2024 Q2 | Volume 8 | Issue 28

IQ INNOVATION QUARTERLY

INNOVATION. INSIGHT. INSIDE AEROSPACE.

PLUS: Meet the Experts
Boeing Technical Fellowship ensures lasting commitment to engineering excellence

Pathways to Poseidon

Distinct journeys lead engineers to the same team

P-8 PURSUITS
Kendra Powers, left, and Marvi Matos Rodriguez share a passion for collaboration.

BOEING

INNOVATION QUARTERLY

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IQ IS ...
Innovation Quarterly invites readers to go inside the future of aerospace with the people who make it happen.


PHOTO: JOSHUA DRAKE/BOEING

Engineering Excellence

Engineering excellence is characterized by the relentless pursuit of precision, creativity and innovation in designing and implementing solutions to complex problems. It encompasses a commitment to safety, sustainability and efficiency, driving progress through the practical application of scientific principles and technical expertise.

This issue of Innovation Quarterly underscores the ingenuity, dedication and passion that engineers bring to their work, ultimately shaping the world around us.

Our cover story introduces you to three leaders who are driving the design, development and delivery of the P-8 Poseidon by prioritizing collaboration and communication across multidisciplinary engineering teams.

In this issue, you'll also meet our newest class of Executive Senior Technical Fellows. Learn what inspires them and what excites them about the future. Additionally, read the story of twin brothers who are mentoring others in the Fellowship, demonstrating how collaboration and ambition can yield remarkable results.

Boeing Research & Technology-Brazil is marking its first decade of operations with the significant achievement of two in-country patents, the first to be granted in Brazil. The team's story is just one example of Boeing's efforts to achieve global aerospace sustainability goals.

Each story is a representation of the ever-evolving and dynamic field of engineering, reflecting continuous improvement, problem-solving and a relentless commitment to making the world a better place.

Throughout this issue of IQ, join us as we celebrate all those who are contributing to engineering excellence. **IQ**

Howard McKenzie
Chief Engineer,
Executive Vice President,
Engineering, Test & Technology

Pathways to Poseidon

Engineering executives share their steps to success

BY ELAINE BRABANT, BOEING WRITER

There was a time when Kendra Powers, Marvi Matos Rodriguez and Dannielle Haraldson didn't see engineering as a career path for themselves. Today, they hold the most senior engineering positions for the P-8 Poseidon aircraft program.

Discover how these three Boeing leaders took different journeys but ultimately arrived on the same team. They are certain, as they work with other P-8 teammates to produce new aircraft, that diverse and inclusive teams drive technical excellence and innovation.

TECHNICAL TEAMMATES

Motivated and inspired by their own mentors to pursue engineering careers, Kendra Powers, left, and Marvi Matos Rodriguez now lead hundreds of Boeing engineers who are designing, developing and producing the P-8 Poseidon aircraft.

PHOTO: MARIAN LOCKHART/BOEING

“No matter what your role is in supporting P-8, across this program there’s an attitude that we lean in and help each other.”

KENDRA POWERS, P-8 ENGINEERING DIRECTOR AND CHIEF ENGINEER

Kendra Powers, P-8 engineering director and chief engineer

Powers may not have become an engineer without encouragement — both intended and unintended. When she was in high school and considering majors, her father pointed out that with her science and math skills, she might consider engineering. “I wasn’t even sure what that was,” Powers said.

She talked it over with a friend, whose reaction of distaste and the declaration that “engineering is hard” led to Powers’ resolve. “I remember feeling like ‘I’ll show you,’” said Powers, who graduated from Montana State University with a degree in chemical engineering.

Named P-8 chief engineer in 2022, Powers leads the engineers involved in designing, developing and producing the P-8 maritime patrol and reconnaissance aircraft.

When Powers joined Boeing 25 years ago, as an engineer for commercial airplanes, there was only one other woman on her team and none in her chain of command. Now that she is on an engineering team with women represented at every level, she notices a different dynamic.

“I don’t feel like I have to show up differently, like ‘Am I being authoritarian enough,’” Powers said. “I focus on collaboration.”

The key to collaboration, she emphasized, is playing offense. “No matter what your role is in supporting P-8, across this program there’s an attitude that we lean in and help each other,” Powers said. “We communicate candidly and share information. We are open to new ideas and will pursue them.”

Others see how Powers leads and take note. “Kendra is my role model,” Haraldson said. “She is calm in every situation and asks lots of great questions. I watch how she handles herself and have so much respect for her.”

FINISH LINE

Boeing has over 200 P-8 aircraft on contract with nine customers, including Australia, Canada, Germany, India, New Zealand, Norway, the Republic of Korea, the United Kingdom and the United States.

PHOTO: BOEING

CONVERSATION CENTERPIECE

Matos Rodriguez and Powers are dedicated to collaboration and communication across the P-8 program.

PHOTO: MARIAN LOCKHART/BOEING

“No one had ever asked me what would make you happy. I didn’t even think to ask that of myself. To me, the question showed leadership and genuine humanity.”

MARVI MATOS RODRIGUEZ, ENGINEERING DIRECTOR

Marvi Matos Rodriguez, engineering director

Matos Rodriguez has made several defining moves in her career, including moving from the island of Puerto Rico to the continental United States and transitioning from academia to aerospace. These life decisions helped lead her to Boeing, where she manages about 730 people responsible for systems engineering, integration and test of multiple military aircraft programs, including the P-8.

Growing up, Matos Rodriguez wasn’t familiar with the fields within engineering. When her mother installed a central computer system in her clinical laboratory, the engineer in charge introduced her to coding and software development. That was a revelation for Matos Rodriguez. At the age of 11, she saw that she could channel her love for math via applied problem-solving and engineering solutions, which would enable her to make a real-world impact.

After majoring in chemical engineering in Puerto Rico, Matos Rodriguez relocated to Pittsburgh, earning a master’s degree in colloids, polymers, and surfaces and a doctorate in chemical engineering at Carnegie Mellon University.

She later served as a postdoctoral fellow at the National Institute of Standards and Technology, and she lectured at the University of Washington in chemical engineering. Her passion to work in research and development to solve real problems and her curiosity led her to rediscover the field of aerospace. “I wanted to work on products that really matter and serve others, as many people as possible,” Matos Rodriguez said.

She joined the Boeing team in 2010, then left to work for another company in 2017. When she expressed interest in returning to Boeing in 2020, an executive asked her what she wanted to do, what would make her happy. Matos Rodriguez was shocked.

“No one had ever asked me what would make you happy,” she said. “I didn’t even think to ask that of myself. To me, the question showed leadership and genuine humanity.”

Matos Rodriguez recognizes mentoring as one of the most impactful influences in her career. When people reach out to her for support and coaching, she pays it forward by meeting with students, engineers and managers. “It’s inspiring when someone spends time to guide you,” she said.

Additionally, Matos Rodriguez serves on the National Science Board, which provides oversight to the National Science Foundation and advises the president and Congress on matters of science and engineering policy.

Dannielle Haraldson, P-8 deputy chief engineer

Haraldson was ready to quit. After a few months in college, she told an acquaintance, “I don’t think engineering is for me. I’m going to switch majors.”

The acquaintance, who worked for Boeing, responded: “You absolutely will not. You are meant to be an engineer.”

“He knew math was my thing,” said Haraldson, who has worked within Boeing engineering for 27 years. “It was the kick in the butt I needed.”

In her current role, Haraldson is deputy to Powers and shares responsibility for the technical integrity of P-8 aircraft. In other words, they ensure the aircraft meets the required engineering specifications and performs optimally. To Haraldson, technical acumen is only one aspect of being an engineering leader.

“What we used to call soft skills are actually fundamental skills,” Haraldson said. “Relationships and servant leadership matter. My team comes first. I want them to know they are trusted and that if they need help, I’ll follow through.”

A teammate who has worked closely with Haraldson noted the impact that makes.

> “My team comes first. I want them to know they are trusted and that if they need help, I’ll follow through.”
>
> **DANNIELLE HARALDSON, P-8 DEPUTY CHIEF ENGINEER**

PEOPLE PERSON

For Dannielle Haraldson, her teams come first. As she serves P-8 engineers and engineering students, she believes straight talk and transparency drive better outcomes.

PHOTO: KYMBERLY VANDLAC/BOEING

> “I am able to focus on the technical aspects of my work and let go of that constant battle to prove myself.”
>
> **NINA CERRUTI, P-8 FLEET SUPPORT ENGINEER**

“With Dannielle, there’s the feeling of being supported without question,” said Nina Cerruti, P-8 fleet support engineer. “Under her leadership, I am able to focus on the technical aspects of my work and let go of that constant battle to prove myself.”

In addition to being a leader in aerospace, Haraldson is a leader in the classroom. She teaches an engineering course at her alma mater, Gonzaga University. One class just happened to have all women, a ratio Haraldson could not have fathomed when she was a student.

Still, Haraldson emphasized, diversity and inclusion are about more than numbers.

“Being able to talk openly about the challenges women face and address them collectively is something I’ve seen change for the better,” she said, noting that Boeing encourages teammates to raise concerns and solve problems.

That transparency, Haraldson believes, leads to benefits for everyone on the team and enhances the outcomes they create for customers.

ON PATROL

With surveillance and reconnaissance, search and rescue, and long-range anti-submarine capabilities, the P-8 is deployed around the world.

PHOTO: BOEING

The journey ahead

Powers, Matos Rodriguez, Haraldson and the hundreds of Boeing teammates who support the Poseidon are working together to deliver new aircraft to first-time P-8 customers Canada and Germany. **IQ**

BOOST YOUR IQ
Watch the Boeing team assemble a P-8 Poseidon.

Two Firsts for Flight Efficiencies

Boeing Brazil obtains in-country patents for innovations that predict and reduce fuel consumption

BY MICK BOROUGHS, BOEING WRITER

Two inventions to measure and reduce fuel consumption are the first in-country patents to be granted to Boeing Research & Technology-Brazil.

Brazil's National Institute of Industrial Property (INPI) has granted two patents related to flight operation efficiency to Boeing Research & Technology-Brazil. Both discoveries will help reduce fuel consumption in aviation and lower carbon emissions globally.

"Boeing is doing something for the country, and in the country," said José Fregnani, Boeing Research & Technology-Brazil technical manager. "To receive these two patents here in Brazil is big. After 10 years of operations in country, we're still growing, expanding our research and engineering efforts, and developing our technical workforce here."

