Government Relations team and employer coalitions.

"Boeing is working to fully understand the intricacies of this legislation and preparing to implement the changes," said Rick Stephens, senior vice president, Human Resources and Administration. "The law did a good job providing access. Going forward, we will continue to press for cost and quality improvements in the health care system."

Highlights of the most significant changes that take effect over the next eight years include:

Effective Jan. 1, 2011

- Generally speaking, dependent children will be allowed to remain on their parents' plans until they turn 26. Specific details of this provision will be described in greater detail to employees during annual health benefit enrollment.
- Health plans can no longer impose lifetime benefit limits or certain annual limits.
- Employers must report the annual value of each employee's health insurance coverage on the employee's W-2 form for informational purposes. This information will first appear on W-2 forms issued in 2012 for 2011.

Effective Jan. 1, 2013

- Medicare prescription drug subsidies paid to employers will receive less favorable tax treatment.
- Individuals earning more than $200,000 and couples earning more than $250,000 per year will pay higher Medicare taxes—an additional 0.9 percent on wages—and an additional 3.8 percent on unearned income.

Effective Jan. 1, 2014

- All individuals will be required to have health coverage or pay a penalty.
- Some individuals may qualify for government subsidies to purchase coverage.
- Insurers will be prohibited from imposing pre-existing condition limitations.

Effective 2018

- A 40 percent excise tax will be imposed on high-cost or so-called "Cadillac" plans, affecting employee plans valued in excess of $10,200 per year for an individual or $27,500 per year for a family.

"In many cases, the provisions simply expand the already excellent coverage Boeing currently provides," Stephens said.

For example, Boeing health plans now cover eligible dependent children up to age 25. Other changes, though, such as less favorable tax treatment for Medicare prescription drug subsidies, and adding an excise tax to high-cost plans, will add to Boeing's health care expenses and result in employees paying more for their health care, Stephens said.

Additional information about changes to health care benefits will be published in upcoming issues of Boeing News Now on the Boeing intranet and in *Frontiers*, as well as in health benefit enrollment materials that will be mailed to employees in November. ■

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Controlling health care costs

Boeing and its employees need to work in partnership to maintain access to an excellent level of health care benefits while reducing costs—in order to remain competitive in the marketplace, said Rick Stephens, senior vice president, Human Resources and Administration.

To that end, Boeing has been working to aggressively manage its growing health care costs through initiatives such as supplier management, dependent verification, and leveraging Boeing's size and Well Being programs. From 2006 to 2009, the company's actions saved more than $590 million in health care costs.

Employees can:

- Understand that, though Boeing will continue to bear most of the financial burden for providing health care benefits, they will pay a greater percentage of their health care costs.
- Participate in Well Being programs and make healthy lifestyle decisions.
- Study health care benefit options and choose the medical plan that makes the best sense for them and their families.
- Address chronic health risks such as high blood pressure, obesity, diabetes and tobacco use to help do their part in reducing the $1 billion spent on health conditions over which employees have some control.

PHOTO: BOB FERGUSON/BOEING

Sentimental *journey*

Habitat restoration slated for old Plant 2 site

By Mike Lombardi

It was once one of the most vital buildings in the United States, a birthplace for America's airpower from World War II to the Cold War.

The plant was so important to the war effort in the 1940s that the 35-acre (14-hectare) roof, under which some 30,000 people built more than 300 bombers a month, was camouflaged to look from above like a residential area of South Seattle, with life-size homes, sidewalks, streets and fake trees—just in case enemy planes paid a visit. They never did.

Known as "Plant 2," the building complex at Boeing Field served as the final assembly site not only for bombers but also for Boeing propliners and prototype airplanes.

The B-17 Flying Fortress was born there, as was the B-52 Stratofortress. So was the 737 commercial jetliner.

However, the end is coming to Plant 2. The timeworn and empty buildings will be demolished this year in conjunction with a Boeing environmental initiative to clean up the site and create habitat restoration projects that will benefit fish and wildlife along the nearby Duwamish Waterway. (See story, Page 13.)

The Plant 2 story began in 1936 after Boeing received its first production contract for the B-17. At the time, the company did not have adequate facilities to build the big bombers and began a search for a suitable location to construct a new factory.

In an effort to keep Boeing in Seattle, a local truck farmer, Giuseppe Desimone, offered the company several acres of his land near Boeing Field for the price of one dollar.

The support from Desimone and the local community was acknowledged by then–Boeing Chairman Claire Egtvedt, who said: "The Boeing Company wishes to express its sincere appreciation to the many public-spirited citizens and various community organizations who have cooperated with the Chamber of Commerce in making it possible for us to acquire this site in Seattle where, just 20 years ago, our company had its start as a one-room shop and grown to its present status."

On May 15, 1936, the Austin Co. began construction of the $250,000 plant and by November production of Y1B-17s moved to the site. The finished building was not much larger than a U.S. football field. But it was big enough to hold nine B-17s.

During 1937 the factory started assembly of the Model 307 Stratoliners and in July Boeing received an order for 26 B-17s. To

PHOTO: The first production B-52 rolls out of Plant 2 in March 1954. BOEING ARCHIVES

make room for these giant plane programs the factory was doubled in size. A second expansion, started in May 1940, added more than 600,000 square feet (56,000 square meters) to support Boeing's production of 380 Douglas DB-7s for France and Great Britain.

When Pearl Harbor was attacked in 1941, the new "Fortress Factory" had finished its final expansion to 1,776,000 square feet (165,000 square meters), with part of the facility built on pilings above the Duwamish Waterway.

To hide the factory from possible aerial attack, the U.S. Army Corps of Engineers built a massive camouflage covering that made Plant 2 and Boeing Field appear as a residential area. Underneath the camouflage Boeing employees, including women working then-nontraditional factory jobs and known as Rosie the Riveters, worked in two shifts and on multiple moving assembly lines, building an average of 12 B-17s each day. In all, Boeing workers built 6,981 B-17s at Plant 2.

As the war in Europe was coming to an end, B-17 production was halted and Plant 2 became a branch plant that fed finished B-29 Superfortress assemblies to the Boeing plant in nearby Renton.

After the war, Boeing re-entered the commercial airplane market with the Model 377 Stratocruiser, a commercial version of the C-97. Between 1947 and 1950, Boeing built 56 of the giant double-decked propliners at Plant 2. Along with the 377, two other new airplanes rolled out of the factory—the B-50, a modified version the B-29, and a revolutionary new plane that was the basis for all large subsonic jets to follow. It was called the XB-47 Stratojet.

On Nov. 29, 1951, under cover of darkness and canvas sheets, the secret XB-52 was rolled out of Plant 2—and into the Cold War. The B-52 was the last production line at Plant 2 and Boeing built 278 of the bombers there before the line was permanently moved to Wichita, Kan., in 1958.

The last airplane program at Plant 2 was the 737. In 1967, the first three 737s were built at Plant 2 before final assembly was moved to the Thompson site, also on Boeing Field.

