



The **3,000**-mile assembly line

Desert environment presents unique challenges for Boeing employees working on secure-border program
by Jenna McMullin

Even before the sun creeps over the mountains in Arizona's Sonoran Desert, a small team of Boeing employees make their daily commute to work in four-wheel-drive vehicles along a bumpy one-lane dirt road. The view on either side is miles and miles of arid sands punctuated by Saguaro cactuses. Temperatures soar above 100 degrees Fahrenheit (38 degrees Celsius) most days and the air is dry. Thunderstorms are welcomed for the few hours of shade they yield on scorching hot afternoons.

This rugged desert environment is an assembly line for Boeing's *SBI*net program, a component of the Secure Border Initiative created under U.S. Customs and Border Protection to provide an integrated system of personnel, infrastructure, technology and rapid response to secure the northern and southern land borders of the United States.

Since being awarded the contract in 2006 to design and deploy an advanced system of cameras, sensors and radars atop towers to monitor border activity, and feed information back to a Border Patrol command center, the Boeing team has moved from development to deployment—a process not without challenges

and delays. The Department of Homeland Security recently announced that the *SBI*net program will undergo a department-wide reassessment that will include an evaluation of the right balance of *SBI*net technology, physical fence and Border Patrol agents required to provide control along the southern border.

Today, permanent towers have been built along a section of the U.S. border with Mexico in Arizona; plans are under way for the second deployment in the same region. For Boeing employees, working in the rugged southern border region “brings challenges not typical of a normal workday,” said Craig Williams, *SBI*net production and operations manager.

The Tucson deployment covers about 225 square miles (583 square kilometers). From the *SBI*net field office in Tucson, Ariz., the nearest tower is about a 90-minute drive south. Cell phone coverage

PHOTO: JR Smith, *SBI*net deployment project manager, and Dave Reimer, production operations project manager, review a checklist near an *SBI*net tower at dusk. Towers vary from 40 to 120 feet (12 to 37 meters) in height. MIKE GOETTINGS/BOEING

is spotty and the nearest restaurant is 45 minutes away. Some tower sites are located a stone's throw from a state highway, while others are perched atop ridges accessible only by a one-lane path.

"Extremely hot weather—not to mention monsoons, snakes, tarantulas and the occasional mountain lion sighting—demand extra vigilance and attention to safety, coordination and communication," Williams said.

In May 2009, Boeing SBl^{net} teams descended upon 13 tower sites in the Border Patrol's Tucson Sector to form the technological framework of the SBl^{net} Block 1 operational deployment. This included upgrading the command and control facility at sector headquarters in Tucson with new workstations and technologies for receiving information fed from the desert network.

