

aloft

Volume 37, Number 5

September | October 2015

THE MUSEUM OF FLIGHT
MAGAZINE



1965-2015
50 years
THE
MUSEUM
OF FLIGHT



Frequent Flyers

For all events, please R.S.V.P. to membership@museumofflight.org.

Restoration Center Open House

Saturday, Sept. 12 | 11 a.m. to 2 p.m.
Paine Field, Everett

The staff and volunteers of the Restoration Center welcome the opportunity to show off the Museum's "Reserve Collection" to our membership. Come see the XF8U-1 Crusader, Boeing 247D and Antonov AN-2 before they leave to join their brethren in the Great Gallery and Aviation Pavilion next spring. See several prototype aircraft such as the Lockheed Model 329 Jetstar, Boeing SST mockup, and of course, the world's first commercial jet airliner—the deHavilland Comet Mark 4-C. Once you have been there, we know you will come back to check on the progress often.

Member Movie Night: "Contact"

Friday, Oct. 9 | Movie starts at 6 p.m. (Doors open at 5:30 p.m.)
William M. Allen Theater

Contact is the story of a free thinking radio astronomer who discovers an intelligent signal broadcast from deep space. She and her fellow scientists are able to decipher the message and discover detailed instructions for building a mysterious machine. Will the Machine spell the end of our world, or the end of our superstitions? Will we take our place among the races of the galaxy, or are we just an upstart species with a long way to go?

Special Members-only Q&A Session: NASA Innovative Advanced Concepts

Sunday, Oct. 25 | 3:30 to 5 p.m.
Weyerhaeuser Room

Immediately following the public presentation by the NASA Innovative Advanced Concepts team on how they make science fiction into reality, members are invited to join presenters, Dr. Robert Winglee and Rob Hoyt, for an intimate question and answer session.

STEM

starters

STEM Starters is a monthly program series geared specifically for our youngest members! Children ages 3 to 5 and their co-pilots (adult helpers required) are invited to explore the wonders of aerospace during this fun, educational program. Space is limited to 12 families (one child/one adult per family) at each program. **RSVP required due to limited space.** To attend, RSVP to membership@museumofflight.org.

Monday, Sept. 14 and Monday, Oct. 12
10:30 to 11:30 a.m.
Northwest Aeroclub Room (Red Barn, First Floor)

This school year we will explore the world of engineering. September and October start off with a hands-on workshop exploring patterns, pattern recognition, and how things work together.



Celebrating 50 Years

Wednesday, Sept. 9 | Noon to 1 p.m.
NW Aeroclub Room (Red Barn, First Floor)

Supervisory Archivist Amy Heidrick will present images and other materials from the Museum's corporate collection that illustrate the entire history and evolution of our institution. From the first Pacific Northwest Aviation Historical Foundation's fundraising activities, to the first displays at Seattle Center, to the changing museum campus and galleries here at Boeing Field, as well as images and materials from special events and notable milestones in the past 50 years, and of course, images of the collection's expansion and the arrivals and installations of our most fascinating aircraft.

727 Restoration

Wednesday, Oct. 14 | Noon to 1 p.m.
Drafting Room (Red Barn, Second Floor)

The Museum's Restoration team has been working diligently restore the first Boeing 727 ever produced. As we finish the aircraft and prepare to move it to the museum's main campus, Head Librarian Meredith Lowe Prather will give a brief history of the airplane, showcase items from the collection related to the 727, and talk about the Museum's resources used in the restoration project.

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Questions or Comments?
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On the cover: The Museum's Boeing WB-47E under restoration, year unknown. (The Boeing Company/The Museum of Flight Collection)

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Aerial view of the Red Barn and the B-47 on the Museum's construction site at Boeing Field, October 1980. (The Museum of Flight)

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Smithsonian Institution
Affiliations Program



It's been an absolutely fantastic summer here at the Museum!

I hope you were able to witness the thrilling U.S. Blue Angels action from the Museum's doorsteps or spot some of our brilliantly decorated astronaut statues dispersed throughout Puget Sound. I want to take the opportunity to share one of my favorite memories from this summer.

On July 23, spirits were bright among an audience of Museum trustees, staff, educators, volunteers and learners as a cloud of blue paper airplanes whirled and soared amidst the backdrop of the historic Boeing 80A, officially welcoming the Boeing Academy for STEM Learning.

