

Down-to-Earth Success

After a long, successful partnership on the space station, Boeing and Russia expand collaboration on Earth

Stories by Bill Seil

PHOTO: Where Russia's past intersects with its future—St. Basil's Cathedral in Red Square, Moscow. The nearby Boeing Moscow office and Boeing Design Center are leveraging the country's engineering talent and natural resources to advance critical Commercial Airplanes programs. SHUTTERSTOCK

As recently as the early 1980s, it would have been difficult to imagine the Soviet national airline, Aeroflot, flying Boeing airplanes.

Today, the Russian airline has Boeing jetliners in its fleet and is a customer for the 787 Dreamliner. Other Russian carriers, created since the days of the Cold War, also fly Boeing airplanes.

In late 2010, a diverse, government-owned company, Russian Technologies, placed an order for 50 Next-Generation 737 airplanes, which will be used by several state-run airlines. This is Boeing's largest sale to Russia in terms of the number of airplanes. Some of these planes will arrive before the 2014 Winter Olympics in Sochi, Russia. (See story on Page 48.)

Boeing's business activity in Russia is not limited to airplane sales. The

company has a Moscow office, employing 220 people, that oversees operations in Russia and the Commonwealth of Independent States. The same building is also home to the Boeing Design Center, which has about 1,150 contract engineers working in concert with Boeing engineers in the Seattle area. They play an important role in around-the-clock design support for Boeing commercial airplane programs.

"Russia has an excellent talent base of highly educated people," said Shep Hill, president, Boeing International. "We've been able to leverage that talent very effectively to support some critical Commercial Airplanes development programs."

The company's oldest Russian facility, the Boeing Technical Research Center, was created in 1992. It taps the talent of Russian scientists and information technol-

ogy specialists to work on Boeing contracts in commercial aviation, information technology and space. Boeing subsidiary Jeppesen employs approximately 100 people at its St. Petersburg, Russia, office.

In addition to talent, Boeing has developed a number of business alliances within the country, including one to use Russian titanium on the 787 and other Boeing commercial jetliners.

"Russia represents a very good global model for Boeing," Hill said. "We have established partnerships there that have enhanced our productivity and given us access to valuable resources. Our presence and involvement in Russia have also had a positive effect on our relationship with Russian airlines."

The company's operations in Russia are led by Sergey Kravchenko, president

of Boeing Russia and the Commonwealth of Independent States. Kravchenko joined Boeing in 1992, when he helped establish Boeing's overall presence in the region. Today, Boeing employs some 2,500 full-time and contract employees throughout Russia.

Kravchenko said business opportunities in Russia have grown dramatically since the days of the Soviet Union. The country has been open to new outside business alliances and is seeking full membership in the World Trade Organization.

One early sign of this liberalization was the opening of Russian airspace in 1999 to allow point-to-point service via polar routes. Kravchenko, representing Boeing, worked with the Russian government to negotiate this change, which gave a boost to the sale of Boeing long-haul jetliners such as the 777.

"This was a critical element to our

Russia at a glance

Location: Northern Asia, bordering the Arctic Ocean, between Europe and the North Pacific Ocean. The largest country in the world by territory with 11 time zones, it covers 6.5 million square miles (17 million square kilometers)—about 1.8 times the size of the United States.

Population: 139 million

Capital: Moscow

Other major cities: St. Petersburg, Ekaterinburg, Novosibirsk, Vladivostok, Nizhni Novgorod

National language: Russian

Government: Russia has existed as an independent republic since 1991. Current leaders include President Dmitry Medvedev and Premier Vladimir Putin.

Gross domestic product (2009 est.): \$2.11 trillion

Trade partners: (Exports) Netherlands, Italy, Germany, China, Turkey, Ukraine; (imports) Germany, China, Ukraine, Italy, United States

Sources: U.S. and Russian governments

international sales and it would not have happened if Russia had not looked on Boeing as a reliable long-term business partner," Kravchenko said.

He sees "huge opportunities" for commercial airplane sales as Russian airlines replace their aging Soviet-built fleets. He also sees bright prospects for Boeing Commercial Aviation Services. As Russian airlines adopt Western operational models and advancements in technology, they will need support in areas such as training, management consulting, engineering, information technology and efficient operations. (See story on Page 48.)