In the more than 40 years since, Plant 2 has been used for non-airplane manufacturing programs, research work and storage. The huge factory is now mostly empty. Where there was once the deafening sound of rivet guns, there is only silence—and the haunting sense that if one were to visit the old factory in the late hours of the night, it would not be surprising to hear the faraway sound of Doris Day singing "Sentimental Journey" and see the ghostly images of Boeing workers going about their tasks of building the giant bombers that defended freedom worldwide. ■

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PHOTOS: (Clockwise, from above) The No. 1 737 is assembled at Plant 2 in July 1966; B-17 final assembly at Plant 2; Boeing employee Elinore Offenbacker poses on the camouflaged roof of Plant 2 for a publicity photo in September 1944; taken in June 1945, this aerial view shows the effectiveness of the camouflage that covered Plant 2. BOEING ARCHIVES

Planes to salmon

For Plant 2, where so many famous Boeing planes were built, a new chapter is beginning, one that will focus on salmon and aquatic wildlife.

The aging buildings, which have not been used for airplane production in more than 40 years, will be demolished as Boeing moves forward with a habitat restoration project on the banks of the adjacent Duwamish Waterway. The project will create nearly 5 acres (2 hectares) of intertidal wetlands and riparian habitat, restore more than half a mile (nearly a kilometer) of shoreline, and establish a resting area for migratory fish.

"This is the largest continuous habitat improvement planned for the Duwamish," said Steve Shestag, director of Enterprise Remediation. "By restoring the shoreline and creating intertidal wetlands, we will be establishing an important ecological resource to improve Puget Sound fish runs."

The habitat project is part of a federal court settlement between Boeing and several parties, including the National Oceanic and Atmospheric Administration, the U.S. Interior Department, the Washington State Department of Ecology, and the Suquamish and Muckleshoot Indian tribes. Building demolition will begin later this year, and cleanup and restoration is scheduled to start in the fall of 2012 once final court and agency approvals and permits are obtained.

More than 100,000 cubic yards (83,600 cubic meters) of contaminated sediment will be excavated from the waterway. Boeing will replace the sediment with clean sand and will rebuild the storm drain system at Plant 2 to meet current federal and state standards.

More is planned for the Duwamish Waterway. Boeing, the city of Seattle, the Port of Seattle, King County and other parties are working with the U.S. Environmental Protection Agency, federal and state regulatory agencies, and the community on future environmental cleanup and restoration activities that are anticipated for the Duwamish Superfund site.

– Blythe Jameson

THE DUWAMISH WATERWAY was created in the early 1900s when the U.S. Army Corps of Engineers straightened, dredged and transformed a 9.3-mile (15-kilometer) stretch of the Duwamish River in South Seattle into a 5.3-mile-long (8.5-kilometer-long) navigational channel with deep-water port facilities. In 1909, what was then the world's largest man-made island was built at the mouth of the waterway for industrial use. Boeing began operations along the Duwamish in 1936. In 2001, the waterway was listed by the EPA as a Superfund site, the federal government's program to clean up the nation's hazardous waste sites.

The Puget Sound Business Council estimates that businesses along the lower Duwamish Waterway provide some 80,000 jobs, and that 84 percent of the industrial lands within the city of Seattle are located along the waterway.

Mod squad

Installing a new interior on a customer's airplane involves much more than changing seats and carpets

Photo by Ed Turner

As a project management engineer in Modification Services, part of Boeing Commercial Aviation Services, located in Mukilteo, Wash., Jon Coomber supports Boeing customers and the airplanes they operate. In this *Frontiers* series that profiles employees talking about their job and the way their work fits into Boeing's goals, Coomber explains the interiors modification business and the importance of getting those customer airplanes back into service as quickly as possible.

In the interior mod business, we put new interiors into in-service airplanes. We can do what's called an interior refresh—installing new carpets, sidewalls and seats. We also do "monument" changes, which are the galleys, lavatories, closets and partitions in an airplane, called monuments because they usually are large, fixed assemblies that can't be relocated easily. And we do a lot of in-flight entertainment changes, as the technology in those systems is advancing rapidly and the systems are constantly being upgraded.

Customers usually come to us with an idea of what they want to do and we help make it happen. A lot of the time, they're modifying the interior to match other airplanes in their fleet.

It starts with writing a work statement based on the customer's requirements, followed by an estimate that leads to pricing and then the contract. The engineering and service bulletin work is done in Long Beach, Calif., or the Puget Sound area of Washington state. The task of pulling together and packaging all the parts—known as kitting—and then shipping the kits takes place in Kent, Wash. The actual installation work is often done at the customer's facility, or they may hire a Maintenance Repair and Overhaul provider for that.

A high point comes after the service bulletin is certified by the appropriate government regulatory authority. This is our confirmation that all of the work was performed properly. When the "installs" are done and they're fully certified on the first of what may be several airplanes, that's a great feeling of accomplishment.

As the point person for all the Boeing activity at a mod site, sometimes I'm in the crossfire with the customer and with the Boeing people on site and back home. I've found myself in this position in Japan, England, Dubai and Brazil.

It's a lot of pressure and we work some very long hours. Customers may have two shifts going and we have to be there to support them. And, if there are any problems, we have to do real-time engineering.

If they need parts urgently, we get "airplane on ground," or AOG, parts—which are reserved for our customers' most urgent requirements. The Spares team, the team that manages all the spare parts for Commercial Aviation Services, sends the parts wherever in the world they're needed—quickly.

I love my job because of the variety. I work with customers and all kinds of groups within Boeing: Engineering, Sales, Supplier Management, Contracts, Quality, Operations, Certification. And then there are the other services groups such as Publications that also are engaged, because once the work is done we update the manuals.

What we do is also about profit and loss. We are in business to make money for The Boeing Company—and we do. At the same time, we're supporting our customers throughout the life cycle of the airplane, and getting their upgraded airplanes back into the air as quickly as possible. ■

Crown class

Royal Jordanian was the first airline in the Middle East to order the 787 Dreamliner **By Richard J. Wood**

PHOTO: Jordan's late King Hussein, who established Royal Jordanian in 1963, was a pilot who maintained a warm relationship with Boeing. The airline operated 707, 720, 727 and 747 jetliners. It's now a customer for the 787. ROYAL JORDANIAN

PHOTO ILLUSTRATION: BRANDON LUONG/BOEING; AIRPLANE GRAPHIC: BOEING; PETRA, JORDAN, HISTORICAL SITE PHOTO: SHUTTERSTOCK.COM

Jordan has long recognized the importance of aviation as a gateway to the rest of the world.

Although the kingdom's national airline, Royal Jordanian, serves a region dominated by air carrier giants, during the leadership of King Abdullah II it has recently undergone a remarkable transformation since it was established nearly 50 years ago.