Cutting fuel weight with continuous climb

The first patent INPI ever granted to Boeing describes a function that adds a continuous cruise-climb algorithm to the flight management system (FMS), thus allowing the system to track the optimum altitude climb.

On long-range flights, airlines want airplanes to perform a continuous climb. With the current system, pilots may only increase altitude incrementally, for example, taking the airplane from 35,000 feet to 37,000 feet (10,668 meters to 11,278 meters), then, hours later, climbing to a cruising altitude of 39,000 feet (11,887 meters).

The technology would send continuous climb commands to the airplane's autopilot system while interfacing with the pilot. Following the commands offers the potential to provide up to 3% savings on fuel consumption, simultaneously lowering carbon emissions.

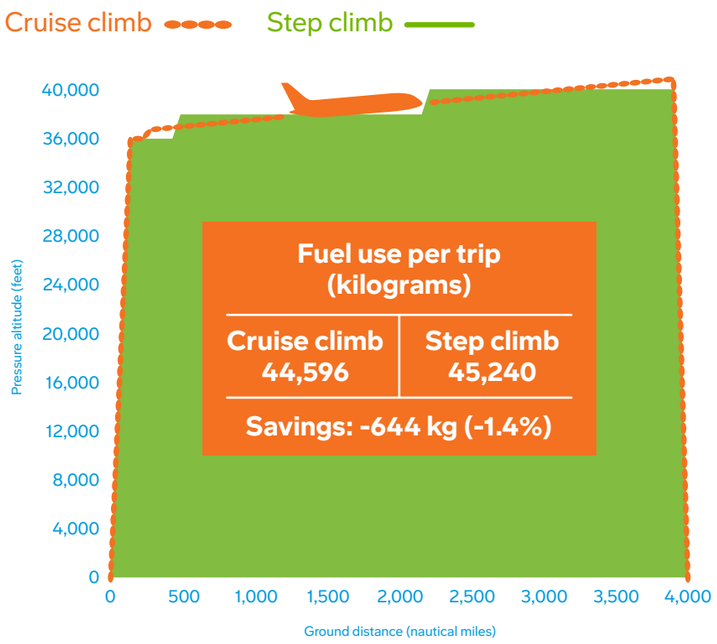
"On a flight from Brazil to Dubai, an airplane may consume 130 tons of fuel," Fregnani said. "Using continuous climb could save 1.5 tons of fuel, which is equivalent to the weight of 15 passengers and their luggage."

Boeing has checked the continuous climb function in simulations; the function is not in commercial use.

> "On a flight from Brazil to Dubai, an airplane may consume 130 tons of fuel. Using continuous climb could save 1.5 tons of fuel."

JOSÉ FREGNANI,
BOEING RESEARCH & TECHNOLOGY-BRAZIL
TECHNICAL MANAGER AND INVENTOR

Optimum Cruise Climb



CLIMB OVER STEP

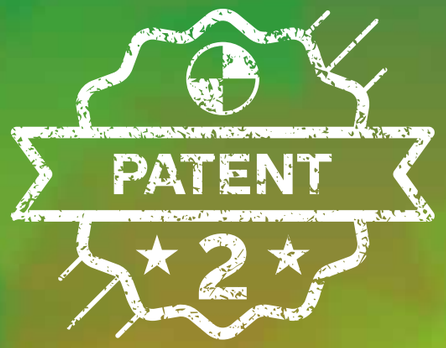
A simulated flight from Mumbai, India, to Perth, Australia, demonstrates potential fuel savings during a long-range flight. Climbing continuously by tracking the wind-based, optimum altitude would save fuel on flights of six hours or more.

GRAPHIC: BOEING

LONG-RANGE SAVINGS

Using the continuous climb function could save fuel on long-range flights.

GRAPHIC: BOEING



Watching and weighing gravity's balancing act

The second patent INPI granted to Boeing in 2023 describes the movement of an airplane's center of gravity, the calculation of fuel consumption during flight, and its impact on airplane drag.

"An airplane's center of gravity changes in flight while it consumes fuel," said Boeing engineer Geun Kim. "We want to better predict the fuel consumption by accurately predicting how the center of gravity changes in flight."

The process allows for more precise adjustments by the flight management and planning systems. By programming the function into the FMS, airlines can better predict those changes and be more accurate when refueling on the ground.

The United States Patent and Trademark Office, the European Patent Office and Brazil's INPI name Fregnani, Kim and retired Boeing engineer Tim Rohr as the inventors of these two patents. Since 2018, the trio has teamed up on three other patents in the U.S. on aircraft fuel efficiency and flight path optimization. Canada and China also have granted related patents.

JOSÉ FREGNANI
PHOTO: COURTESY OF JOSÉ FREGNANI

GEUN KIM
PHOTO: COURTESY OF GEUN KIM

> "An airplane's center of gravity changes in flight while it consumes fuel. We want to better predict the fuel consumption by accurately predicting how the center of gravity changes in flight."

GEUN KIM,
BOEING ENGINEER
AND INVENTOR

Center of Gravity Management

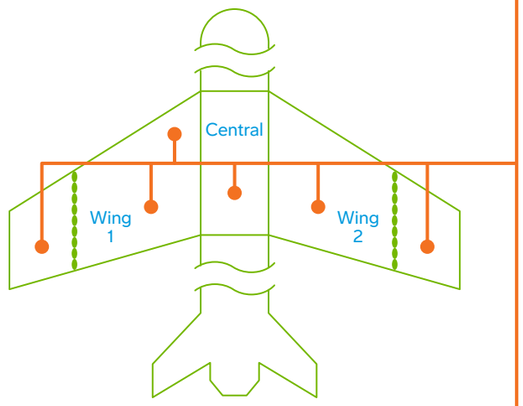
FUEL FLOW

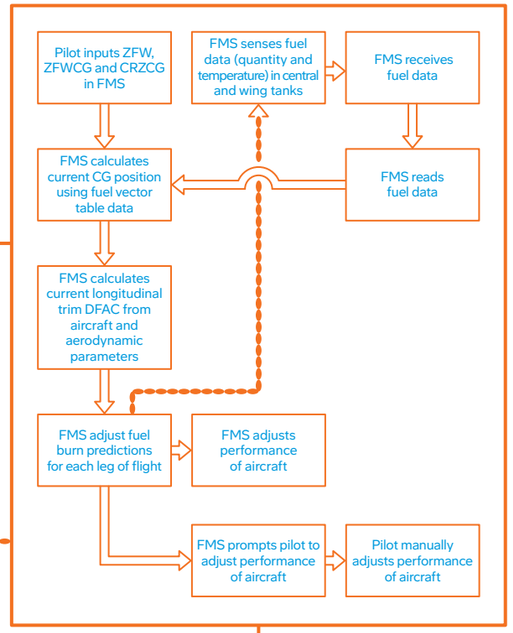
The flowchart illustrates how an onboard FMS calculates an airplane's shifting center of gravity during flight. The pilot enters data for the airplane's zero fuel weight on the ground and center of gravity during the cruise phase.

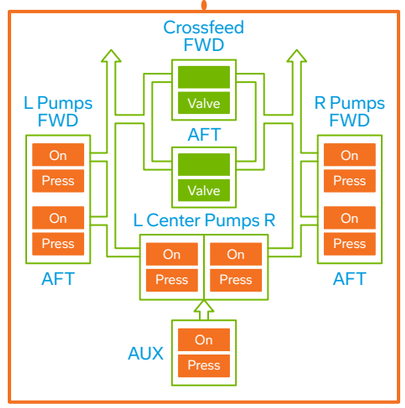
GRAPHIC: BOEING

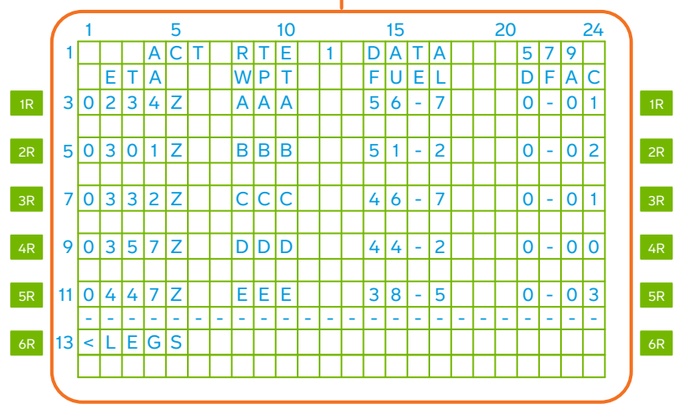
Legend

ACT	Actual
CG	Center of Gravity
CRZCG	Cruise Phase Center of Gravity
DFAC	Drag Factor
ETA	Estimated Time of Arrival
FMS	Flight Management System
RTE	Route
WPT	Waypoint
ZFW	Zero Fuel Weight
ZFWCG	Zero Fuel Weight Center of Gravity

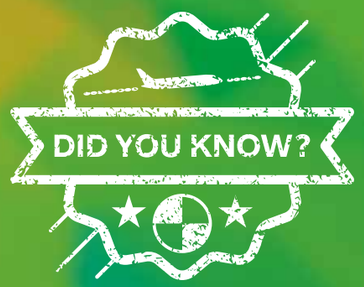








Multipurpose Control and Display Unit



The weight and trim of an airplane affects how many passengers can board, where passengers should sit, and the allowable amount of luggage. Each airplane has a set limit, or maximum weight, for a safe takeoff.

Airlines calculate the airplane's total weight — including passengers, cargo, baggage, water tanks and carry-on luggage — to determine each airplane's center of gravity. Today, most airlines calculate passenger weight using average weights provided by the European Aviation Safety Authority.

Strength in numbers

Since 2014, Boeing Intellectual Property has recommended 34 inventions of the Boeing Research & Technology-Brazil team. Sixteen patents have been granted in the U.S. and other countries, including the first two from INPI in 2023.

"For more than 90 years, Boeing and the Brazilian community have partnered to leverage the technical skills and problem-solving capabilities of Brazilian engineers," said Lynne Thompson, Boeing vice president of Engineering, Strategy and Operations. "Their expertise strengthens our commitment to engineering excellence and positions us to tackle the challenges of the next generation in our industry."

That expertise is fundamental to achieving global aerospace sustainability goals, according to Boeing Research & Technology-Brazil director Eduardo Carrillo de Albornoz.