I am truly honored to announce the largest gifts in The Museum of Flight's history: two outstanding investments from both an iconic company and its legacy family that will shape our institution for years to come. In an unprecedented partnership, The Boeing Company, along with the late Bill Boeing, Jr. and his wife June, have committed \$15 million each, for a combined impact of \$30 million, launching the Boeing Academy for STEM Learning. The timing of these two investments couldn't have been more opportune given the gap between science, technology, engineering and mathematics (STEM) job openings and qualified candidates in Washington state. This effort will more than double our educational capacity, thus increasing student access to STEM Education—especially underserved youth, including young women and students of color—and ensuring our future as a robust learning hub. For more information about this exciting partnership, please see pg.8.

The end of the summer marks the Museum's official 50th Birthday—September 14 to be exact. We have truly come a long way since our humble beginnings as the Pacific Northwest Aviation Historical Foundation (PNAHF). Today, the Museum campus spreads across 15 acres with four buildings and, of course, one more under construction—the much anticipated Aviation Pavilion scheduled to open in Summer 2016—and don't forget the Museum's Restoration Center and Reserve Collection at Paine Field in Everett. The Museum's archives include more photos than the Smithsonian National Air and Space Museum, our educational outreach may be the largest of its kind, and through it all, the Museum remains a fun place for visitors near and far. Our growth as an institution is undoubtedly a testament to the support of our donors, trustees, staff, volunteers, members and greater Museum community. I invite you explore our history in the 50th Anniversary Edition of Aloft—packaged along with this issue.

To commemorate our first 50 years, please join us on Saturday, September 19 in a fun-filled birthday celebration. In honor of this momentous occasion, The Museum will offer visitors our original admission price of 50 cents for the entire day (10 a.m.-5 p.m.). Festive activities will be held for the entire family to enjoy, including a one-time opportunity to view all 25 of the Museum's life size Astronauts. For more information about this event, please see the back cover.

As the Museum looks ahead, we are taking bold steps forward to preserve our collections and exhibits, enhance our visitor experience and provide a deeper and more lasting educational impact on the community. We are truly grateful for your dedicated support.

I look forward to entering this exciting new phase of growth with you!

Sincerely,

Douglas R. King
President and CEO

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Douglas R. King – Ex-officio



Jet Blast Bash

The Museum celebrated Seafair in style this August with a weekend outdoor family festival right on the Blue Angels' flight line. In tune with the Museum's 1965 birthday, the festival was themed to the Sixties with a mix of the right food, cocktails, music, activities and AstroTurf.

In the background of the runway action and dramatic takeoffs and landings of our favorite 'blues' static aircraft and some hot wheels were featured in the Museum's parking lot. Displays included the F9F Cougar, AV-8B Harrier, EA-6B Prowler, A-4 Skyhawk, V-22 Osprey tilt-rotor, a clan of Cascade Warbirds, the Air Force's Vapor super car, and the Elio future car.

Museum visitors bobbed their heads to the amusing tunes of the Jet Flight Team (from Jet 95.7 radio), Market Street Dixieland Band, Boeing Employees Stage Band and Two Scoops.