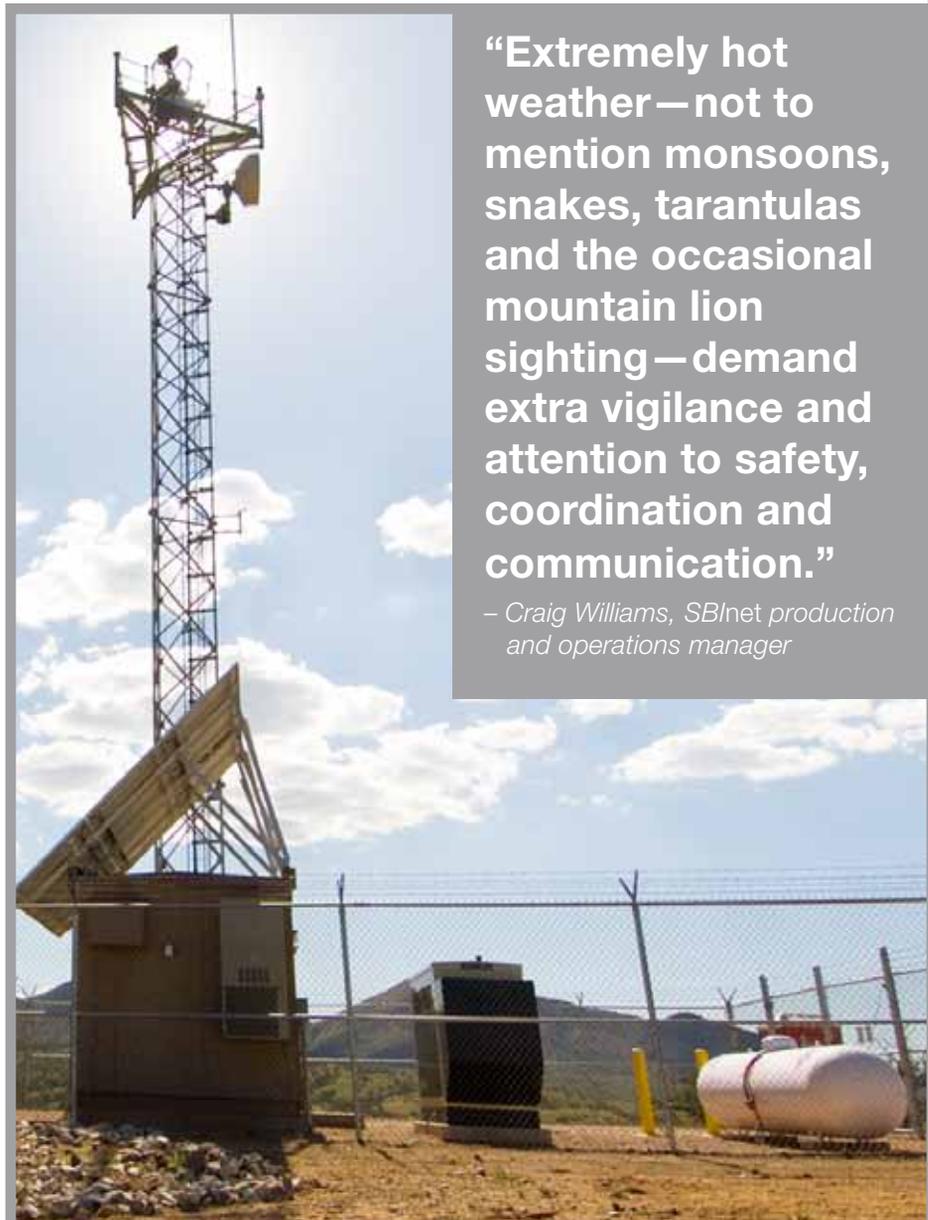
Work included placement by cranes of tower foundation "wafers," piecing tower sections together, and hoisting microwave dishes and radar equipment to the tops of the 80-foot-high (24-meter-high) towers. Teams from across Boeing conducted integration and testing, working with the project's Tucson field office to network components, troubleshoot software, align the system and meet requirements spelled out by Customs and Border Protection.

"This is not your typical factory," said Scot Magill, Tucson deployment production manager, who spent 29 years on the Apache helicopter program before joining SBl^{net}.

"Apache is built in a factory with all needed support and resources adjacent to the assembly line," Magill noted. "SBl^{net} program stakeholders stretch from El Segundo, Calif., to Washington, D.C. It's what some call a 3,000-mile [4,830-kilometer] assembly line. In order to communicate and resolve day-to-day issues, you have to take all the required resources with you or have them available via cell phone, Blackberry or satellite phone."

Most SBl^{net} employees in Tucson are on temporary assignment, meaning they are away from family and home. Each day, dinner—whether it's burgers, pizza, steak or Greek food—becomes all important. "After a long day in the field, this is our chance to relax, enjoy friendships, maybe talk a little football," said Matt Arnold, Tucson deployment operations manager. "It's a great opportunity to connect informally with co-workers, suppliers and our customer." ■

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— Craig Williams, SBl^{net} production and operations manager

More than 2,100 miles

(3,380 kilometers) from the Sonoran Desert, where temperatures head in the opposite direction, another group of Boeing employees is deploying border surveillance capabilities along the U.S.-Canada border. The Northern Border project covers 37 miles (60 kilometers) of the St. Clair River in Michigan and 15 miles (24 kilometers) of the Upper Niagara River in New York. Although the locations are not as remote as the Sonoran Desert, construction teams have seen their share of challenges.