MAP IT

In partnership with the State University of Campinas, Boeing engineers are developing the third phase of the SAFMaps database. The software identifies Brazil's most viable regions for feedstock production, fuel storage and airports. Offering insights into supply chain economics and available refueling processes, SAFMaps also integrates essential information about potential raw materials, aligning with international regulations to reduce greenhouse gas emissions.

PHOTO: TIM REINHART/BOEING

SUGAR STOCK

Brazil is the second-largest biofuel producer in the world. Sugar cane residue, abundant in the country, is a promising SAF feedstock.

PHOTO: TIM REINHART/BOEING

> "For more than 90 years, Boeing and the Brazilian community have partnered to leverage the technical skills and problem-solving capabilities of Brazilian engineers. Their expertise strengthens our commitment to engineering excellence and positions us to tackle the challenges of the next generation in our industry."
>
> **LYNNE THOMPSON,**
> **BOEING VICE PRESIDENT,**
> **ENGINEERING, STRATEGY AND OPERATIONS**

Among those efforts, Brazilian engineers are leading projects to discover biofuel feedstocks, sustainable aviation fuels (SAFs) and digital tools to reduce fuel burn and fuel emissions.

"The amount of available feedstock in Brazil is amazing," said Carrillo de Albornoz. "Few regions in the world can provide for the future demand of SAF and achieve the SAF production capacity that is possible in Brazil."

While assessing the challenges and opportunities associated with SAF development and commercialization, Boeing Brazil is investing in initiatives to maximize social, economic and environmental benefits to communities that develop feedstock for SAF production. **IQ**

Landing the Perfect Specialist

Boeing taps parachute expert for test of CST-100 Starliner's landing system

BY DEBORAH CIRCELLI AND PAUL CUSTODIO, BOEING WRITERS

Safely launching and landing the crew aboard the Boeing Crew Space Transportation (CST)-100 Starliner, developed in collaboration with NASA's Commercial Crew Program, is an imperative for every teammate on the program.

DROP TEST
Two parachutes deploy as planned during a test of the CST-100 Starliner parachute system. A NASA C-130 aircraft released a test vehicle simulating the spacecraft's flight mass.
PHOTO: U.S. ARMY YUMA PROVING GROUND

As he began to build the Starliner Landing and Recovery team in 2021, Boeing manager Kirk Svartstrom recognized a special need for an expert in parachute systems.

“One name that continued to show up as we asked for recommendations from the human spaceflight and military aircraft communities was Ty Bowen,” Svartstrom said. “His parachute expertise and his personal experience were just what we were looking for.”

Passion for parachutes

For more than 30 years, Bowen had designed, built, repaired, packed and maintained parachute equipment. Among his projects were solid rocket booster and orbiter drag parachutes for the space shuttle program and chutes for sport and military skydivers.

A U.S. Federal Aviation Administration-certified master parachute rigger, Bowen’s name is on several patents. His designs are in use for special operations across the U.S. military and for many NATO allies.

Prior to Boeing, Bowen had worked for private companies as a research and development manager and as a production manager, training technicians in material handling, cutting, and preparation and in industrial sewing machine operations. Early in his career, he had served as a quality control inspector, designing and implementing numerous upgrades to existing parachute harness and container product lines.

Bowen joined the Boeing team as a parachute systems engineer in January 2022, prior to the Starliner’s second Orbital Flight Test. Working to enhance the spacecraft’s parachute system, he supports testing and leads the team that recovers the parachutes and stabilizes the spacecraft after each landing.

Designing solutions

Ahead of the Crew Flight Test, the team focused on strengthening the Starliner parachute soft links, which connect the suspension lines and the risers. Made of strong cord, soft links connect the parachutes to the vehicle.

Using industrial sewing machines he purchased during the shuttle era, Bowen developed prototypes in his own workshop. After designing and developing various prototypes, he began testing the soft links on a tensile test machine at the Commercial Crew and Cargo Processing Facility in Florida.

“I love designing solutions,” Bowen said. “I started looking at how to improve and make the system stronger while minimizing the mass and volume changes to the existing configuration.”

> “Parachutes are lifesaving devices, whether they are on your body or on a vehicle. When you need it, you need it. As a parachute system designer, builder or packer, I work as if I’m the one using it.”
>
> **TY BOWEN, BOEING ENGINEER**

SOFT BUT STRONG

Ty Bowen, left, and Boeing engineer Kyle Kercher examine a soft link on a tensile test machine at the Commercial Crew and Cargo Processing Facility in Florida.

PHOTO: JOHN PROFERES/BOEING

Record-breaking family

Bowen developed an interest in parachutes in 1990. While taking private pilot lessons, he met some skydivers, and his interest quickly turned from flying airplanes to jumping out of them. As a student at the University of Akron, he worked between semesters and during holidays as an instructor at an indoor skydiving attraction in Tennessee.

“It was a fun, challenging thing to do that involved speed,” Bowen said. “When skydiving, you fall 120 miles per hour, and you can dive downward and get over 200 miles per hour.”

When he started jumping, his mother joined him. She later specialized in group canopy formation skydives, performing on a team that set a record in the late ’90s for the largest women’s parachuting canopy formation.

Bowen and his fiancée, who has over 30 years of parachute system sewing expertise, were instrumental in supporting the world-record highest-altitude skydive in 2014, the StratEx Space Dive. Their work is on display in the Steven F. Udvar-Hazy Center at the National Air and Space Museum in Virginia.

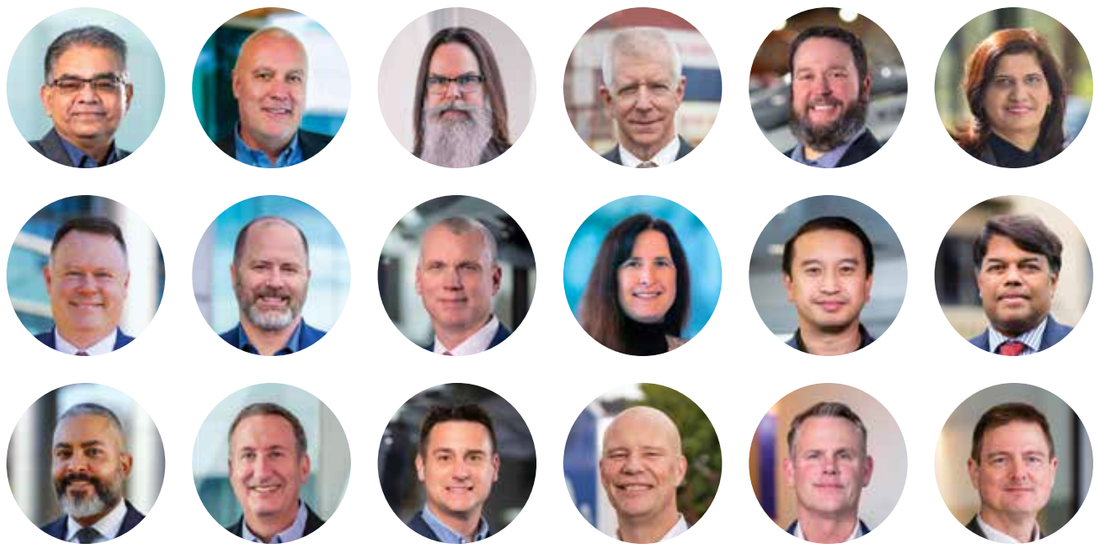
“Parachutes are lifesaving devices, whether they are on your body or on a vehicle. When you need it, you need it,” Bowen said. “As a parachute system designer, builder or packer, I work as if I’m the one using it.”

Bowen earned recognition as Florida Space Coast Operations Engineer of the Year for his work developing and testing the Starliner parachute system, which performed as expected during a test in January.

Working on crew vehicles and parachutes that will safely return crew from space, Bowen said, “is the pinnacle of my career and drives me to perform at my best.” **IQ**

Meet the Experts:

New Executive Technical Fellows



Individuals in the newest class of Boeing Executive Senior Technical Fellows possess expertise in engineering disciplines that profoundly influence the full life cycle of all Boeing products, processes and services.

"A cornerstone of the engineering function, the Boeing Technical Fellowship helps ensure a lasting commitment to engineering excellence," said Howard McKenzie, chief engineer and executive vice president, Engineering, Test & Technology. "This recognition reflects an appreciation of each engineer's technical capabilities and signifies their acceptance of the responsibility to help grow and mentor the next generation of engineering leaders."

Following a comprehensive candidate evaluation process, 18 individuals advanced to the executive levels of the Fellowship in 2023. John Sullivan progressed to Distinguished Senior Technical Fellow.

The executive tier of the Boeing Technical Fellowship represents less than one-tenth of 1% of the company's technical workforce. As trusted consultants, advisers and mentors, Executive Senior Technical Fellows play an important role in the future as they drive design practices and shape the global aerospace industry.

> "A cornerstone of the engineering function, the Boeing Technical Fellowship helps ensure a lasting commitment to engineering excellence."
>
> **HOWARD MCKENZIE,**
> **CHIEF ENGINEER,**
> **EXECUTIVE VICE PRESIDENT,**
> **ENGINEERING, TEST & TECHNOLOGY**

PHOTOS: BOEING

Principal Senior Technical Fellows

IAN FIALHO

MECHANICAL AND STRUCTURAL ENGINEERING

In college, I was drawn to engineering courses that had theoretical and mathematical content. I gravitated toward dynamical systems theory for my doctoral work. My current work in multi-physics modeling and simulation, loads and dynamics, shock and vibration, and probabilistic and stochastic methods draws on that foundation.

The diversity of Boeing products offers continuous learning opportunities as you research and develop solutions to new technical challenges. This never gets boring and makes every day new and exciting. Seeing the first flight of a spacecraft, airplane or missile you helped design is an experience unlike any other. The new products we are working on certainly are exciting. But what I most look forward to is giving back to this company through mentoring, supporting the next generation of engineers and strengthening engineering.

TORBEN SYBERG

STRUCTURAL ENGINEERING

As the son of a Boeing engineer, I had an early focus on math and physics as a child. I loved to build things, but initially I had several unsuccessful outcomes. Eventually, and luckily, the understanding of physics and gravity kicked in, and my woodworking skills produced products that lasted. These early experiences piqued my interest in structures and drove my continuing desire to build everything strong enough.