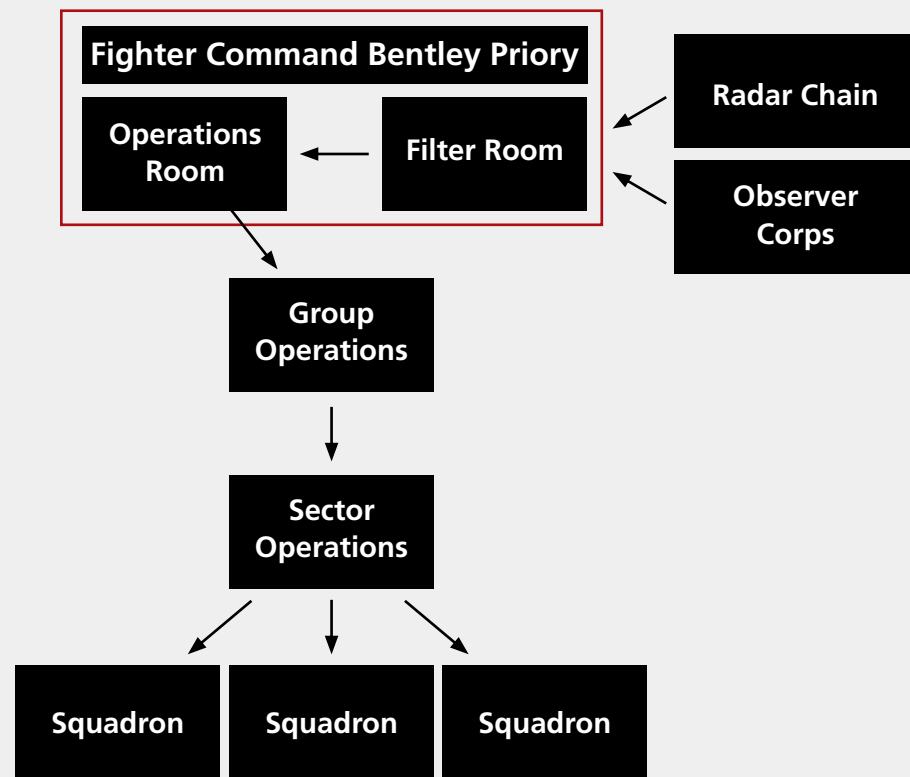
Some of our youngest visitors tested out their piloting skills with a squadron of adorable pedal planes. Youth also enjoyed racing one another with the hydroblasters, crafting Blue Angels themed creations, and participating in fun games and trivia on the AstroTurf.

Inside of the Museum, legendary SR-71 Blackbird spyplane pilot Brian Shul delivered his remarkable story and former Navy Top Gun instructor pilot Dave "Bio" Baranek entertained the audience with his fascinating talk about living in the danger zone.

The weekend was completely fun-filled and jam-packed! A big thanks to the Museum staff and volunteers, the Bank of America community crew and our media sponsor 95.7 The Jet for helping make the event a success!

Clockwise from top: U.S. Navy Blue Angels take-off for the 2015 Boeing Seafair Air Show. (Ted Huetter) • Former Navy Top Gun instructor pilot Dave "Bio" Baranek (Rachel Dreeben) • Youth participate in Blue Angels Mania themed Bank of America Weekend Family Workshop. (Rachel Dreeben) • A mini-pilot prepares for flight. (Rachel Dreeben) • Bank of America Seattle Market President Anthony DiBlasi and his team of community volunteers join President and CEO Doug King to celebrate the Museum's partnership with Bank of America. (Rachel Dreeben)





THE DOWDING SYSTEM

By: Ted Young, Volunteer at The Museum of Flight

This summer marks the 75th anniversary of the Battle of Britain, the first major campaign fought entirely between rival air forces. While there are many events taking place to commemorate the achievements of “The Few,” the gallant pilots who through their bravery and tenacity defeated the Luftwaffe, it is not inappropriate to remember as well the system of command and control that gave the Royal Air Force a priceless advantage during the Battle. Referred to today as “C3I”—Command, Control, Communications and Intelligence—since the Battle of Britain the Royal Air Force’s system of fighter control has become known as the Dowding System in honor of Air Chief Marshal Sir Hugh Dowding, its creator.

Any system of air defense has two principal requirements: first, the ability to detect and locate a formation of enemy bombers; and

second, the ability to direct friendly fighters to a successful interception. Prior to the invention of radar, intercepting an enemy air raid was a hit-or-miss affair involving wasteful standing patrols of fighters over probable approaches to a key target. Even then, the fighters still might not locate an enemy bomber force. This practice led the British Prime Minister Sir Stanley Baldwin to declare in 1932 “the bomber will always get through.” The invention of radar provided a means of detecting incoming enemy aircraft. With experience, radar operators could also estimate the number of enemy aircraft and their approximate altitude. This was vital intelligence for the defense of Great Britain, but it was only part of what was required.

When he became head of the newly established Fighter Command in 1936, Air Chief Marshal Dowding recognized that

the more important aspect of air defense was the ability to rapidly communicate radar intelligence down to the RAF’s fighter squadrons and to direct these squadrons to a successful interception. Between 1936 and 1940, Dowding, his staff officers, and a select group of scientists created a robust, multi-layered system of command and control that enabled Dowding to effectively and efficiently deploy the fighter squadrons at his command. The system was designed to receive information from the chain of radar stations and ground observers, process this information into a form that could be simply understood and quickly communicated, and pass the information down the chain of command for execution.