A forward-looking business strategy has transformed the formerly government-owned carrier into a modern, profitable, investor-owned company. Along the way, Royal Jordanian has scored a succession of firsts for a Middle East airline:

- First government-owned airline to be listed on a stock exchange
- First airline to become a member of a major airline alliance
- First to order the Boeing 787 Dreamliner

The late King Hussein established the airline by royal decree in 1963, stating, "I want our national carrier to be our ambassador of good will around the world and to be a bridge across which we exchange culture, civilization, trade, technology, friendship and better understanding with the rest of the world."

Today, Royal Jordanian has a fleet of 31 airplanes and fills an important niche in the Middle East air transport market, according to Hussein Dabbas, president and chief executive of Royal Jordanian.

"Our primary market focus is to connect the Levant countries to the world," Dabbas said. "One of Royal Jordanian's strengths is providing frequent and convenient service to markets that the region's large airlines can't serve economically. We concentrate on quality for the passengers, both in the air and on the ground."

In 2007, Royal Jordanian joined Oneworld, a major international airline alliance. The move increases the airline's access to long-distance markets and will help it expand intercontinental connections that currently reach four continents.

The 787 Dreamliner is an important component of Royal Jordanian's strategy. The airline boosted its 787 orders with an announcement for three Dreamliners at last month's Farnborough International Airshow. Combined with orders and leases announced in 2007, the airline will receive 11 Dreamliners. "The unique passenger appeal of the 787 will give us a competitive advantage in the markets we serve," Dabbas said.

The airline plans to upgrade and expand its fleet and open one new regional and one new long-haul destination every year through 2018.

Purchasing the 787s marked a turning point for Royal Jordanian, which has traditionally leased its airplanes. Owning the jetliners will allow Royal Jordanian to realize the full asset value of the 787, said Boeing Sales Director Ed Schachle. ■

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Little missed ***sunshine***

New Boeing technology brings down the cost of solar-generated electricity—and helps power a university

By Derrell Carter and photos by Paul Pinner

PHOTOS: (Left) A high-concentration photovoltaic solar panel is moved into position on the campus of California State University, Northridge. Thirty-three panels are being installed to provide power for the university and to help the community meet state renewable energy standards. **(Middle)** Jeff Frericks, director, Boeing Energy, and Ian Simington (foreground), CEO of NTR Solar, evaluate the first solar array installed at the 100-kilowatt power facility. The panels use XR700 high-concentration photovoltaic solar technology supplied by Boeing subsidiary Spectrolab. **(Right)** Sam Alvarez, environmental test engineer, performs a test on a solar array to ensure it tracks the sun: "As we install them, we want to make sure they're putting out the amount of power they were designed to."

In California's San Fernando Valley, a new solar installation using Boeing technology is taking shape that will help a local university meet a state mandate to use more energy derived from renewable sources.

It's also an example of how Boeing's Energy Solutions unit, part of Defense, Space & Security, is developing renewable energy technology that can be integrated into national power grids.

Energy Solutions is using its expertise in solar technology to develop and install 33 high-concentration photovoltaic solar panels on the campus of California State University, Northridge, for a 100-kilowatt power facility that will provide renewable power for the university and the local community.

"This collaboration with Boeing is crucial because it allows us to provide peak [consumption period] energy, green energy, to help the university and the state meet renewable portfolio standards," said Tom Brown, executive director of facilities for California State University, Northridge.

The high-concentration arrays, designed and built by Boeing Energy Solutions and Boeing Research & Technology, use XR700 high-efficiency photovoltaic solar cell technology supplied by Boeing subsidiary Spectrolab in Sylmar, Calif. The technology brings down the cost of solar-generated electricity by concentrating more sunlight on fewer cells.

Each 18-foot-by-8-foot (5.5-meter-by-2.5-meter) solar panel can produce approximately 3.5 kilowatts of electricity, or enough to power an average-sized home.

Each of the 33 solar arrays features 24 panels of lenses and mirrors that concentrate sunlight onto 1-square-centimeter (0.16-square-inch) photovoltaic cells.

To maximize sun exposure, the arrays are mounted on mechanical trackers that follow the sun throughout the day.

"It's pretty promising," said Sam Alvarez, Boeing environmental test engineer. "Everyone talks about developing alternative energy sources, but we're proving we have the capability and expertise to do it."

The power facility is scheduled to begin operating in the third quarter. ■

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Lighthouse shows the way

More than 2 million Boeing parts each year come from community manufacturing partnerships

By Rebecca Crichton and Robin McBride
Photos by Marian Lockhart

Five days a week, Kevin Jones and his guide dog, Arley, start their day at 4 a.m., taking the hourlong ferry ride across Puget Sound from the Kitsap Peninsula to Seattle then switching to a bus bound for the Lighthouse for the Blind facility just south of the city.

His 24-year association with Boeing is a matter of pride for Jones, who works as a machine setup person. "I started working on parts for Boeing on Labor Day in 1986. I like my work," said Jones, one of more than 70 blind and deaf-blind machinists at Lighthouse who work on Boeing parts. "They give me a job, then they leave me to do it. They trust me."

Lighthouse is one of 10 organizations that participate in the Community Manufacturing Partnership, which provides Boeing with services for millions of airplane parts annually—and provides people who have various physical and cognitive disabilities with employment that increases their independence and productivity.

Community Manufacturing Partnership began as Boeing's Sheltered Workshop Program in 1952. Then there were just two suppliers performing about 10,000 hours of work per year, providing products for Boeing and meaningful work for members of the community. Today, Commercial Airplanes has 30 contracts with these suppliers in the Northwest U.S. region—through the Community Manufacturing Partnership and others—for an estimated 689,000 work hours annually.

Known for high-quality work as well as responsive and flexible support, the program's suppliers annually cut more than 2.4 million feet (731,500 meters) of wire bundles and produce more than 2.6 million parts and assemblies for the company.

"They are competitive. Their standards are high enough to compete with anybody."

– Steve Dewater of Supplier Management, Boeing Commercial Airplanes

The work of these partners measures up to the best done by any Boeing supplier, according to Steve Dewater of Commercial Airplanes Supplier Management, who has helped manage the program for 10 years. "Their quality, delivery and performance are phenomenal," Dewater said. "They are competitive. Their standards are high enough to compete with anybody."

Ross Bogue, Boeing Fabrication vice president and general manager, believes the partnership demonstrates "the value we bring to our program partners as well as for the communities in which Boeing has business units."

"We gain tremendous value from these small businesses and we provide people who have significant challenges with meaning, purpose and empowerment in their lives," he said.

The increased use of manufacturing technology is a boon for Lighthouse mechanics, according to Kirk Adams, the agency's president and CEO of the Lighthouse for the Blind. In the past, most manual machines needed a sighted person to set up many of the functions, but now calipers and other machines incorporate computers, enabling blind or deaf-blind machinists to run them.

"Technology is our friend," Adams said. "As the machining world becomes more technology-driven, there are more opportunities for blind and deaf-blind people."

Boeing's relationship with the Lighthouse for the Blind dates from the 1950s. From the beginning, both organizations recognized the mutual benefits of their alliance. Adams knows how important Boeing has been to the blind and deaf-blind community.