Kravchenko believes Russian expertise in engineering, design and information technology can strengthen both Boeing and its customers.

"Our Moscow office is focused on

increasing revenue in both airplane sales and services," Kravchenko said. "But we also want to leverage every opportunity to reduce costs and develop new technologies to improve the company's productivity and make our airplanes more competitive worldwide."

Kravchenko notes that the titanium partnership involving Ural Boeing Manufacturing is particularly significant to Boeing. (See story on Page 50.) The metal has long been valued by the aerospace industry, due to its strength, relatively light weight, and resistance to expansion, contraction and corrosion.

"Russian titanium has become one of the great success stories in our global supply chain," he said.

Boeing's longest period of collaboration with Russia has been in space exploration.

In July 1975, a Boeing-built U.S. Apollo spacecraft docked with a Russian Soyuz spacecraft. In the 1990s, joint missions were held that involved the Boeing-built U.S. space shuttle docking with the Russian Mir space station. This working relationship became more formal and challenging later in the decade as the orbital assembly of the International Space Station began, with Boeing as NASA's prime contractor.

Kravchenko describes the space station as the best symbol of U.S.-Russian partnership since World War II. (See story on Page 46.)

"Apollo-Soyuz was a small crack in the Cold War mentality," Kravchenko said. "It showed everyone what both nations could accomplish by working together." ■

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Helping children across Russia

Boeing's corporate citizenship activities in Russia extend from Moscow and St. Petersburg to a remote community in the Ural Mountains.

The company has supported more than 50 charitable projects focusing on health and human services, education, and arts and culture. Philanthropy efforts include cash grants, in-kind donations and employee volunteerism. Employees are particularly active in services for children, including health and education.

Among the programs receiving Boeing support are the Downside Up Center,

which helps families raising children with Down syndrome; Children of Russia, which provides services to children with cancer and blood diseases; and Kidsave International, which helps orphaned children. Educational programs include the Moscow School for Continuous Math Education and Junior Achievement-Russia.

"I'm very proud of our employees, who generously donate their time to community activities," said Sergey Kravchenko, president of Boeing Russia and the Commonwealth of Independent States. "We don't have to send e-mails asking them to volunteer; they do it on their own."

The company's presence is especially felt in Verkhnyaya Salda, a manufacturing town in the Ural region. A joint venture called Ural Boeing Manufacturing, which is involved in the production of titanium

parts for commercial airplanes, has had an active community involvement program since it opened in July 2009.

Boeing has supplied the children's hospital in Verkhnyaya Salda with equipment that has significantly improved the facility's diagnostics capabilities and reduced the time needed to conduct laboratory tests, according to Maria Osnovina, business operations manager for Ural Boeing Manufacturing. This has modernized eye examinations, heart diagnostics, and ear, nose and throat exams. Urine analysis equipment has greatly decreased the time it takes to complete tests.

"The technicians who conduct the analysis are happy that they're better able to help the children," Osnovina said. "It's a big change from the old days, when doctors might have to wait days to get the results." ■

"Our Moscow office is focused on increasing revenue in both airplane sales and services."

— Sergey Kravchenko, president of Boeing Russia and the Commonwealth of Independent States

PHOTO: MIKHAIL MELNIKOV



PHOTOS: (Above right) Boeing Moscow Communications Director Dmitry Krol and his son, Alex, help restore an airplane at the Monino Aviation Museum, Moscow. (Inset, top) Boeing Moscow lead engineer Alexey Musienko helps out at the city's Downside Up Center. (Above) Boeing Moscow travel desk receptionist Ilya Poliveev distributes presents at the Downside Up Center. MIKHAIL MELNIKOV

Living space

The space station is a high-flying symbol of global cooperation—and technical achievement

The International Space Station represents nearly two decades of continuous, successful collaboration between the United States and Russia, and the dawn of the international space age.

The partnership began in the early 1990s when the U.S. space station program, facing budget cuts, opened the program to international participation. The Russians, with decades of experience in space, joined the ambitious venture. Boeing is NASA's prime contractor for the station. In addition to NASA and Russia, Japan, Canada and 11 member nations of the European Space Agency are partners in the station today.

"The thing that most impresses me about this program is that, working

together, we've accomplished everything we set out to do in the early 1990s," said Mark Mulqueen, Boeing's vehicle director for the space station. He has been working on the program since 1987.