At the top of the surveillance pyramid was Fighter Command HQ at Bentley Priory, northwest of London. Here a Filter

Room received information from radar and the Observer Corps, and assigned a number to the incoming raid indicating their approximate strength and altitude as well (Hostile 06, 30+, Angels 15). This information was immediately passed to the Operations Room at Fighter Command, and simultaneously to the Operations Rooms at Fighter Commands four Group commands covering the United Kingdom (No. 10, 11, 12, and 13). Each Group contained several Sector stations with their own operations rooms that controlled the fighter squadrons assigned to the sector. Thus each level of the command had same picture of what was happening in the air.

The Group commanders made the tactical decisions as to what forces should intercept a

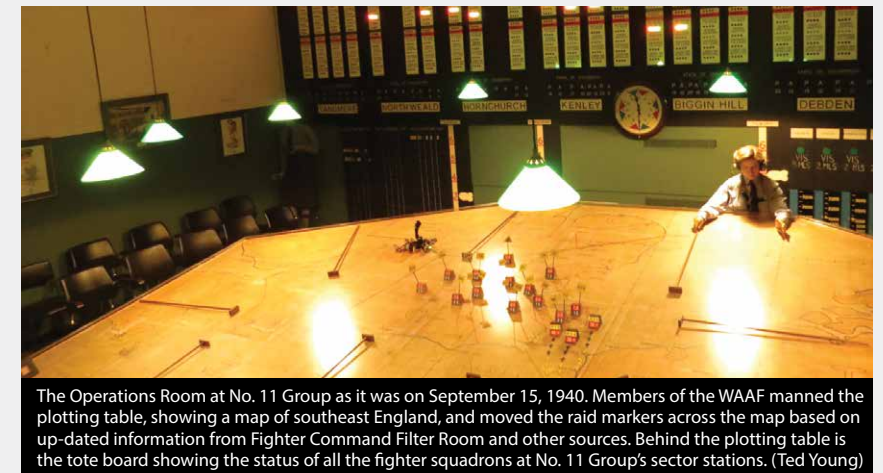
raid, passing their orders down to the Sector stations who ordered the squadrons to take off, directing them to the interception. A tote board at the Group Operations Room indicated that status of a squadron, i.e. the time it would take for the squadron to take to the air, when it had taken off, when it had intercepted the enemy, or if it had landed and was refuelling and re-arming. A similar tote board at the Sector Operations Room provided the Sector commander with information about the squadrons under his control. Information on the track of a hostile formation and intercepting squadrons was displayed on a map of Britain with small wood and metal markers and up-dated constantly. The beauty of the system was that it displayed critical information clearly and simply to all levels of the system at the same time.

Fortunately, much of this system has been preserved. There is now a museum at Bentley Priory documenting the role of Fighter Command HQ during the Battle of Britain. The Battle of Britain Bunker at RAF Uxbridge west of London has restored No. 11 Group’s Operation Room as it was on September 15, 1940. Finally, the Imperial War Museum at Duxford has preserved the Duxford Sector Operations Room, so that all three levels of the Dowding System can be visited and explored.

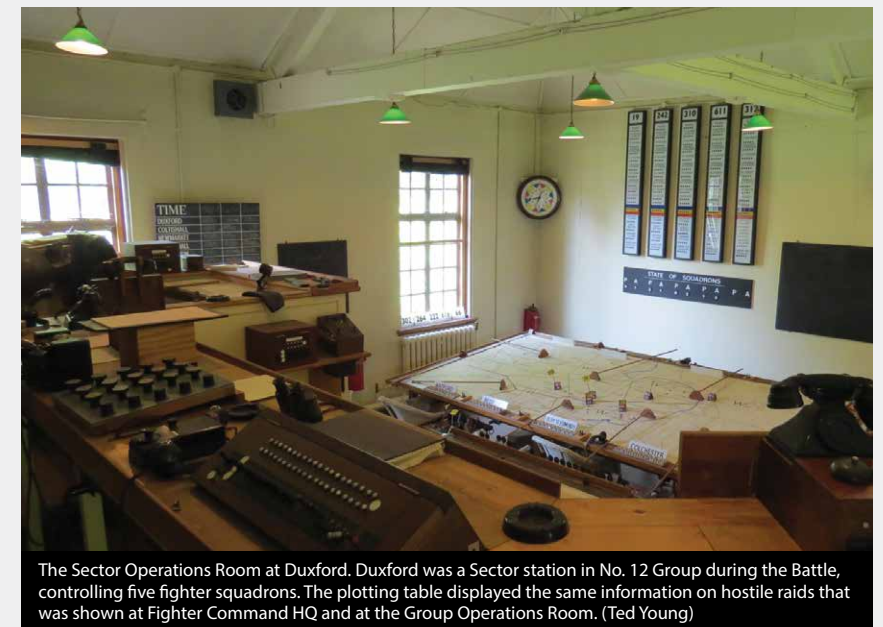
RAF Uxbridge Battle of Britain Bunker No. 11 Group Operation Room