"Seven out of 10 blind adults are not working, and many of those who have work feel underemployed," Adams said. "The work we do for Boeing has allowed us to provide high-quality, long-term career opportunities for blind people."

After more than five decades of partnership, thousands of people have been helped by the relationship, enabling them to buy homes and raise families and achieve goals.

Bogue noted that the benefits to Boeing go beyond the parts manufactured by people with disabilities.

"These people have huge challenges they overcome every day, and the joy they bring to the work they do is immeasurable," he said. "They don't take anything for granted. We can all learn from that." ■

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PHOTOS: (Left) Lighthouse for the Blind machinist Kevin Jones and his guide dog, Arley, navigate the ferry terminal on Seattle's waterfront as they go to and from work each day. **(Above)** Jones demonstrates how he uses voice-synthesized calipers to measure a part prior to milling.

Suppliers contribute throughout the enterprise

Lighthouse for the Blind in the Puget Sound area is part of a nationwide network of similar agencies in an organization called AbilityOne. Boeing contracts with more than a dozen AbilityOne agencies on various programs at different sites. For example, the San Antonio Lighthouse for the Blind produces insulation blankets for a Boeing Defense, Space & Security program that upgrades U.S. Air Force KC-135s. In April, the San Antonio Lighthouse for the Blind was named a Boeing Supplier of the Year. And in 2009, the U.S. Defense Department honored Boeing with an award for the company's many partnerships with AbilityOne suppliers.

AbilityOne suppliers include:

ATWORK, Issaquah, Wash.

BRIDGEWAYS, Everett, Wash.

CAMBRIA COUNTY ASSOCIATION FOR THE BLIND, Johnstown, Pa.

CENTER INDUSTRIES CORP., Wichita, Kan.

CHINOOK ENTERPRISES INC., Mt. Vernon, Wash.

DIVERSIFIED INC., Mukilteo, Wash.

FIRLAND SHELTERED WORKSHOP FOUNDATION, Shoreline, Wash.

GOODWILL INDUSTRIES EASTER SEAL SOCIETY, Wichita, Kan.

KITSAP APPLIED TECHNOLOGIES, Bremerton, Wash.

LICKING/KNOX GOODWILL INDUSTRIES INC., Newark, Ohio

LIGHTHOUSE FOR THE BLIND INC., Seattle, Wash.

METAL MOTION, Seattle, Wash.

ORION INDUSTRIES, Federal Way, Wash.

PIONEER INDUSTRIES, Seattle, Wash.

PROVAIL, Seattle, Wash.

SAN ANTONIO LIGHTHOUSE FOR THE BLIND, San Antonio

SHERWOOD COMMUNITY SERVICES, Lake Stevens, Wash.

SKILLS INC., Seattle, Wash.

VETERANS INDEPENDENT ENTERPRISES OF WASHINGTON, Fife, Wash.

WORK FORCE DEVELOPMENT CENTER, Mukilteo, Wash.

WORK OPPORTUNITIES INC., Lynnwood, Wash.

PHOTO: Members of the Rotorcraft Engineering Enterprise Support team include, from left, Bukola Olagbaju, David Yi and Chris Massa.

FRED TROILO/BOEING; GRAPHICS: DOUG YAMADA/BOEING

Moveable feats

Rotorcraft engineering team shares its expertise across the company By Jeff Barnett

It began as a simple idea: Create a team of Boeing engineers who could be sent anywhere in the company as needed.

Thus was born the Rotorcraft Engineering Enterprise Support team. It was formed in 2004 when Mike Warburton, a mechanical structures engineer with Rotorcraft Systems, had a strategic vision: Place a handful of Philadelphia engineers on site in Everett, Wash., to support the 787 program.

The goal was to leverage what the engineers learned working on Boeing commercial aircraft and apply their knowledge and experience at Rotorcraft Systems and across the company.

From that handful of talent, the team has grown to more than 160 engineers in Philadelphia and 80 engineers in Mesa, Ariz. And as the team has grown, so has its list of projects and accomplishments. Team members have tackled some of the company's most critical engineering and technical issues on programs ranging from Boeing's NewGen Tanker to the 747-8 and 787 jetliners.

"We can develop methods for one project and apply them to other projects," said Chris Mazza, a structural analyst with the team. "We're using work done on a new 787 part to help design structures on other aircraft."

This transfer of knowledge is a key benefit of the program. Work performed on commercial aircraft, for example, can be applied to military aircraft. Technology and methods used to design structures on the 787 can be used to design parts on the CH-47, V-22 and AH-64.

Take the 787 vertical fin supports. These structures experience complex forces during flight.

"We design, analyze and test these parts to understand how they'll react under stress," said Bukola Olagbaju, a structural analyst with the team. She and her teammates use advance modeling technology to simulate the kinds of stress these parts are likely to undergo and verify the part will function as planned for the life of the aircraft.

Paul Handel, a senior manager with Rotorcraft Engineering Enterprise Support, said the team is setting benchmarks and championing the "One Boeing" approach.

"A mobile team of engineers can apply specific know-how and skills to problems across all of Boeing, from commercial airplanes to rotorcraft, piggybacking experience from each project to tackle the most difficult technical challenges," Handel said.

He noted the CATIA (Computer Aided Three-dimensional Interactive Application) software that is widely used by engineers on design and development programs such as the 787.

"Putting the CATIA software we used on commercial aircraft to use on rotorcraft and other projects is just a small part of the knowledge we can apply enterprise-wide," Handel said.

Mike Moran, a stress analyst with the team who is currently supporting the 787 program, said the "learning opportunity is just immense.

"There are few other places I could get this kind of exposure to different projects and aircraft," Moran said.

During a recent visit to the Philadelphia Rotorcraft Systems site, Dennis Muilenburg, president and CEO of Boeing Defense, Space & Security, met with team members.

"Providing this kind of engineering support across the enterprise offers a seamless application of expertise and technical know-how," Muilenburg told them. "It's a great way to make the most of our technical capabilities." ■

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Building *the future*

Pride and excitement run high at Boeing South Carolina as the journey begins toward 787 final assembly and delivery

By Eric Fetters-Walp and photos by Bob Ferguson

In less than a year, Boeing employees are scheduled to begin assembling 787 Dreamliners in a massive new building rising from the landscape of North Charleston, S.C.

As that date approaches, more than 3,000 employees at the 240-acre (100-hectare) site are meeting three major challenges: integrating two separate 787 component factories into Boeing's policies and processes; improving production rates and efficiencies in those plants; and setting up the new final assembly and delivery facilities.

"We've just started on the journey, and we have a long way to go," said Tim Coyle, vice president and general manager of the Boeing South Carolina site. "But I look back on how far the site's come in just a few years, and I'm amazed. It all stems from the fantastic can-do attitude of our work force."