I consider it a privilege and a responsibility to be a member of the Fellowship. The network of people I meet and work with, internal and external to Boeing, is always growing, and I feel fortunate to work with such talented and knowledgeable people.

These teams are shaping the future by defining not only what Boeing creates but also how we create. I take pride in knowing the products and processes we are developing now are the foundation for future engineers.

Senior Technical Fellows

MATTHEW ANGLIN

PAYLOADS SAFETY, REQUIREMENTS AND COMPLIANCE

Engineering and aviation are in my blood. Both my parents were engineers, and I grew up learning from them. My grandfather was an airman in World War II, and he built and flew his own airplane in his retirement years.

When I began my career at Boeing, among my peers were flammability experts who were Organization Designation Authorization unit members, who are authorized representatives of the U.S. Federal Aviation Administration. Right away, I was drawn to fire safety, and I later expanded my work to other aspects of cabin safety.

Knowing the flying public is safer due to the things I have developed and tested is the most rewarding aspect of my work.

I was fortunate to have amazing mentors throughout my career, and I am excited to see my mentees continue to grow as our technical leaders. As the aerospace industry continues to innovate, it will be exciting to see how we move around the world in the future.

RANDOLPH L. BRADLEY

SUPPLY CHAIN MANAGEMENT

Watching the Apollo 11 moon landing live captured my childhood imagination.

I began my career researching logistics models at McDonnell Douglas, which led to graduate studies at Massachusetts Institute of Technology. Working to create inventory optimization algorithms led to innovating supply chain models.

Shop floor shortages are trending down, and that's rewarding. Now I'm about inspiring the next generation of technical leaders, researching new inventory optimization algorithms to support Boeing production and sustainment. Sponsoring supply chain projects in collaboration with industry and academia provides additional perspectives on problem-solving.

Advances in artificial intelligence will extend algorithmic work in inventory optimization and supply chain simulation. In many ways, my field is again in its infancy, offering opportunities for inventing original approaches, integrating across disciplines with production and sustainment, and mentoring future leaders.

Senior Technical Fellows

STEVE DOSTERT

DIGITAL ARCHITECTURE, AUTOMATION AND NUMERICAL CONTROL

From the age of 10, when I began assisting my grandmother with her computerized loom, my fascination with automation has only grown. This passion has led me to work with various automated technologies, such as composite layup, fastening machines, metal and composite machining, and robotics.

One of the most fulfilling aspects of my job — and a privilege of serving in the Boeing Technical Fellowship — is collaborating with our global sites. This involves sharing best practices and devising strategies to program factory automation equipment. Additionally, I find immense satisfaction in nurturing and mentoring the upcoming generation of factory automation programmers.

The transformative potential of data analytics, machine learning and AI thrills me. These advancements will revolutionize our ability to program, optimize and effectively utilize factory automation equipment.

TIM BROWN

OPERATIONS ANALYSIS

During graduate school, I attended a conference on operations analysis led by a Boeing Technical Fellow. He suggested I apply to his department when I finished my graduate studies. Once with the company, I immediately knew operations analysis was the right choice for me, as it offers a variety of topics, technologies and customer missions.

It's hard to beat a job that allows you to participate in flight testing, field and lab measurements, cutting-edge simulations, advanced technologies, rapid prototyping and direct support to our operational customers. The work is seldom easy, but I couldn't imagine a more rewarding career.

My customers and colleagues across the aerospace industry are outstanding, and it's truly humbling to be a part of the Boeing Technical Fellowship. Harnessing our diverse experiences and skills is the best way to continue to provide solutions to customers. I look forward to empowering engineers to deepen their skills and to extending current capabilities to meet emerging defense threats and commercial demands.

NEIL LICHTY

PRODUCT LIFE CYCLE MANAGEMENT

A lifelong desire to understand and use technology to resolve complex problems led me to pursue a degree in engineering.

Collaborating with people to innovate engineering technology solutions is the most rewarding aspect of my work. The challenge of applying critical thinking to digital transformation is exciting, as it offers opportunities to gain efficiencies in processes, tools and products.

It's a tremendous honor to be recognized as a Senior Technical Fellow, and I'm excited for the digital transformation of product life cycle management as we mature our model-based engineering methods across the Boeing enterprise.

The speed at which digital data is transforming collaboration is exciting. Digital data and digital threads are advancing our design methods across the product life cycle, transforming products and product development in ways we have yet to imagine, and all promising a very exciting Boeing future.

SEEMA CHOPRA

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

As a little girl growing up in Punjab, India, machines intrigued me. When I was in middle school, I took apart a ceiling fan and repaired the motor. That accomplishment fueled my determination to pursue a career in engineering.

Graduate studies in AI and machine learning fascinated me, and I have pursued those interests ever since. That's still the most rewarding aspect of my work — using AI and machine learning to develop solutions from predictive alerts for aircraft faults to automation in manufacturing and engineering processes.

Serving in the Boeing Technical Fellowship fills me with excitement and honor. The continuous collaboration motivates me to contribute my vision and technical expertise to develop cutting-edge technologies. I'm excited by the possibilities of bringing AI technology to benefit human systems by combining the best of human knowledge with the capabilities of AI.

CHRIS MADDOX

STRUCTURAL ENGINEERING AND STRUCTURES AIRWORTHINESS

I knew I wanted to be a structural engineer the first time I walked into the McDonnell Douglas plant in St. Louis. Within a single building, I witnessed the development of a fighter aircraft from detailed parts to a complete aircraft. I dedicated the early part of my career to being hands-on and learning every aspect of what it took to design, assemble and test an aircraft.

Being a member of a team that creates products that are essential to national defense is the most fulfilling aspect of my work.

I take great pride in having worked hard to advance to a position in my field where I can speak for and represent the structures community and exercise leadership within Boeing and the aerospace industry.

I am enthusiastic about the future, for both my role in shaping the structural integrity of aircraft and in helping Boeing become a global leader in aircraft development and manufacturing.

Senior Technical Fellows

JAY PATEL

SUSTAINING AND FLEET SUPPORT ENGINEERING

Growing up, our house was on the flight path to the airport. Every day, airplanes flying overhead fascinated me; I could recognize the type of aircraft just by the engine sound. This inspired me to pursue aeronautical engineering and to find answers about why things break and how to fix them.

Solving unique, complex engineering problems in challenging environments with limited resources is one of the most rewarding aspects of my work. I think about the Apollo 13 mission, on which ground controllers designed a solution using only materials available to the astronauts.

I'm honored, humbled and blessed to be part of the Boeing Technical Fellowship. I would not be here without the help and support of my family, managers, mentors and co-workers.

Through the Fellowship, I look forward to my continuous learning and to developing, coaching and mentoring the next generation of Boeing engineers. Together with our partners and customers, I am excited to drive innovations like automation and AI into engineering solutions for our products.

EVELYN MATHESON

ELECTRICAL POWER SYSTEMS AND POWER QUALITY

Growing up, I was interested in science and airplanes and enjoyed solving problems. In college, I worked with new technologies for ground-based, utility industry engineering applications. That led me to Boeing and to integrating similar technologies in the challenging environment of large airplane power systems.

I am constantly learning from customers and finding opportunities to use that knowledge and experience to improve products and processes. Customer feedback is rewarding, helping us understand what worked well and guiding us to deliver an even better product.

I'm honored to be part of the Boeing Technical Fellowship and thankful for the mentors and teammates who have encouraged me to reach across integrated airplane systems to influence system performance and equipment designs. I'm excited to continue working with talented people to create new architectures, designs and capabilities that will have a positive impact for Boeing platforms and services.

CHRISTOPHER R. REID

HUMAN ENGINEERING

I accidentally came across human engineering during my first job after undergraduate school. Working as a computer systems engineer, I was taking graduate classes in usability, human-computer interaction, ergonomics and safety. Those classes opened my eyes to the blending worlds between engineering and human sciences through human factors and ergonomics — human engineering. I was hooked.

Human engineering improves the lives of people and the systems they work with. That's the most rewarding aspect of my work: people.

My position in the Fellowship is an honor and a privilege for my family, myself and the human engineering field. Within the Fellowship, the collaboration compares to the synergy of a sports team. Each teammate brings individual strengths, but moving as one body enables the team to overcome any challenge.

Emerging technologies are prompting new reasons to either leverage technology or intervene for its improvement on behalf of people. Shaping these technologies will improve safety, human performance and accessibility. I can't imagine a more exciting time than now. We're pulling the future into the present.

DANIEL NGUYEN

PRODUCT SECURITY ENGINEERING — CYBER TEST

I enjoy solving technical puzzles and creating real-time strategy scenarios, which challenge me to understand the intricacies of group and environmental compositions.

Cyber test embodies a similar mindset, where continuous learning, tinkering and debugging are essential to identifying the optimal path or solution. Within this field, I'm able to apply this approach to evaluate and enhance the resilience of our products. It's exciting to push boundaries and constantly improve in this domain.

Being surrounded by a diverse group of individuals — innovators, technologists, visionaries and talented colleagues — is the most rewarding aspect of my work. My teammates are focused on execution, and that creates a stimulating, dynamic work environment that constantly pushes me to challenge my thoughts and assumptions.

I'm honored and grateful to be part of the Fellowship, and I'm thankful for the guidance and invaluable support of my mentors, advocates and teammates.

DON ROBINSON

PROPULSION PERFORMANCE

Throughout my career, I've based my decisions on doing what I enjoy. I have always been interested in aircraft and how things work, and I studied aeronautical engineering at college.

My focus of study was fluid dynamics, and my early work experiences were in the areas of propulsion and aerodynamics. I have happily been able to integrate and optimize propulsion systems throughout my career.

I have always enjoyed the opportunity to improve or develop aircraft and to help move those products from concept through use in service. I especially enjoy being part of a large collaborative team, developing and producing complex aircraft that customers value highly.

I am thankful to be a part of the Boeing Technical Fellowship, and I look forward to adding value to Boeing's future.

Senior Technical Fellows

THOMAS TAYLOR

ELECTRICAL DESIGN AND ELECTRICAL WIRE INTERCONNECTION SYSTEMS

Since I was a kid, I've been drawn to aerospace and understanding the workings of complex machines. Fortunately, I grew up in a family that exposed me to aircraft at an early age. Engineering was a perfect fit for me, allowing me to apply my love of math and science and to follow my passion for these wonderful flying machines.

For the past 34 years, I've had the privilege of working with skilled, focused individuals to solve difficult engineering problems, whether in new product development or by resolving high-visibility, in-service issues.