"And this has happened despite all the setbacks and political challenges we've faced over the years," he added.

Once competitors in a race to the moon, the two countries first cooperated in the 1975 Apollo-Soyuz mission. A special module was developed to allow the Russian Soyuz and Boeing-built Apollo spacecraft to dock in space. From 1994 through 1998, there were nine missions where the U.S. space shuttle joined with Russia's Mir space station.

And the cooperation continues.

In late 2009, Boeing and Russian aerospace company RSC-Energia signed a memorandum of understanding to jointly develop a common docking system that will serve as an international standard for advanced space exploration vehicles from all nations.

Development of such standards is a vital step in the international exploration of space, according to Mulqueen. In addition to standard docking systems, commonality in propulsion systems, power systems and environmental systems will also be needed.

Mulqueen said he enjoys working with the Russian engineers, some of whom have experience from the early days of the Mir station. In planning sessions, he is often one

of the youngest people in the room.

"I was born on July 16, and I remember watching the launch of Apollo 11 during my 10th birthday party," he said. "It was on our old, black-and-white TV."

Boeing's Joe Sherrill, director of avionics projects for the space station, joined the program 15 years ago because he wanted a chance to work with Russian engineers. He had long had an interest in the country and its people. Indeed, while in college he studied the Russian language with hopes of having the opportunity to use it one day.

Seven years ago, while working at the Boeing Moscow office, he married a Russian woman. Today they have a 17-month-old daughter.

"I very much enjoy the Russian people," Sherrill said. "Politics aside, they're just like us. They want the same things. They have the same problems. They want their children to grow up and have a good future." ■

PHOTO: (Below left) A Russian Soyuz spacecraft approaches the International Space Station (foreground) for docking on Dec. 22, 2009. It carried a Russian cosmonaut and two astronauts from Japan and the United States. Another Russian spacecraft, already docked at the space station, is shown at top left. NASA



Engineering in any language

This highly experienced Boeing engineer just happens to live in Moscow

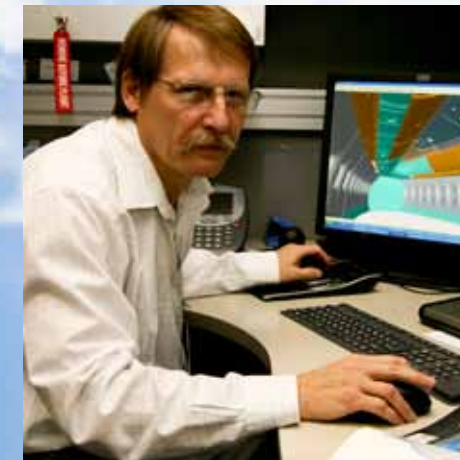


PHOTO: MIKHAIL MELNIKOV

Alexei Shuvaev was born in 1957, the same year the Soviet Union launched the first Earth-orbiting satellite, Sputnik 1.

This was the dawn of the space age, and Shuvaev as a child became a space enthusiast. He closely followed both the Soviet and U.S. efforts to reach the moon.

Today, Shuvaev is senior lead engineer at the Boeing Design Center, Moscow, which works with Boeing engineers in the United States to provide around-the-clock design support for Boeing commercial airplane programs.

Shuvaev—called Alex by his American colleagues—provides technical leadership to contract engineers on a variety of projects. Most relate to airplane interiors, payloads and environmental control systems.

His wife, Tatina, also is an aerospace engineer but left work to raise their children. They have an 18-year-old son, now an engineering student, and a 10-year-old daughter. Shuvaev's own parents were both field geologists.

Early in his career, after graduating from the Moscow Aviation Institute in 1980, Shuvaev spent 10 years working on the Russian space plane, a concept similar to the U.S. space shuttle. That program was canceled following the collapse of the Soviet Union in 1991. He joined the Boeing Design Center in 1999 as a contract employee. After a few years, he was offered a job as a full-time employee.

He travels to Boeing's Everett, Wash., plant about once a year to confer with his U.S. colleagues. He has developed friendships with American co-workers and, in his free time, has joined them on expeditions to scenic locations in the Seattle area.

"I enjoy hiking in areas like Mount Rainier, which is especially beautiful in August," he said. "I've also gone canoeing in mountain lakes, taken scenic drives and been to the Pacific Ocean."