The existing Charleston plants opened just four years ago under Vought Aircraft Industries and Global Aeronautica, a joint venture between Vought and Italy's Alenia Aeronautica. The two facilities, which assemble major sections of the mid- and aft fuselage, were purchased by Boeing during the past two years, with the final piece of the operation acquired in December 2009.

Since the ownership switch, Boeing managers have focused on bringing the site's business systems, manufacturing processes and a thousand other details into line with the rest of the company. Boeing also has improved the existing site infrastructure, adding more parking and food service choices, among other things.

"It's been somewhat overwhelming because of the fast pace we're on," said Rick Muttart, Shared Services Group director in South Carolina. "I think there's been some shock

"Everything about this place is brand-new, so we're trying to mold it."

– Tim Coyle, vice president and general manager of the South Carolina site

PHOTO: As workers construct the towering final assembly building, the Dreamlifter (far right) is ready to pick up or deliver its next major 787 component worldwide. When completed, the building will have a footprint of 610,000 square feet (56,700 square meters).

to the system, but everyone's been very welcoming, really gracious. The employees have been interested and engaged."

Geoff Schuler, Site Integration leader, said introducing Employee Involvement teams and related practices has been a big part of the transition. "We have a set of initiatives to create a culture for employees that emphasizes active engagement and makes them aware that leaders are here to listen and break down barriers," he said.

That already is visible among the employees, who express pride and excitement about being added to Boeing. Since Employee Involvement teams began forming late last year, employees say it's made a difference in how they perform and how they feel about their jobs and managers.

"It helps us define and improve our processes," said Janice Carter, a materials management analyst in aft body Cell 215, where members of the Employee Involvement team The Finishers often wear their matching orange shirts.

"We are the ones on the factory floor and doing the job," said Amey Burden, team leader for the Palmetto Flyers. "That's why I love this; we can tell managers what we need."

Employees have formed more than 100 Employee Involvement teams between the two buildings next to Charleston International Airport. Coyle said Boeing has brought Employee Involvement and Lean+ experts from numerous sites to South Carolina to help accelerate progress. Support people have been moved closer to the work cells, and daily "board walks" allow managers and mechanics to talk about progress and any problems. Other ideas and best practices commonly used at Boeing production sites are being phased in as well.

"Everything about this place is brand-new, so we're trying to mold it," Coyle said.

Ray Conner, vice president and general manager, Supply Chain Management & Operations, Commercial Airplanes, said the site provides Boeing with a "convergence point" for bringing together employees that represent organizations from across the company. "It gives us a unique opportunity

"The employees have been interested and engaged."

– Rick Muttart, Shared Services Group director in South Carolina

PHOTO: David Reed and Reynalda Sanchez prepare tooling used on the 787 aft section prior to curing in the autoclave.

“This is the first company I’ve ever worked for where you can talk to the managers without any type of open-door policy.”

– Letha Fogle, Employee Involvement team leader for the Crib Dwellers

PHOTO: Gregory Anderson (foreground) and Barry Riebe inspect work performed on a 787 aft section.

to share, collect, and implement best practices and processes in new and innovative ways,” Conner said. “At its most basic level, the discipline and integration that’s going on here defines what functional excellence is all about.”

Coyle, meanwhile, tries to demonstrate the type of leadership he expects from his managers. And that hasn’t gone unnoticed by employees on the factory floor.

“This is the first company I’ve worked for where you can talk to the managers without any type of open-door policy,” said Letha Fogle, Employee Involvement team leader for the Crib Dwellers. “If I have a problem, I can talk with them. I get excited to come to work every day.”

That kind of enthusiasm among Boeing South Carolina employees is needed going forward as the site continues to improve production and efficiency rates for 787 fuselages and gets ready for final assembly and delivery work. This summer, the building’s steel frame, including giant roof trusses, is going up amid a bevy of cranes and fast-paced construction activity. It’s the first final assembly facility built by Boeing since the Everett plant was expanded for the 777 production line in the early 1990s. A new customer delivery center, welcome center and employee cafeteria are planned as well.

Additionally, Boeing Fabrication plans to build an interiors facility in North Charleston, about 10 miles (16 kilometers) from the final assembly and delivery site. It will supply final assembly with stow bins, closets, partitions and other interior components for the 787. That operation could employ up to 150 people.

William Smith, a mid-body lead at the Boeing South Carolina site, said he’s pleased with the number of jobs Boeing is creating in the state.

“Not only are we employees excited to have Boeing here, but Charleston itself is, too,” said Smith, a native of the Lowcountry region of South Carolina. “We haven’t seen someone come in and put in an investment like this since the U.S. Navy shipyard.”

Josh Perrine has worked at the site for more than three years and is now a production manager for mid-body Cell 20, which installs doors on the

“Not only are we excited to have Boeing here, but Charleston itself is, too.”

– William Smith, mid-body lead, South Carolina plant

PHOTO: From left, Christopher Jackson, Scott Wilson and Patrick Johnson discuss work performed during the mid-body build process.

787 fuselage. “It’s the best thing I’ve ever done, and I’m proud to work here,” Perrine said.

Mary Thornley, president of Trident Technical College in North Charleston, said South Carolinians are keenly aware of the opportunity that comes with hosting only the third final assembly site in the world for twin-aisle commercial airplanes. Her institution has worked closely with Boeing to create a work force training program and facility that can keep supplying qualified, interested employees as the site grows.

“I think when the first Dreamliner takes off from the South Carolina site, it will be a defining moment for us,” Thornley said.

Marco Cavazzoni, vice president and general manager for Final Assembly and Delivery, South Carolina, said that’s the reaction he and other Boeing leaders frequently hear. That kind of support from the community, along with the employees, will help the Boeing South Carolina site reach its goal of creating a final assembly and delivery process that works seamlessly with the 787 production line in Everett, he said. Many talented employees from other Boeing sites, especially the Puget Sound region, are helping in that effort at Charleston, he said.

“The welcoming we’ve had, along with the people of the state, has been incredible,” Cavazzoni said. “We’re fortunate to be on-plan, and now we need to deliver. We need to show that the confidence the company gave us was well-placed, and we look forward to doing that.” ■

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Hire **learning**

Training program helps ensure new Boeing employees are well-prepared for their jobs

As Boeing establishes a presence in South Carolina and its 787 final assembly and delivery facility takes shape, it is striving to create a skilled aerospace work force there.

Ever since Boeing suppliers opened the North Charleston, S.C., facilities in 2006 to produce major components of the 787 Dreamliner's fuselage, Trident Technical College in North Charleston and readySC have teamed to help teach aerospace work force skills. About 1,800 people have finished training and started working at the Charleston facilities in the past four years, said Jeff Stone, director of Training and Employee Development for Boeing South Carolina.

"Without a doubt, Boeing is the largest project we've ever taken on," said Jim Maxon, project director for readySC, one of the oldest state-sponsored work force training programs in the country. "But Boeing is making a significant investment here."

Over the years, the training and the facilities used for teaching have evolved. The most visible sign: the opening in April of an 18,000-square-foot (1,700-square-meter) state-of-the-art training center, which includes a fuselage barrel, drilling and benchwork stations, a sealant lab, and areas for practicing electrical, plumbing and hydraulics work.