I'm honored and humbled to be part of the Fellowship. It's rewarding to pass the knowledge I've gained to the next generation of engineers and to help advance our technical community.

The aerospace industry is at a turning point, as technical advancements in aircraft efficiency, emissions and performance are required to meet increasing transportation needs. Engineers love nothing more than solving difficult problems. These new challenges present learning opportunities for engineers, which excites me about the future.

BRIAN ROYER

KILL CHAIN ANALYSIS AND MISSION SYSTEMS ARCHITECTURES

From as early as I can remember, I have been captivated by aviation. This fascination inspired me to read every book I could find about aviation, to build remote control airplanes and model rockets, and to seek an aircraft mechanic license in high school.

My passions led me to pursue a degree in aerospace engineering. In college, I had the privilege of being taught by several Boeing Technical Fellows who exposed me to the real-world application of academic concepts that engineers encounter.

Kill chain analysis involves understanding the warfighter's needs and appreciating how our products protect people. I am energized by the challenge of finding creative solutions to integrate on our platforms and anticipating and developing future requirements.

Strong mentors throughout my life, particularly at Boeing, have helped me develop and refine my childhood dream of a career in aviation. I am honored to represent Boeing as a Senior Technical Fellow, and I am excited to collaborate with, and learn from, the talented individuals within the Fellowship.

KIRK VINING

FLIGHT TEST OPERATIONS

Aviation inspires us to keep our career aspirations high. I was counseled that if you shoot for the moon, you might at least end up in orbit. And if you shoot for orbit, you might end up being an experimental test pilot.

We count on each other for support and to perform at our best. The most demanding individual test conditions at the edge of the envelope require everyone to work together — planning, preparing, executing, monitoring and analyzing — to be safe, efficient and effective.

I'm honored to be part of the Fellowship, and I feel a strong accountability to ensure my role in the Fellowship provides tangible value to Boeing, our customers and the flying public.

Boeing has a renewed vision for technology that enhances product safety, both for new products and existing aircraft. I'm eager to see new safety enhancements propagated across the fleet.

ANDREW SHEPPARD

ADVANCED AIRPLANE DEVELOPMENT

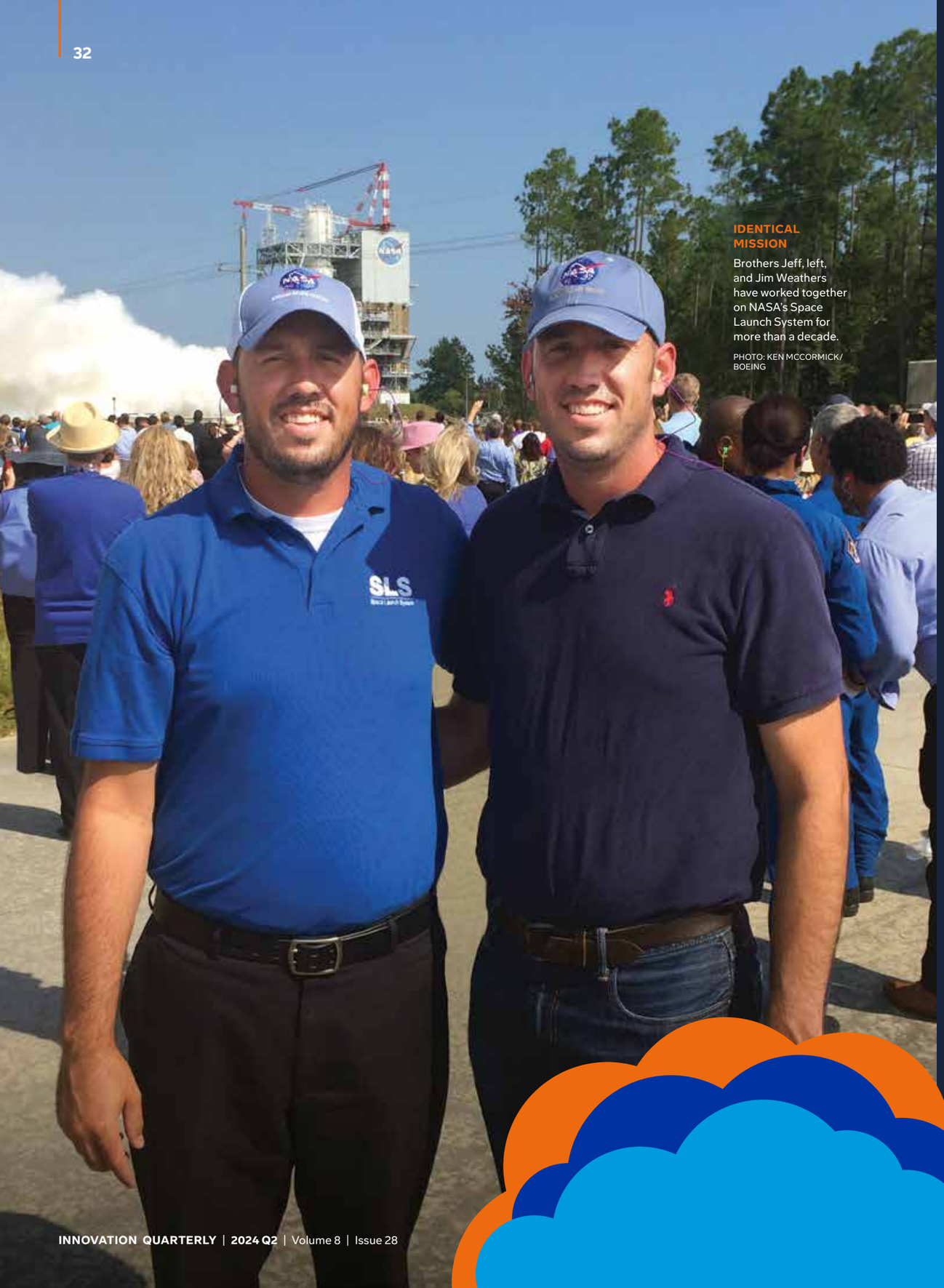
My father was an electrical engineer. He taught me to be inquisitive, and he inspired my passion for understanding how things work. I became interested in aviation, mathematics and physics at a young age, which naturally led to my aerospace engineering studies at college.

The most rewarding aspect of my work is the opportunity to work with a diverse group of multidisciplined, talented people to develop components and products that I can see take flight. Being at the airfield and seeing the MQ-28 complete its first flight was a career highlight.

As a Senior Technical Fellow, I'm responsible for promoting and ensuring technical excellence in all we do. It's foundational to our success and something I take seriously. Innovating and solving problems by collaborating across the Fellowship is an honor.

I'm excited to expand Boeing's technical community globally, bringing engineering innovation and capability together to maximize product value.

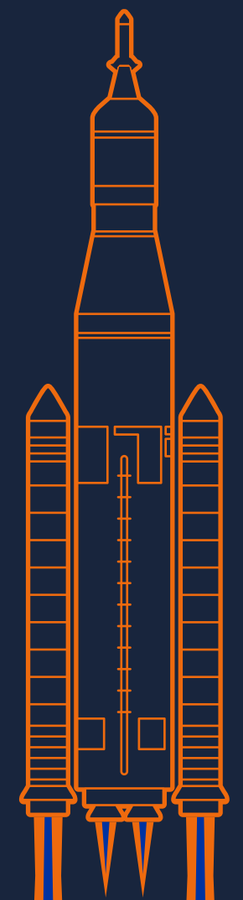
New Executive Technical Fellows



IDENTICAL MISSION

Brothers Jeff, left, and Jim Weathers have worked together on NASA's Space Launch System for more than a decade.

PHOTO: KEN MCCORMICK/ BOEING



Take It From the 'Twin-gineers'

Boeing Technical Fellowship offers path to career advancement, fulfillment

BY ELAINE BRABANT, BOEING WRITER

The career journey has never been lonely for identical twins Jim and Jeff Weathers — and they're determined to make sure it won't be for others.

The brothers have been the best of colleagues throughout their almost identical careers.

As members of Boeing's Technical Fellowship, they represent the top 3% of Boeing's technical and scientific community. NASA has recognized the work they've done with Boeing, awarding each a Silver Snoopy Award, an honor reserved for less than 1% of the human spaceflight workforce.

What brings the brothers the most joy, however, is the opportunity to work with each other every day, tackling important engineering challenges and developing current and future talent.

Here, they share the journey of following their dreams and helping others do the same.

Cohabitation leads to lifelong collaboration

Growing up, the Weathers brothers realized they could do more together than apart.

“We shared a bedroom for 18 years, so we didn’t have a choice but to get along,” Jeff said. “Collaboration has always been part of our relationship.”

Throughout school, they challenged each other and relied on their community for support. Seeing their talents for problem-solving, teachers and friends encouraged their interests and aptitudes in math and physics. Neighbors gave them rides to school for early class opportunities.

With Mississippi State University in their hometown, and both parents on staff, the brothers were surrounded by engineering mentors. Both earned bachelor’s and master’s degrees there. Jim also completed his doctoral degree there, and Jeff earned his doctorate at The University of Alabama.

The whole is greater

Once together at Boeing, the brothers continued to join forces.

In addition to designing and analyzing critical Space Launch System hardware for NASA’s successful Artemis I mission, Jim and Jeff are two of the primary architects of the Boeing-built Exploration Upper Stage. As leads on an early design team, they helped mature the new upper stage, a key component of the Artemis IV mission.

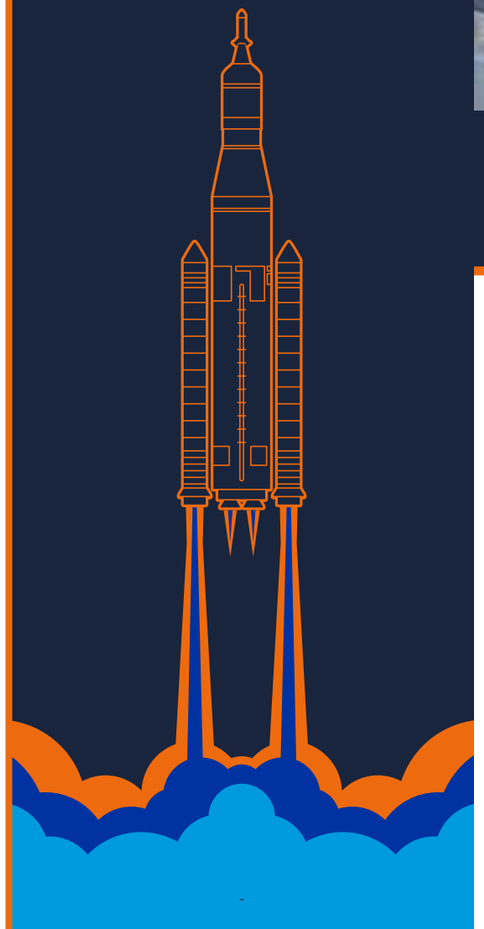
“The tendency might be to split up two high performers,” said Jim. “We had good leaders who realized the whole is greater than the sum of its parts, and they decided it was better to keep us together.”