During those trips to Everett, Shuvaev enjoys visiting a favorite used bookstore, where he tracks down science fiction stories by some of his favorite authors, including Clifford Simak, Arthur C. Clarke and Robert Heinlein.

"When I was young, people were crazy about space and science fiction stories about space travel," Shuvaev said. "Everyone followed the space flights, the cosmonauts and the race to the moon. It was a very exciting time." ■

Flying into the future

Russia's airlines are expanding and updating their fleets, and Boeing is well-positioned to help

The Russian airline industry is in transition, modernizing fleets and adopting Western operating practices.

As trade barriers come down, the growing strength of the Russian economy is expected to accelerate the replacement of aging Soviet-built aircraft. Boeing estimates that airlines in Russia and the Commonwealth of Independent States will need about 1,000 jetliners over the next 20 years—an estimated \$90 billion in sales.

While today's Russian aerospace industry produces a limited number of commercial airplanes—with plans to develop new models—Boeing sees strong potential for near-term as well as long-term sales.

Early evidence of this is a 2007 order by Aeroflot for 22 787 Dreamliners, and a

late 2010 order by Russian Technologies for 50 Next-Generation 737 airplanes. The Next-Generation 737s purchased by Russian Technologies, a diverse state-run company, will be used by several government-owned airlines. Boeing has also logged orders for 737s from Russian carriers S7 and Atlant-Soyuz, and 747-8 Freighters from Volga-Dnepr—an order book that represents the breadth of the Russian airline landscape.

Competition from Airbus has been strong, but Boeing is optimistic that it can maintain its approximately 60 percent market share of Western-built aircraft.

"With all the liberalization that's taking place, we're also seeing growing traffic to and from Europe, and that's happening at a significant pace," said Marlin Dailey,

"It's a changing market with new opportunities emerging."

—Sergei Leschinski, sales director, Commercial Airplanes, Russia

vice president, Sales & Marketing, Boeing Commercial Airplanes. "Russian airlines are in the process of strengthening and growing their long-haul operations."

The core Boeing Commercial Airplanes sales team for Russia is spread between Moscow and Seattle. Sergei Leschinski, a sales director based in Moscow, and

his Moscow- and Seattle-based team recently completed the 50-airplane sale to Russian Technologies.

More than 20 Russian airlines use Boeing airplanes, with many purchased or leased from the secondary market. About half the Boeing planes used by Russian airlines are older 737 "classic" models. As trade barriers ease, it is expected that the demand for new planes will grow rapidly.

"Our sales team is focused on the top 10 Russian airlines, but all of the airlines are on our radar," Leschinski said. "It's a changing market with new opportunities emerging."

Boeing Capital Corporation is advising the nation's aircraft financial community, according to Mher Papyan, Boeing Capital's senior director for Russia and the Commonwealth of Independent States.

"We're working closely with Russian banks and leasing companies to educate them on Boeing's products, and aircraft financing in general," Papyan said. "They're just starting to finance airplanes, and we're trying to ensure that ours will be on the banks' preferred products lists."

As Russia reinvents its airline industry, Boeing Commercial Aviation Services wants to double its business in Russia over the next couple of years, said Kamil Gaynutdinov, Moscow-based sales director for Commercial Aviation Services.

"Russia's aviation industry is advancing quickly and is successfully competing in both domestic and international markets," Gaynutdinov said. "The Boeing Company and the Boeing brand are well-positioned to help support our Russian customers." ■

Major Russian airlines

Aeroflot

Headquarters: Moscow

Fleet: 96 airplanes, including 11 767s, three MD-11 Freighters, 66 A320s and 10 A330s

Notable: Aeroflot is the flag carrier and largest airline in Russia. It has firm orders for 22 787 Dreamliners. The airline will soon merge with six airlines belonging to Russian Technologies, which has firm orders for 50 Next-Generation 737s.

Transaero

Headquarters: Moscow

Fleet: 57 airplanes, including 20 737 Classics, two Next-Generation 737s, 13 747s, 12 767s and seven 777s

Notable: Transaero is the only operator of 777s and 747s in Eastern and Central Europe and the largest charter operator in Russia.