"We want to give new employees the look, feel, smell and taste of the factory—to break them into the factory environment while they're still career building," Stone said of the new facility, located on the Trident campus. To that end, the large training room has a tool crib area that operates like those in the Boeing factory, and the training schedule runs on similar factory shift schedules.

John Clem, a Training Integration specialist for Learning, Training & Development, said lessons learned from the 787 Employment Resource Center in Everett, Wash., were applied in setting up the facility. "This is going to have a huge impact in the factory," he said.

Those who learn in the new facility first have to go through a selective hiring process; the training comes after they officially become Boeing employees. Stone said the basic "new hire" training takes about 10 weeks, but it can last up to 24 weeks, depending on the job a trainee is learning.

Ann DeRose, one of more than 30 instructors in the training program, said most of the trainees have entry-level manufacturing experience, but many aren't sure what to expect in the Boeing facilities. She agreed that the combination of more experienced instructors and the new training center will produce better-prepared employees.

"We've fine-tuned it. We have more instructors who've worked in the plant, so we can give more real-world experience," said DeRose, who worked at the South Carolina facility and has more than 22 years of experience in aircraft maintenance.

The ultimate goal of the work force training, Stone said, is to make sure the Boeing South Carolina site produces 787s that are indistinguishable from those now assembled in Everett, once the new final assembly plant opens in 2011. That facility also will incorporate a feature that underlines Boeing's commitment to work force development in South Carolina: a training area to give new employees even more practice opportunities in the final assembly setting.

– Eric Fetters-Walp

PHOTO: "The Finishers" Employee Involvement team prepares a 787 lower aft section for delivery.

Leading *change*

Creating a better workplace starts with leaders

For Boeing Employee Involvement consultant Ramon Sanchez, learning how to create a "people first" culture at the Boeing South Carolina site began when he attended a leadership development program with site managers last year.

"It's [now] a totally different place. All of us have the power to make coming to work something each of us can enjoy," Sanchez said.

During the program in Charleston, Sanchez heard experienced Boeing leaders talk about the importance of creating an open workplace environment that is both energizing and performance-oriented, while listening to employees and developing teammates.

"These programs are especially important for managers who are new to Boeing," Sanchez said. "Participating in these programs helps managers understand their role in the development of their people."

Senior executives from South Carolina taught the program to model the best approach for developing teammates—using the Boeing Leaders Teaching Leaders methodology. This helps leaders better engage with team members and ensure they have the support they need to be successful.

"Launching these programs is part of a larger effort to equip our leaders with the right skills that will help ensure the success of all teammates," said B.V. McGrue, Human Resources director for Boeing South Carolina. "These programs are helping to facilitate the transition of this site into Boeing."

The leadership development programs offered in Charleston are part of a larger portfolio developed by Human Resources for the Boeing Leadership Center in St. Louis and for other company locations around the world.

– Drew Favreau

Employees can learn more about the Boeing Leadership Center at http://hr.web.boeing.com/index.aspx?com=40&id=47 on the Boeing intranet.

PHOTO: Ramon Sanchez (left), a Charleston-based Employee Involvement consultant, discusses career development opportunities at Boeing South Carolina with Daryl Henry, an Employee Involvement facilitator.

Field of *dreams*

The 787 final assembly building that is now under construction embraces Boeing's environmental policies

It will make a worthy home for the innovative 787 Dreamliners that will roll out its huge doors—and for the many hundreds of Boeing employees who will work there.

The Boeing South Carolina Final Assembly building is being designed with the environment in mind.

"The new assembly building and supporting infrastructure will include programs that embrace environmental responsibility, such as optimizing the use of energy and water, and a robust program for solid waste and recycling," said Rick Muttart, Shared Services Group site director.

Site leaders are also taking environmentally responsible steps during the building phase, such as recycling demolished concrete and asphalt for reuse during construction, and transporting excavated soil unsuitable for engineered fill to a local gravel pit reclamation project, Muttart said.

The facility will be built to a LEED Silver rating or higher.

The Leadership in Energy and Environmental Design, or LEED, program, developed by the U.S. Green Building Council, is the U.S. benchmark for sustainable building design, construction and operation. In 2009, Boeing established a LEED Silver rating for all new construction and major renovations of Boeing-owned buildings in the United States.

The LEED certification process verifies that a building is designed and built using strategies that will save energy and water, reduce greenhouse gas emissions, improve indoor environmental quality, and increase the recycling and reuse of materials.

Designing and building to a LEED rating supports Boeing's five-year target for 25 percent improvements in energy and water consumption and greenhouse gas emission intensity on a revenue-adjusted basis, and a similar target for hazardous waste generation, at its major manufacturing facilities.

Mike Magee of Global Performance, a construction management company, is teaming with Boeing and several other contractors and designers to provide the improved environmental performance.

"These initiatives at this new facility are a testament to Boeing's environmental policy," Magee said. "We've been teaming with them every step of the way to ensure the best possible product that meets these standards."

Building to LEED standards is important to Boeing and the surrounding community, said Boeing Conservation leader Jeff Nunn. "Embedding environmentally responsible building practices into facility planning, design and project implementation processes is a major focus area within Boeing's enterprise Conservation Initiative to use resources wisely, reduce the company's environmental footprint and increase productivity," Nunn said.

Boeing's Bay Area Boulevard building in Houston and the 18-26 building in Kent, Wash., achieved LEED Gold certification in 2009.

– Kathleen Spicer

From the **ground up**

The Boeing South Carolina Final Assembly and Delivery facility features an environmentally progressive building design. Highlights include:

- A stormwater management system to control water runoff during the construction phase and, once the building is operational, to eliminate the erosion and sedimentation of local waterways
- Water-saving strategies, including dual-flush toilets and flow-restrictive faucets, are expected to reduce water consumption by more than 40 percent; additionally, native plants have been selected for landscaping that do not require sprinklers or irrigation
- An Energy Management System to allow maintenance and service personnel to remotely monitor the heating and air-conditioning systems while providing a comfortable environment for employees
- Healthy interior design and construction, plus a smoke-free environment, to enhance indoor air quality, including the use of paints, adhesives, sealants and coatings with low or no volatile organic compounds
- A robust waste reduction and recycling program, including working with material and equipment suppliers to minimize shipping waste and increase use of reusable shipping containers
- Working with the community to offer mass transit service to the site to help reduce traffic and associated exhaust emissions, while also reducing the need for parking
- Boeing also is evaluating the installation of rooftop solar cells that will convert sunlight directly into electricity to help supplement the building's energy needs

PHOTO: The final 787 assembly building now rising from the Boeing South Carolina site will be a model of environmental responsibility. Mark Schwarztrauber (left), construction manager, and John Rhodes, system engineering manager, overlook part of the stormwater management system that will control water runoff into local waterways.