“That’s true of our relationship as brothers, but it’s also true for our company. The only way to be successful is through close collaboration, and that’s what the Technical Fellowship is all about,” Jeff added.

With a desire to solve technical problems and engage with a community of experts, Jim and Jeff applied to become Associate Technical Fellows, the first of the Fellowship’s five progressive stages. The Fellowship offers technical leaders an alternative to the managerial career path.

“The technical path seemed like the only path for me,” said Jeff, who along with Jim was named an Associate Technical Fellow in 2020. “I get the greatest sense of accomplishment from solving really tough problems, while learning from and mentoring others.”

> “The tendency might be to split up two high performers. We had good leaders who realized the whole is greater than the sum of its parts, and they decided it was better to keep us together.”
>
> **JIM WEATHERS, BOEING TECHNICAL FELLOW**



MIRROR IMAGES

When the Weathers brothers look at a project, they see their own reflection too. From left, Jim, Jonathan Bennett and Jeff look at a structural component of the SLS.

PHOTO: TRUE HINES/BOEING

An unconsidered path could fit perfectly

Not everyone sees their path as clearly, said the brothers, who enjoy helping people find their way into the Fellowship. Both advanced to Technical Fellows in 2024.

Jim and Jeff counsel others who, despite great technical aptitude, may hesitate to share their expertise out of fear of being scrutinized or because they underestimate their knowledge. The brothers step in to remind individuals that their ideas matter.

“Some of the best results come from people who aren’t really visible but keep their heads down doing great work,” Jim said. “We need them to have more exposure and influence, and the Technical Fellowship is a perfect platform for that.”

> “That’s true of our relationship as brothers, but it’s also true for our company. The only way to be successful is through close collaboration, and that’s what the Technical Fellowship is all about.”
>
> **JEFF WEATHERS, BOEING TECHNICAL FELLOW**

The brothers know firsthand that doubt doesn't just come from within. Sometimes it comes from other people, even those with the best intentions.

"Even though our parents worked at the university, math and science was not their thing," Jeff said. "When Jim and I wanted to major in engineering, they pushed back a bit because it was unfamiliar to them and they were worried."

The brothers, however, were not. "We motivated and gave each other confidence," said Jim. "Sometimes that little bit of confidence is all it takes."

Paying it forward

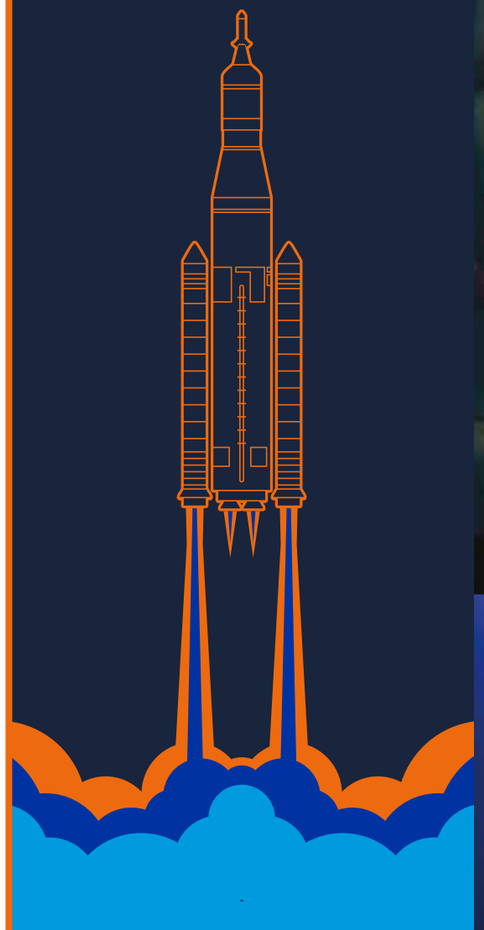
As they build launch vehicles, Jim and Jeff also build professional pathways for colleagues and students.

They mentor other engineers, helping them gain the breadth and depth of experience necessary to become a Fellow. Candidates applying for the Fellowship seek out Jim and Jeff, who provide counsel and coaching through the application and interview process.

In addition, Jim and Jeff serve as Boeing executive contacts for Mississippi State University. They love to get students excited about aerospace, whether telling them about the great stuff going on at Boeing or designing capstone projects.

"We both care about seeing others succeed," Jim said. "Our individual honors are nice, but it's the collective success that truly matters." **IQ**

> "Some of the best results come from people who aren't really visible but keep their heads down doing great work. We need them to have more exposure and influence, and the Technical Fellowship is a perfect platform for that."
>
> **JIM WEATHERS, BOEING TECHNICAL FELLOW**



BOOST YOUR SLS IQ
Meet the rocket.

X-66

Ready for ‘X’-tensive Mod

Boeing, NASA efforts to reduce aviation emissions converge in experimental airplane

BY QUINN MARCIANO, BOEING WRITER

A metamorphosis is taking place inside an airplane hangar in Palmdale, California, as an MD-90 airplane transitions to become the NASA Sustainable Flight Demonstrator (SFD), or X-66.

Ahead of extensive modifications, Boeing teams are scanning the airplane in 3D to inform the future aircraft’s design and build plan.

ALL PHOTOS AND VIDEO: RYAN COE/BOEING (UNLESS INDICATED)

RUDDER REVIEW
The X-66 gets its close-up, as laser scans capture structural details of the existing aircraft configuration. When reconfigured with a truss-braced wing, the X-66’s design could lead to reductions in fuel burn and emissions of up to 30%.

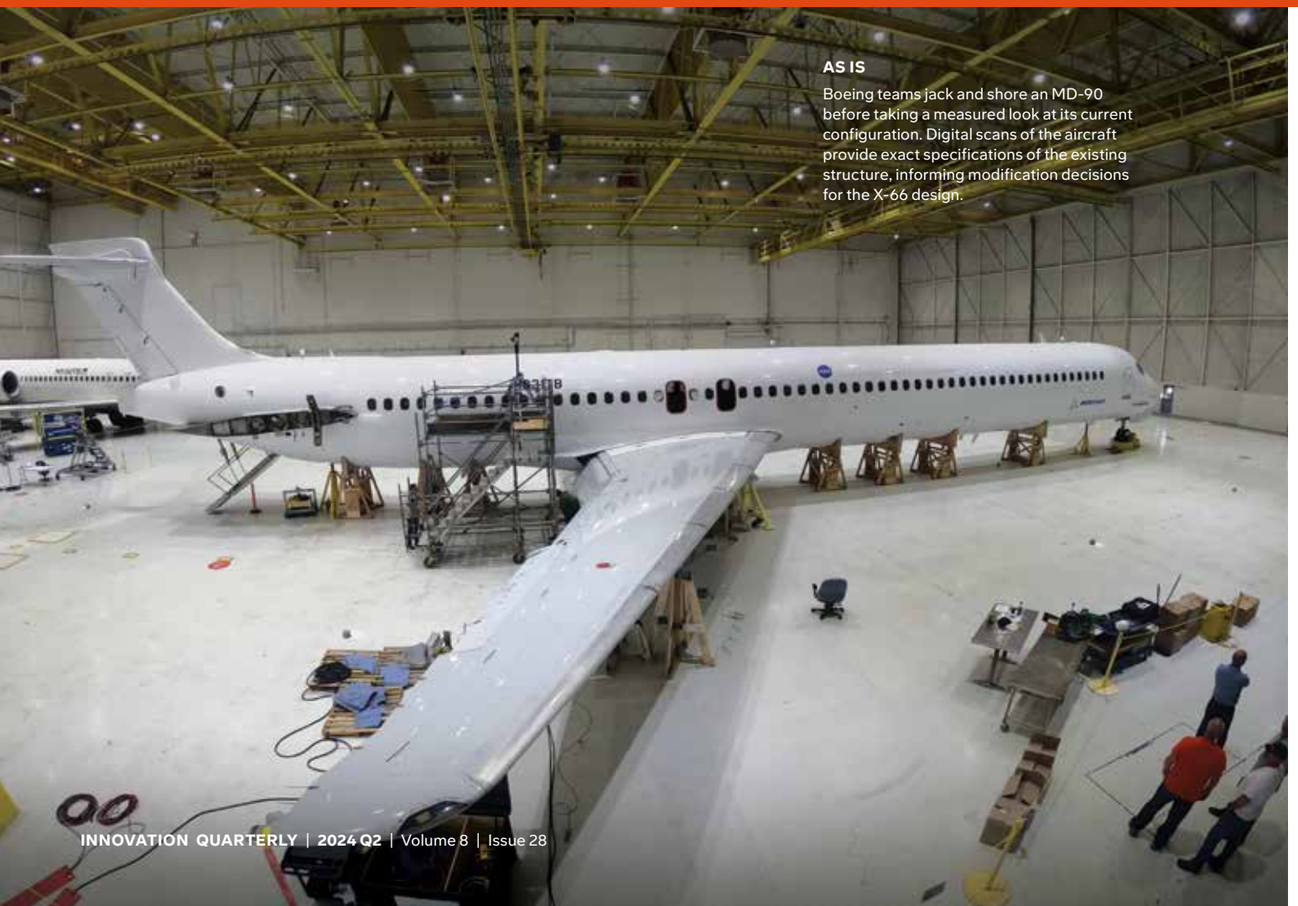
WHAT A WING

Extra-long, thin wings stabilized by diagonal struts are signatures of the X-66 structure.

IMAGE: BOEING

MD-90 IN 3D

With engines removed, Boeing teams are scanning every detail of the MD-90 that will become the NASA SFD.



AS IS

Boeing teams jack and shore an MD-90 before taking a measured look at its current configuration. Digital scans of the aircraft provide exact specifications of the existing structure, informing modification decisions for the X-66 design.