A recreation of the Filter Room at Fighter Command HQ at Bentley Priory, with life-size statues of members of the Women's Auxiliary Air Force (WAAF) and RAF officers working to plot an incoming raid on a map of southeast England. (Ted Young)



The Operations Room at No. 11 Group as it was on September 15, 1940. Members of the WAAF manned the plotting table, showing a map of southeast England, and moved the raid markers across the map based on up-dated information from Fighter Command Filter Room and other sources. Behind the plotting table is the tote board showing the status of all the fighter squadrons at No. 11 Group's sector stations. (Ted Young)



The Sector Operations Room at Duxford. Duxford was a Sector station in No. 12 Group during the Battle, controlling five fighter squadrons. The plotting table displayed the same information on hostile raids that was shown at Fighter Command HQ and at the Group Operations Room. (Ted Young)



Doug King, Museum of Flight President and CEO, June Boeing, and Ray Conner, Boeing Commercial Airlines President and CEO. (Andrea Arenas)

A NEW CHAPTER

By: Louisa Gaylord,
Campaign Communications Coordinator at The Museum of Flight

On July 23, an eager audience of Museum of Flight learners - from the youngest Aerospace Camp Experience students to Raisbeck Aviation High School graduates - gathered in the T. A. Wilson Great Gallery as two of the largest investments in the institution's 50-year history were announced.

Ray Conner, President and CEO of Boeing Commercial Airplanes, was surrounded by nearly 200 youths as well as Museum of Flight trustees, local elected officials and education leaders as he shared the exciting debut of the Boeing Academy for STEM Learning. This new education program aims to double the number of students interested in science, technology, engineering and math who will be served by the Museum over the next two years, particularly from communities underrepresented in STEM careers, and connect them to fulfilling, in-demand jobs.

After being introduced by Joshua Limes and Rachel Crow, two alumni of the Washington Aerospace Scholars program at the Museum, Conner shared with the audience The Boeing Company's \$15 million commitment. "I'm pleased and proud to announce the launch of a remarkable initiative. It will allow The Museum of Flight to significantly expand STEM opportunities from kindergarten through college. The number of students will double by 2017 - and double again by 2019."

Conner continued, "Jobs related to science, technology, engineering and math represent the future. But thousands of openings will go unfilled because Washington state doesn't have enough qualified candidates to fill them. We are confident The Museum of Flight is the perfect partner to help us expand the pipeline of diverse, talented young STEM professionals in Washington and beyond. The young people who will benefit from the Boeing Academy for STEM Learning represent the future of our community."

Mrs. June Boeing, widow of Mr. William E. Boeing, Jr., whose quiet philanthropy helped grow the Museum over the years, followed

Conner to the stage. "It is such an honor to announce today that Bill, in one of his last acts of generosity before he passed away in January, agreed to join in partnership with The Boeing Company to also invest \$15 million personally in the Museum and its mission." Mrs. Boeing added, "Knowing that he made a difference in the lives of others was Bill's greatest reward, and today it is mine as well. Thank you for the opportunity to partner with such a great company to support the educational efforts of such a world-class institution."

Doug King, President and CEO of The Museum of Flight, expressed his enormous gratitude by stating simply, "Ray and June—there are no words adequate enough to thank you. We can begin to envision the future that you are making possible, both for all of us here today and so many others who will benefit from your stunning generosity. You have truly made a gift to the community through the Museum, and validated our vision to be the foremost educational air and space museum in the world!"