PHOTOS: (Left) As part of the U.S. military's Host Nation Trucking program, Afghan trucks loaded with gravel wait to be escorted off a base in the city of Bagram to classified areas throughout Afghanistan. The trucks have been outfitted with transponders so the military can track their whereabouts via Tapestry's Global Distribution Management System. LEWIS BYRD/TAPESTRY SOLUTIONS **(Top)** Matthew Hayward, Tapestry Solutions field support engineer, checks transponder cable connections on the top of a truck in Bagram, Afghanistan. ROB HANIGAN/TAPESTRY SOLUTIONS **(Middle)** Members of the U.S. Army get trained on how to use Tapestry's Global Distribution Management System U.S. ARMY **(Above)** Rob Hanigan, Tapestry Solutions field support engineer, prepares a transceiver for rooftop-mounting aboard a truck in Bagram, Afghanistan. MATTHEW HAYWARD/TAPESTRY SOLUTIONS

Driving force

A Boeing subsidiary tracks trucks in Afghanistan

By Robert Sterling

In a small staging area, Afghan truck drivers huddle in the shade to escape the scorching sun of Bagram, a city in Afghanistan northwest of Kabul. Wherever they step, they kick up clouds of extremely fine sand the American soldiers refer to as moon dust. It disperses like cake flour.

The trucks are worn and many bear bullet holes and other battle scars. As contractors in the U.S. military's Host Nation Trucking program, the drivers are undeterred. They look forward to a chance to earn a paycheck.

Meanwhile, some 8,000 miles (13,000 kilometers) away in California, a Boeing subsidiary, Tapestry Solutions, will take care of the trucking details, from planning the route to keeping track of the vehicles by satellite.

The U.S. military uses Tapestry Solutions' computerized Global Distribution Management System (GDMS) to manage the independent truckers it hires to move food, clothing, medical supplies and other cargo throughout Afghanistan. The system tracks the vehicles as they pass hazards and checkpoints, and keeps second-by-second tabs on the vehicles to help ensure their cargo gets to its destination.

"The GDMS network is up and running around the clock and works a lot like a GPS system in your car," said Justin Davis, a program manager for the system at Tapestry. "It provides U.S. commanders in Afghanistan and Iraq unparalleled situational awareness."

Transponders on the vehicles send signals to commercial satellites, which are relayed to a ground station and then to Tapestry's Network Operations Center in San Diego. From there, the information is sent back to the military customer to provide a near real-time view of truck movements throughout the region.

Boeing acquired Tapestry Solutions in November 2008. In April, it was integrated into the Defense & Government Services division of Boeing's Global Services and Support, part of Defense, Space & Security.

The truck tracking system was first used in Iraq in 2003 when U.S. commanders were having problems distinguishing between civilian and enemy truck movements. "This led to incidents of friendly fire with deadly consequences," Davis said. As a result, the U.S. military placed transponders on military and defense-contracted vehicles so their movements could be monitored using the Global Distribution Management System.

The U.S. Army also used the system to mark the times and locations of improvised explosive devices and attacks on coalition vehicles. When an attack occurred, those affected sounded an alarm and the system recorded the details. This allowed the military to map and establish patterns that helped increase safety and security. "Initially, it was normal to hear alarms sounding 30 times a day, pinpointing in-progress attacks on missions in support of U.S. forces," Davis said.

The Host Nation Trucking effort gained momentum in 2009 when the U.S. military contracted with local carriers in Afghanistan. Because coalition resources were limited, the program freed resources for other uses while providing support to a growing trucking industry in Afghanistan.

Lewis Byrd, a field service representative with Tapestry Solutions, provides support for the Global Distribution Management System on the ground in Afghanistan. "The customer has been very satisfied, and it's making a difference," he said. "It's also created a business for the local population that's helping contribute to the country's infrastructure."

Thanks to the system, the military customer knows what's being sent where—and when it arrives, said Mark Young, a Tapestry finance executive. "We even had an Afghan trucking company ask us for assistance in an instance where the military had no record of a delivery," Young said. "We were able to go back, look at transponder data down to the minute and verify the contractor's claim so they could be paid." ■

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Line of fire

Boeing firefighters stay prepared to fight blazes they hope will never happen

By Elizabeth Davis

The blazingly hot scenes play out regularly, day and night, at several locations across Boeing.

With bright-green firetrucks standing by, hundreds of gallons of jet fuel engulf a helicopter- or fuselage-like structure. Firefighters have only seconds to extinguish the inferno, which can burn at nearly 1,830 Fahrenheit (1,000 degrees Celsius).

It's all part of the training to be a firefighter for The Boeing Company, which operates one of the world's largest private fire departments.

"We train for things we hope we don't have to do," said Rob Mathis, acting deputy chief of training for Boeing firefighting operations. "We train so if we have to, we can."

The training takes place at sites near Seattle, Philadelphia, Wichita, Kan., St. Louis, Mesa, Ariz., and in several locations in Southern California. Boeing firefighters, wearing pounds of gear and protective clothing, practice and prepare for something everyone hopes will never occur.

Why burn an Apache helicopter or an airplane fuselage over and over again?

"If you can prevent a fire from happening, then, obviously, that's best," said Mesa fire operations specialist Crystal Nicholson. "But more important, being prepared is crucial. One way to be prepared for a fire is by staging one and then training to actually put it out."

Some 400 Boeing firefighters at 21 stations hone their skills and keep their certifications in order by participating in Web-based training and by attending prevention exercises, hot drills and live fires. On average, Boeing firefighters are involved in up to a dozen training and prevention activities a month, in addition to participating in all required Boeing training.

That training has been standardized across the company. It means firefighters are ready to support a program or business unit and can travel to a remote location on quick notice.

Capt. Tom Tatum, a training officer and 32-year veteran of the Boeing fire department in Mesa, said the importance of training cannot be overemphasized. "A lot of what we prevent isn't measurable and you never know what you've prevented. However, prevention programs and systems inspections can be measured."

Conducting regular inspections is another prevention measure. Fire Inspector Jesse Scott, operating out of the Renton, Wash., office, has worked in fire prevention at Boeing for 26 years. "I inspect things people don't see—how things are stored, power and wiring systems, sprinklers, and other potential building hazards," he said. "Inspectors monitor systems that help people stay safe at work and get out safely should the need ever arise."

The Boeing Fire Protection and Emergency Preparedness

"One way to be prepared for a fire is by staging one and then training to actually put it out."

– Crystal Nicholson, Mesa, Ariz., fire operations specialist

PHOTO: Firefighters in Mesa, Ariz., battle heat and smoke to put out flames engulfing an Apache helicopter mock-up during a nighttime live fire-training exercise.
THOMAS TATUM/BOEING

team is an industry leader in Aircraft Rescue and Firefighting, as well as fire protection engineering, according to Mathis.

"As a leader, we meet federal standards, aerospace regulations and customer demands," Mathis said.

Boeing has been a driving force for establishing best practices and strengthening industry standards, Mathis added. It continues to raise the bar on fire safety and prevention for aircraft manufacturers and customers, he said.