"Before the towers could be erected, an analysis of the soil had to be performed due to proximity to the riverbed. That provided us with the data needed to construct the right kind of foundation to support the 80-foot (24-meter) towers as well as associated video camera and communications equipment," said Scott E. Bell, deployment field coordinator.

Weatherwise it's no picnic for Boeing workers, either. During the winter, temperatures can dip into the single digits Fahrenheit [-13 to -17 Celsius], "not to mention the wind," Bell said.

PHOTO: Boeing SBl^{net} includes an advanced system of cameras, sensors and radar atop towers such as this one in Arizona to monitor border activity. MIKE GOETTINGS/BOEING

Taking safety to new heights

The platform that houses the SBl^{net} camera and sensor equipment is triangular in shape, and looking down through the platform floor grids you can see the ground 80 or more feet (24 meters) below.

Welcome to the office space of a Boeing “tower climber”—an employee whose job it is to oversee construction and installation of tower-mounted radars and sensors that detect activity on the northern and southern borders of the United States.

“The SBl^{net} program is a very unique environment because we’re climbing towers. That’s why I had to learn the program’s specific safety requirements and be recertified,” said Don Domonoske, whose 23 years with Boeing have often involved working vertically, whether it was climbing up a tower or down into a missile silo for the Ground-based Midcourse Defense program in Ft. Greely, Alaska. He is on loan to the SBl^{net} program from Sea Launch.

Over the past 22 months, Domonoske and others on the 240-member SBl^{net} team have performed their tasks without one lost workday due to injury.

The climbers appreciate the rigorous safety training Boeing requires them to take before they can go “up top.” Fall protection training starts at Boeing’s Huntsville, Ala., site, where climbers learn U.S. Occupational Health and Safety Administration requirements, how to identify hazards associated with working on the sensor and communication towers, how to document each climb, and the proper use of required safety equipment specific to SBl^{net}, such as lanyards and harnesses. Training then moves outdoors to a specially built training tower.

The third phase of their training is a required advanced rescue course in which team members are taught how to use safety gear designed specifically to rescue climbers who might have fallen.

“Different scenarios are provided and climbers have to successfully perform ‘pickoff rescues’ to the satisfaction of the instructor. You cannot be certified as a climber until you successfully pass this third training requirement,” explained John Tolleson, a quality assurance inspector with SBl^{net} since 2006.

One of the newer team members is Kevin Peck, who joined Boeing after graduating from the University of Michigan in 2007 with a degree in aerospace engineering. He supports SBl^{net}’s Northern Border Project as a field engineer and was part of the team that helped install the project’s first tower in September 2009 at Marysville, Mich.

Since he has not completed the third part of his



training, Peck can only access the top of the tower via a bucket lift but still dresses in a full harness, hooking to an anchor point on the bucket. Once he safely makes the transfer from the bucket and hooks his lanyard to the platform, he begins verifying that all the tower’s radio and sensor connections have been completed correctly by program subcontractors.

Why did Peck, Tolleson and Domonoske sign up for such a job, with its nontraditional work environments, long periods away from home and occasional run-ins with local wildlife? All three agreed it was the uniqueness of the program that drew them to SBl^{net}. Each feels he is contributing to an important effort to secure the country’s borders and, in the process, making things just a little bit safer. Job satisfaction doesn’t get much better.

— Lynn Farrow

PHOTO: Martin Pape, a DRS Technologies contractor, installs a radar system while Boeing Quality Assurance Inspector Robert Gavaldon is reflected in the lens. Both are atop a tower platform that holds an SBl^{net} sensor package. ROBERT GAVALDON/BOEING