X-66

Ready for 'X'-tensive Mod

"Digital scans are providing a baseline understanding of the aircraft configuration 'as is' rather than 'as designed' or 'as built,'" said Eric Kaduce, Boeing SFD program manager.

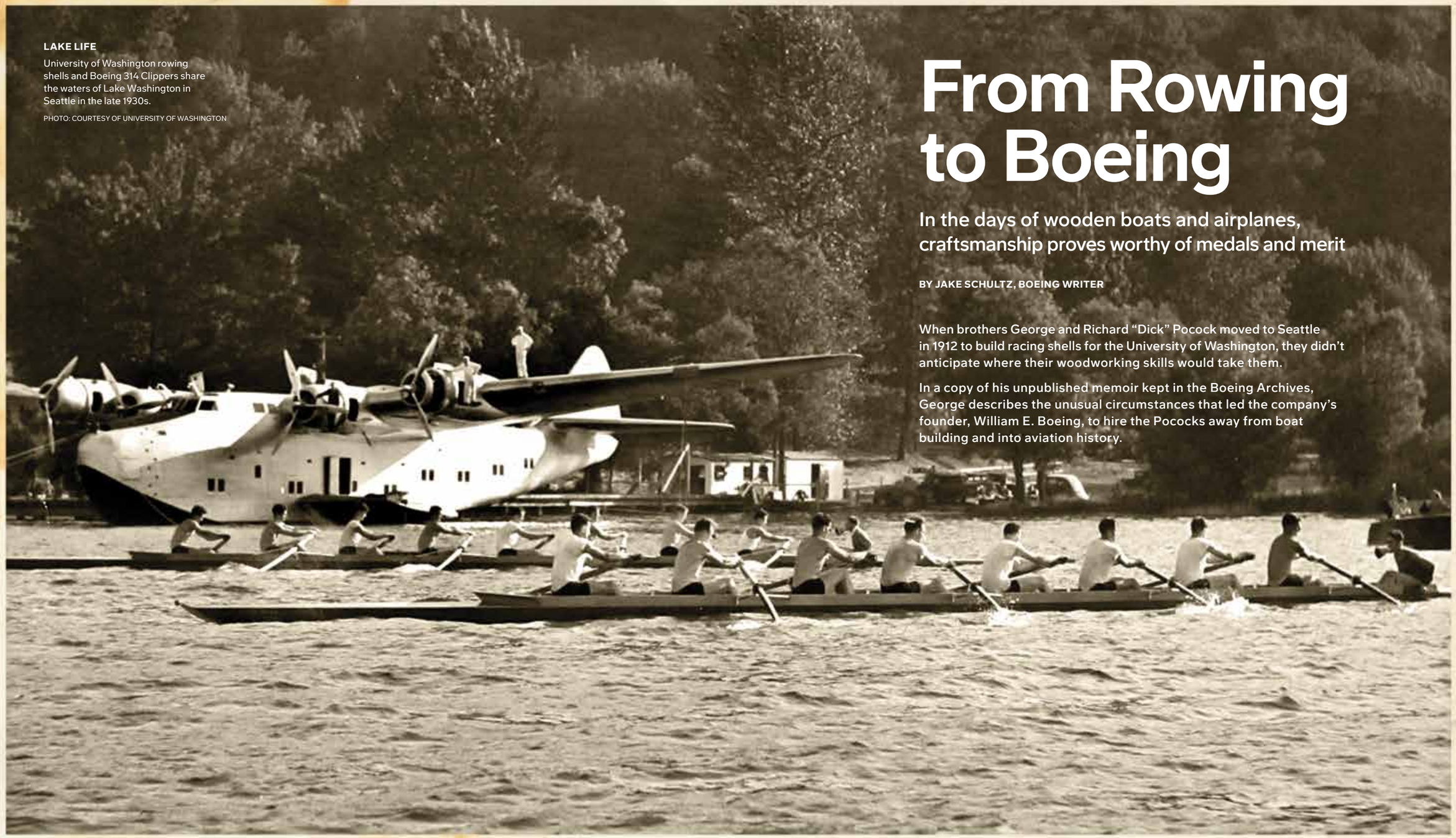
"This airplane has had a long service life since rolling out of the factory, so we must understand in detail the current condition of the airplane, both from a geometry perspective and in a design sense," said Kaduce. "Prior structural modifications or repairs may influence our engineering design, particularly the major pieces of the modification."

X-66 is NASA's first experimental plane to focus on reducing aviation greenhouse gas emissions. Ground and flight testing are expected to begin in 2028.

"Bringing the MD-90 out of storage and into an operational state earlier than planned is ensuring that the design and integration of the X-66 truss-braced wing modifications will proceed efficiently," said Brent Cobleigh, NASA SFD project manager. **IQ**

> "Bringing the MD-90 out of storage and into an operational state earlier than planned is ensuring that the design and integration of the X-66 truss-braced wing modifications will proceed efficiently."
>
> **BRENT COBLEIGH,**
> **NASA SFD PROJECT MANAGER**

INSIDE IQ
Go inside the hangar where X-66 modifications are underway.



LAKE LIFE

University of Washington rowing shells and Boeing 314 Clippers share the waters of Lake Washington in Seattle in the late 1930s.

PHOTO: COURTESY OF UNIVERSITY OF WASHINGTON

From Rowing to Boeing

In the days of wooden boats and airplanes, craftsmanship proves worthy of medals and merit

BY JAKE SCHULTZ, BOEING WRITER

When brothers George and Richard "Dick" Pocock moved to Seattle in 1912 to build racing shells for the University of Washington, they didn't anticipate where their woodworking skills would take them.

In a copy of his unpublished memoir kept in the Boeing Archives, George describes the unusual circumstances that led the company's founder, William E. Boeing, to hire the Pococks away from boat building and into aviation history.

It is now early 1916, and one afternoon the president of the university came in the old Tokyo Tearoom shop. He had a gentleman with him.

"These are the boys I was tellin' you about, Bill," he said.

We had a new finished eight in the shop, which was to go to California. Bill whoever-he-was got under the boat and was on his knees really interested.

"This is the very work I want," he said to Dr. Henry Suzzallo, the president.

President Suzzallo by now was at the door, tapping the floor with his cane and saying, "Come on, Bill, I must go."

Bill got up on his feet and started for the door with his hand in his pocket. Taking out his card case, he threw a card on the bench and said, "Come and see me as soon as you can."

We looked at the card to see who Bill was. The card read W.E. Boeing, Hoge Building, Seattle. We had heard that a man by that name was building a seaplane for his own private use and this undoubtedly was the man.

BOEING ARCHIVES/EDITED FOR CLARITY

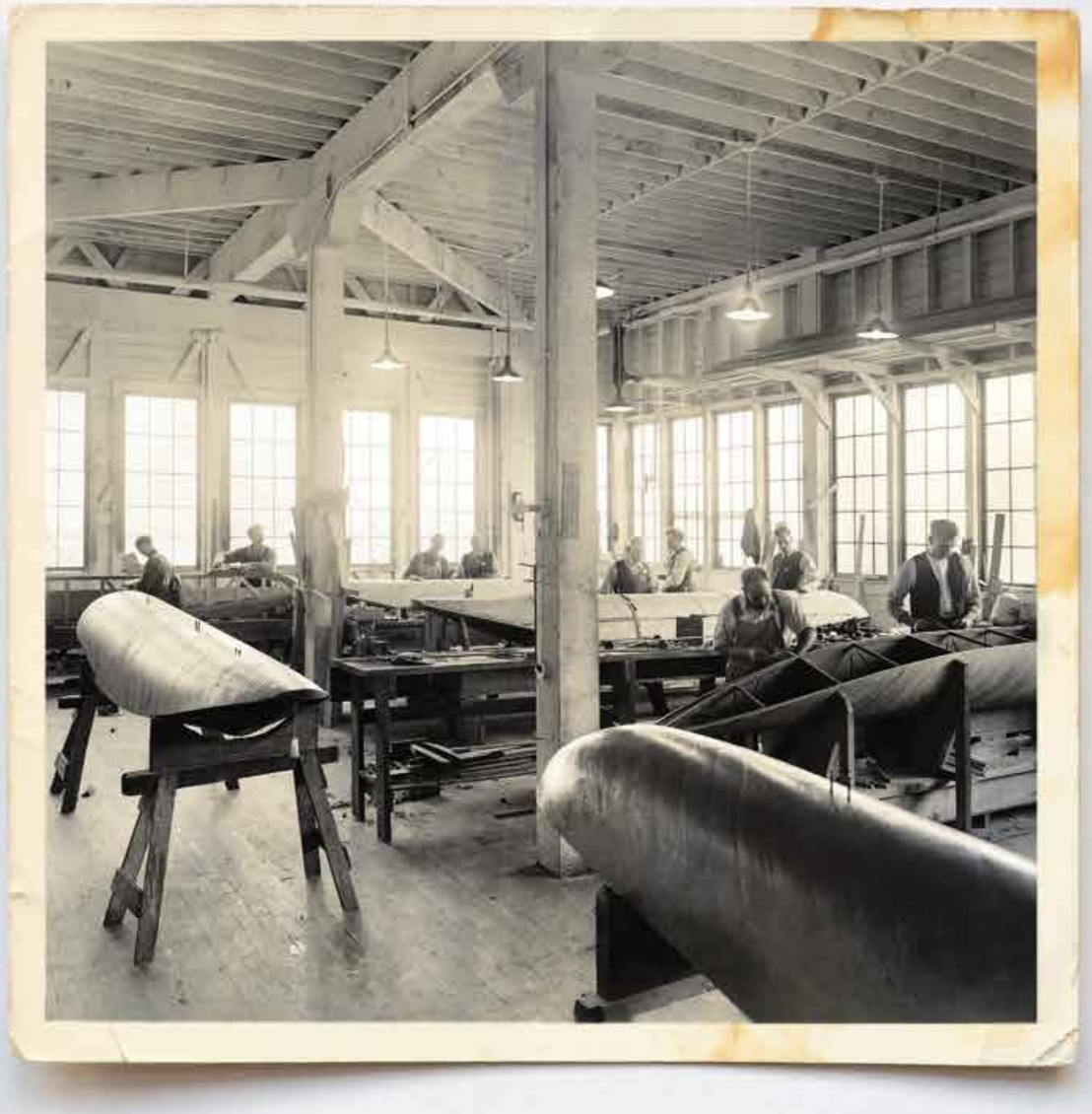
Boeing turns to brothers to build flying boats

Not long after Boeing's visit to the university, in 1917 he received an order for 50 Model C trainers for the U.S. Navy. He hired the Pocock brothers, who brought on 12 more employees to help them construct pontoons for the seaplanes. They set up production in Plant 1, the "Oxbow" plant, which affectionately became known as the Red Barn and is now preserved at The Museum of Flight in Seattle.