Many of the Boeing firefighters have had experience in municipal fire departments.

Boeing St. Louis Fire Chief Mike Coleman joined the company in 2005 after a 28-year career with the St. Louis fire department, including 12 years spent as the assistant chief at the St. Louis airport, Lambert Field.

Recognizing the importance of joint training, Coleman draws on his municipal experience and shares his Boeing knowledge with city firefighters. "We partner with St. Louis firefighters in our mutual aid agreement and the live fire training we do together once a year," he explained.

The Boeing St. Louis fire department is also responsible for training Lambert Field firefighters on how to extricate pilots from Boeing F-15s and F-18s. "Twice a year, over three days, we train approximately 80 city firefighters on how to get a pilot out of a burning jet fighter," Coleman said.

Rich Stine, Boeing's fire marshal, said 83 percent of a Boeing firefighter's job is prevention-related. Most of the rest is dealing with hazmat (hazardous materials) and mitigation situations, and responding to emergency medical calls. Stine noted that the Boeing fire department also responds to calls for light search and rescue, motor vehicle accidents, and mutual aid requests from local jurisdictions.

Firefighters who come to Boeing must also be certified emergency medical technicians, or EMTs.

"Many of our calls are medical emergencies," said Tatum, the Mesa training officer. "We have one helicopter fully stocked with advanced life support equipment we use for chase rescue when we test Apache helicopters. We used it recently to transport someone who was nearly electrocuted."

The training, and intimate knowledge of each Boeing facility, pays off. The average response time for Boeing firefighters is less than 4.5 minutes compared with the industry average of six to nine minutes.

"This job takes a special person," Stine said. "When most people run away from a fire, we run toward it." ■

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PHOTO: Long Beach firefighters (from left) Kelvin Rising, Mike Csallo and Ron Trujillo demonstrate hose lays on the C-17 field where they route fire suppression water via a pumper truck and through the hose at approximately 200 gallons per minute (760 liters per minute). MICHAEL GAIL/BOEING

"We train so if we have to, we can."

– Rob Mathis, acting deputy chief of training for Boeing firefighting operations

By the numbers:

- **Number of Boeing firefighters:** 400-plus
- **Total number of Boeing Fire Service locations:** 21 (including 11 airfields)
- **Area covered:** nearly 86 million square feet (8 million square meters) protected by Boeing firefighters
- **States with Boeing Fire Protection locations:** 7 (Alabama, Arizona, California, Kansas, Missouri, Pennsylvania and Washington)
- **Emergency Operation Centers:** 56
- **Vehicles:** 70, including 1,500-gallons-per-minute (5,680-liters-per-minute) pumpers, hazmat response trucks, aid cars, ambulances, and Aircraft Rescue and Firefighting vehicles

Taking charge

For this employee, losing weight and getting healthier started by taking advantage of Boeing Well Being programs

By Susan Birkholtz and photo by Elizabeth Morrell

James Kiely finally decided enough was enough. It was time to slim down and get healthier.

His weight had steadily ballooned during his adult years, and in January he topped the scales at 298 pounds (135 kilograms). He was 48 years old and the weight gain was taking a toll on his health and energy.

"I realized that I needed to start taking better care of myself because I was robbing myself of time down the road that I could spend with my wife," said Kiely, a 23-year Boeing veteran who works in data management for the Space Shuttle program in Houston.

To get started, Kiely used Boeing's online health assessment as an opportunity to evaluate his overall health and figure out what he should do to lead a healthier lifestyle. He decided to take advantage of one-on-one health coaching—it's available as part of Boeing's portfolio of Well Being programs, tools and resources—to learn more about how to eat better and incorporate more physical activity into his daily routine.

Consulting with his lifestyle coach on telephone conference calls, Kiely worked on figuring out the types of physical activity that would work for him. The feedback from his coach was important. In April 2009, Kiely had torn his hamstring while playing in a softball tournament. The injury, in addition to his weight, contributed to bursitis in his knee, chronic back pain and plantar fasciitis in his foot. Being overweight also contributed to his high blood pressure and high cholesterol that he has been controlling with medication for the past decade.

His coach helped him understand the connection between diet and exercise and the importance of fueling his body with more fruits and vegetables and lowering his carbohydrate and fat intake.

"I learned that I didn't have to completely eliminate things that I enjoy from my diet, but that I need to watch my portion sizes and not overindulge," Kiely said.

Kiely joined his on-site fitness center and began fitting in a midday workout. He found that a lunchtime workout refreshes him and breaks up his day. His health coach also helped him understand that he needs to take small steps and be careful not to push himself too hard.

With his increased energy level, Kiely now is working out five times a week—with the elliptical machine being his preferred choice. He supplements his gym workouts with landscaping and walking his dog.

Since the beginning of the year, Kiely has lost 47 pounds (21 kilograms) and slimmed down six pant sizes. His doctor anticipates taking Kiely off his blood pressure and cholesterol medication. He no longer has knee or back pain.

Kiely served as a team captain on the recently completed Boeing on the Move physical activity challenge. And he shares his success tips with many people who approach him.

Meanwhile, his wife caught his workout bug and is now regularly exercising.

"The most beautiful side effect of all of this," said Kiely, who is halfway to achieving his weight-loss goal, "is how motivating it is to others." ■

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Coach's corner

Employees interested in taking charge of their well-being should consider participating in Boeing's on-site health screening, taking this year's online Health Assessment and signing up for health coaching. On-site health screenings will continue through the summer. Visit www.boeing.com/screenings for schedule information.

The Health Assessment will be available at www.BoeingWellness.com beginning Sept. 1 through Nov. 30, 2010.

For more information about health coaching, employees can call Boeing TotalAccess at 866-473-2016. When prompted, say, "Wellness" to be connected to an OptumHealth nurse who can help with enrollment. Hearing-impaired callers with a telephone typewriter can access TotalAccess TTY/TDD services at 800-755-6363.

REAL FACTS. REAL ADVANTAGE.

	Boeing NewGen Tanker	EADS/Airbus A330 Tanker
Proven Experience	2,000+ Tankers Delivered 1,800+ With Refueling Booms	6 Tankers Delivered 0 With Refueling Booms
U.S. Designed and Built	Yes	No
Total Cost of Ownership	Billions Less	Billions More
More Booms in Air from Any Base	Yes	No

When you look at the facts, it's easy to see which tanker delivers the most capability to America's warfighters and the most value to America's taxpayers. The Boeing NewGen Tanker. Right tanker, right choice.

BOEING

UnitedStatesTanker.com

WING LEADERS

The 787 Dreamliner makes a dramatic exit from the Farnborough International Airshow, near London, July 20. As it departed for Seattle to continue flight testing, the 787 was accompanied over the airfield by two piston-engined Supermarine Spitfires, the famous single-seat World War II U.K. fighter. The 787 was making its first appearance in Europe as part of the air show. PHOTO: ED TURNER/BOEING


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