S7 Group: S7 Airlines and Globus Airlines

Headquarters: Moscow

S7 Airlines fleet: 19 A319s, nine A320s and two 767-300ERs (Extended Range)

Globus Airlines fleet: Four 737-800s and four 737-400s

Notable: S7 Airlines has leading positions in the domestic market and firm orders for 10 Next-Generation 737s.

Volga-Dnepr Group

Headquarters: Ulyanovsk

Fleet: 10 747 Freighters and AN-124 Freighters

Notable: The group has a firm order for five 747-8 Freighters.

Moskva Airlines (Atlant-Soyuz)

Headquarters: Moscow

Fleet: Three 737 Classics and six Next-Generation 737s

Notable: Moskva Airlines has firm orders for four Next-Generation 737s.

UT Air

Headquarters: Khanty Mansiysk, Siberia

Fleet: 20 737 Classics, two 757s, and Russian airplanes and helicopters

Notable: UT Air operates the largest helicopter fleet in Russia in support of oil and gas development and United Nations international transportation.



PHOTO: An artist's rendering of a Boeing 787 Dreamliner in the Aeroflot Russian Airlines livery. Aeroflot is studying expansion of its domestic and international business with the help of 22 Dreamliners. BOEING

Ti

that binds

Partnership provides titanium for 787 while leveraging Russian manufacturing and resource strengths

Russian titanium travels long distances through various sites, from the time the ore is mined to the day it becomes part of a completed Boeing jetliner.

One of the most important stops is a recently completed facility called Ural Boeing Manufacturing, in a remote area of the Ural Mountains near the Russian town of Verkhnyaya Salda.

This is a joint venture with Russian titanium producer VSMPO-Avisma, which operates a titanium mill on the same site. The mill produces the forgings that are machined at the Boeing manufacturing facility.

The location of Ural Boeing Manufacturing is critical because it allows workers to quickly transport highly expensive titanium chips back to VSMPO's mill.

About 85 percent of the chips can be remelted at VSMPO to make new forgings. The remaining chips, which are contaminated or unusable, are sold for reprocessing.

John Byrne, director, Supplier Management-Common Commodities, Boeing Commercial Airplanes, first proposed the idea of the manufacturing facility and handled the initial negotiations for the project. The strategy allowed Boeing and VSMPO to keep the chips within Russia, thus avoiding difficult trade issues involved in returning the chips from outside the country.

"We originally set out to solve some operational challenges," Byrne said. "But the creation of Ural Boeing Manufacturing ended up being of much greater

benefit to The Boeing Company than we had imagined."

Byrne said the joint venture gives Boeing greater oversight of the supply of titanium it receives from Russia and provides VSMPO an ownership incentive to ensure the success of the operation.

The forgings machined at Ural Boeing Manufacturing are made from a new titanium alloy that was jointly developed for the 787 Dreamliner program by Boeing and VSMPO, said Gary Koessler, a Boeing employee, who serves as chief executive and general director of Ural Boeing Manufacturing. Titanium, with its strength, stability and resistance to corrosion, makes it a natural fit with the composite materials used in the 787. The 787 requires more titanium

than any previous Boeing jetliner.

"In order to keep this new alloy affordable, we agreed to build the Ural Boeing Manufacturing plant in Verkhnyaya Salda," Koessler said. "This creates a closed loop titanium production flow that allows us to make full use of our titanium supplies."

The Ural Boeing Manufacturing facility was built under the direction of its first CEO, Gary Baker, who recently moved from that position to a new assignment in China.

Baker moved to Verkhnyaya Salda in late 2007, along with his wife and daughter. As the only Boeing employee on site, he worked with Russian crews to build Ural Boeing Manufacturing from the shell of an old building. By 2009 they had modern manufacturing facilities with

sophisticated machinery and comfortable amenities for the Russian workers.

"It was very exciting to move to a remote community and bring this enterprise to life," Baker said. "But it would not have been possible without the full support of the partners, Boeing and VSMPO." ■

PHOTOS: (Below left) A 787 side of body chord forging being rough-machined at Ural Boeing Manufacturing. MARIA OSNOVINA/BOEING

(Insets, from top) An exterior view of the Ural Boeing Manufacturing joint venture's building in Salda, Russia. MARIA OSNOVINA/BOEING
A titanium forging machined at Ural Boeing Manufacturing. MARIA OSNOVINA/BOEING