Soon the team was producing one pontoon per day in the same shop where Boeing was building Curtiss HS-2L flying boats, bedroom furniture and flat-bottomed boats known as sea sleds. George discovered the vertical grain western red cedar was a far better material to plank the flying boats. Using western red cedar made the pontoons lightweight but strong enough to land on water.

When airplane production slowed to a standstill in 1919, the Pococks honed their woodworking skills on a couple of shells in an unused space in the Red Barn.

In 1922, the brothers left Boeing and returned to boat building. George set out on his own and built racing shells for UW, while Dick built shells at Yale.



BOATS IN THE RED BARN

In 1918, Dick and George Pocock were crafting airplane pontoons in the Red Barn. Dick Pocock, wearing an open vest, is far right. George Pocock is working on the pontoon behind Dick, wearing coveralls, a vest and a necktie.

PHOTO: BOEING ARCHIVES

About this time Dick and I took ourselves off the Boeing payroll and built a couple of eight-oar'd shells in one of the unused shops. When finished they were put over in the new H.S.2 assembly room. It was now 1919.

The aircraft industry was virtually at a standstill. Boeing did not have a tap of work to do on airplanes. The engineering department consisted of three men and a young woman designing a couple of models.

A House committee from Washington, D.C., was touring the country visiting all plants that had built airplanes during the war to see which ones were worthy of keeping running, I supposed. The committee arrived at Boeing and there was nothing to see except some drawings of airplanes. They toured the whole plant: machine shops, plating shop, wing room, woodworking room, and lastly they went over to the huge, as we thought then, final assembly building. There were the two eight-oar'd shells Dick and I had built — 60 feet long, but still lost in such a big place.

One member of the committee hurried over to the two boats and walked up and down in amazement.

"Who on earth built these?" he asked Edgar Gott, the general manager.

"Oh, two of the boys who work for us."

The committee man said, "I rowed at Harvard and I never expected to see anything like this out here. I would like to meet the builders and talk to them."

So we were sent for and a pleasant chat ensued on rowing, not airplanes. Mr. Gott was excited. By then all the committee were studying the boats and incidentally admiring the workmanship, which was pretty good.

"That's the kind of workmen we have here," Mr. Gott told the committee.

It could not have done any harm for very shortly thereafter, the company received an order for 200 pursuit planes, and as Mr. Boeing had predicted, they never looked back.

BOEING ARCHIVES/EDITED FOR CLARITY

Building boats for The Boys of 1936

Soon after George began building eight-oared shells for UW in the university's Shell House, the UW varsity 8 crew won its first national championship in a Pocock shell. Over the next decade, the team earned national prominence, with the undefeated UW varsity 8 crew winning its first collegiate 2,000-meter national championship in 1933, besting Yale, Cornell and Harvard.

In 1936, UW achieved another first in collegiate rowing — a sweep of the Intercollegiate Rowing Association National Championship, with the freshmen, junior varsity and varsity 8 crews claiming victory. Undefeated, the varsity 8 crew qualified for the 1936 Olympic Games in Berlin.

With fans proclaiming the UW team the best crew to ever race, the team won Olympic gold in a Pocock shell in an extraordinarily close finish right in front of the main grandstands.

Just a few years later, the U.S. entered World War II.

As a subcontractor, George Pocock again applied his woodworking skills to aircraft, building floorboards for Boeing B-17 bombers.

CREW CRAFTSMAN

An accomplished rower, George Pocock built rowing shells for the UW varsity 8 crew that won the gold medal at the 1936 Olympics.

PHOTO: COURTESY OF UNIVERSITY OF WASHINGTON

GOLD CREW

The 1936 UW crew won Olympic gold in Berlin.

From left are Don Hume, Joe Rantz, George Hunt, Jim McMillin, John White, Gordon Adam, Chuck Day and Roger Morris. Coxswain Robert Moch kneels in front.

PHOTO: COURTESY OF UNIVERSITY OF WASHINGTON

The Boys of 1936

ROBERT “BOBBY” MOCH
COXSWAIN

Bobby was the team’s only senior and grew up in Montesano, a small logging town in the southwest corner of Washington. After the 1936 Olympic Games, Bobby went to law school, married, and coached at MIT until 1945. He would go on to a highly successful legal career, eventually arguing and winning a case before the U.S. Supreme Court.

DON HUME
STROKE

Don grew up in Anacortes, a lumber and fishing town north of Seattle. When his family moved to Olympia, he stayed in Anacortes and became an all-around athlete and honor student in high school. After UW, Don spent the war years in the Merchant Marine, sailing out of San Francisco. He built a career in oil and gas exploration after the war, traveling as far as Borneo.

JOE RANTZ
#7 SEAT

No stranger to hard work, Joe lived on his own for much of his youth. He worked for a year after high school in his hometown of Sequim, Washington, to earn enough to pay for his first year of college. Joe graduated in 1939 and worked as an engineer at the Union Oil Company and Boeing. He and his wife, Joyce, would live in Lake Forest Park near Seattle for the rest of their lives.

GEORGE “SHORTY” HUNT
#6 SEAT

The youngest boy in the boat due to graduating high school two years early, Shorty was from the small farming town of Puyallup, Washington. After graduating, he married and went to work at a construction firm and as a Seabee in the South Pacific during the war. When he returned to Seattle, he cofounded a construction company. Some of his projects include the Burien Library and Seattle University’s Lemieux Library.

JIM “STUB” MCMILLIN
#5 SEAT

Jim, the team captain, was the tallest of the boys at 6’7” and grew up in Queen Anne. Stub also put himself through school working any odd job he could find. After returning from the Olympics, he graduated, coached at MIT, and worked as a lab engineer for 12 years. Eventually he returned and settled on Bainbridge Island, went to work for Boeing, and married.

JOHN “JOHNNY” WHITE
#4 SEAT

Growing up in South Seattle along Lake Washington, Johnny always wanted to fulfill his father’s dream of him becoming an oarsman. He graduated high school two years early and then worked two years on the docks and at a lumber yard gaining the money and muscle he needed to attend the UW and row. Johnny graduated in 1938, married in 1940, and followed his father into the steel business working at Bethlehem Steel.

GORDON “GORDY” ADAM
#3 SEAT

Gordy grew up in the small dairy-farm town of Everson, near the Canadian border. He spent five months salmon fishing in Alaska to earn enough money to start at UW. After the Games, Gordy married in 1939 and took a part-time job with Boeing during his senior year. This started his 38-year career there, working on the B-17, B-29, 707 and 727.

CHUCK DAY
#2 SEAT

Living just north of the UW campus, Chuck followed his brother’s footsteps and joined the crew. Despite his family being financially stable, he spent the summer working on the Grand Coulee Dam. After earning his medical degree, Chuck served as a naval doctor in the Pacific and returned to Seattle to establish a successful practice as a gynecologist.

ROGER MORRIS
BOW

Roger was from the Fremont district, just west of campus, and put himself through school by playing in a dance band. After graduating in mechanical engineering, he spent the war in San Francisco doing military construction, then returned to Seattle to work for the Manson Construction Company.

PHOTO: JAKE SCHULTZ/BOEING

Hangar is centerpiece of rowing history

The Associated Students of the University of Washington (ASUW) Shell House stands today on the shores of Lake Washington. Indigenous Coast Salish residents called the site stəx̌ʷugʷiɬ (stukh-ug-weelth), or “carry a canoe.”

Originally constructed to house seaplanes and train aviators during World War I, the building is one of only two such original hangars still in existence. The facility is the centerpiece of a project to preserve the historic building and transform the waterfront area into an inspirational cultural center.

Following World War I, the university converted the hangar into the Washington Rowing boathouse. In the early 1920s, UW added an interior upstairs loft workshop for George Pocock. There, in a space just 65 feet (20 meters) at its widest, Pocock constructed the racing shells for the UW crew champions and the 1936 Olympic gold medalists.

TEAMMATES

Three of the 1936 Olympians joined Boeing teams following World War II.

COURTESY OF UNIVERSITY OF WASHINGTON/EDITED FOR CLARITY

Olympic champions, Boeing teammates

All nine team members survived the war. Years later, as stories about their Olympic victory were told and retold, Joe Rantz especially emphasized the win was a team effort. As a team, the UW varsity 8, known at the university as “The Boys of 1936,” was undefeated.

Three members of the 1936 Olympic team became Boeing teammates. Gordon Adam enjoyed a 38-year career at Boeing, serving as a supervising engineer in the 707/727 program. Jim McMillin worked as a unit chief in electrodynamics instrumentation technology. Rantz was a chemical engineer. **IQ**

FAMILY FILES

Katie Kusske, granddaughter of George Pocock, left, and Judy Rantz Willman, daughter of Joe Rantz, review family mementos at the Boeing Historical Archives.

PHOTO: JAKE SCHULTZ/BOEING

> The 787 Dreamliner stands out for its exceptional fuel efficiency, enabling a round-trip flight from Cape Town, South Africa, to Antarctica without the need for refueling. This ensures swift turnarounds and eliminates logistical complexities of transporting, storing and handling fuel in Antarctica. Paired with the airplane's impressive 153 cubic meters of cargo capacity distributed across three cargo holds, and a cargo loading system designed for easy handling of pallets and containers, the Dreamliner excels at meeting the demands of this mission.
>
> **PAUL ERLANDSSON,**
> **BOEING FIELD SERVICE REPRESENTATIVE**

COOL LANDING

Transporting dozens of scientists and 12 tons (10.9 metric tons) of research equipment, a Norse Atlantic Airways 787 Dreamliner touches down Nov. 15, 2023, at Troll Airfield in Queen Maud Land, Antarctica.

PHOTO: SVEN LINDSTRÖM/NORWEGIAN POLAR INSTITUTE

INSIDE IQ
Watch the landing, courtesy of Sven Lindström/ Norwegian Polar Institute.

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