"This year marks five decades of providing educational programs to students of all ages," stated King. "The Museum has ambitious plans ahead to deliver a deeper educational and economic impact for our region. With this combined \$30 million investment, we've been launched on our way towards transforming our museum, our educational mission and the community we serve."

As King concluded his remarks, Limes and Crow returned to the stage to express their thanks for those students who will benefit from the Boeing Academy for STEM Learning over the Museum's next 50 years. "The amount of these investments is large," said Limes, "but so is the need for young people to have access to what Rachel and I and every kid here today have enjoyed."

With a final countdown, the students led the audience in a massive launch of paper airplanes, officially welcoming this exciting new chapter of Museum of Flight history.

Reaching Higher Ground



By: Robin Lee,
Instructor for Private Pilot Ground School

From June 22 to July 10 during the height of summer fun, a group of teenagers willingly devoted seven hours of their time each day to attend Private Pilot Ground School on the campuses of Raisbeck Aviation High School and The Museum of Flight. The 52 youth came from 15 different school districts in the Puget Sound region; some students commuted two to three hours each day.

The course was a collective venture between the Museum, Puget Sound Skills Center (allowing the students to earn credit on their high school transcripts), and Raisbeck Aviation High School in efforts to provide pathways to careers in aeronautical science. Addressing airline industry concerns about future pilot shortages, the accelerated program was designed to explore the world of aviation and prepare students for the Federal Aviation Administration (FAA) private pilot written exam, one of the necessary steps to become a licensed pilot. This particular program directly coincides with the Museum's commitment to address the gap in the STEM workforce in Washington state and The Boeing Company and Mr. and Mrs. William E. Boeing, Jr.'s combined \$30 million philanthropic investment in STEM education.

Using the high school's state-of-the-art classroom facilities, two Raisbeck Aviation High School teachers—who are also FAA certified Flight Instructors—facilitated student learning in aerodynamics, aviation weather, navigation, flight planning, and aircraft operations. Students participated in hands-on activities in the Museum's Aviation Learning Center including pre-flying a real Cirrus aircraft, completing computer-based experiments in the learning laboratory, and flying the advanced flight simulators. iPads graciously donated by Alaska Airlines assisted students in navigating various flight scenarios during their simulator sessions. Students learned about aviation history from docent-led Dream of Flight Tours and visited the Tower exhibit during their lessons on radar and communication. They became inaugural members of the Museum through



Majestik Allah pilots a simulated flight in the Museum's Aviation Learning Center. (Rachel Dreeben)

the Connections program, and learned about future opportunities such as Washington Aerospace Scholars.

The program included field trips to the Museum's Restoration Center and Reserve Collection at Paine Field, Boeing's Everett plant, and the Boeing Field runway. In addition, industry experts such as Museum Trustee and retired Delta Air Lines pilot Anne Simpson, KING 5 TV meteorologist/pilot Jeff Renner, and other aviation/aerospace leaders. Inspired by guest presentations, students asked astute questions that demonstrated their interest in STEM-related career paths. For those with aspirations beyond the stratosphere, there was also a virtual chat with NASA, where students spoke with scientists involved with the Orion and mission to Mars projects. The scope went far beyond the traditional ground school course.

On the last day of class, a graduation ceremony was held in the William M. Allen Theater, giving students the opportunity to showcase their learning through skits and speeches. Parents, families, and special guests cheered for the graduates as they received

their certificates. Program feedback from students and parents was overwhelmingly positive, with many students praising the 14-day experience as their best class ever taken during 10 years of schooling. The students earned academic credit for the course, which is added to their high school transcript as an impressive record for college admissions representatives and future employers.

Private Pilot Ground School is one of the many programs the Museum plans to implement for high school students to prepare them for aerospace careers, and the first one to take aim at a specific exam required for FAA pilot certification.

As aeronautical science continues to grow, educational offerings may include Aviation Safety and accident investigation, human factors in aviation, aerodynamics, and Crew Resource Management. Other courses under consideration for development include aviation careers, space physics, global history of aviation and aircraft design, and others yet to be imagined.

For more information, please contact: Reba Gilman, Vice President of Education at The Museum of Flight, rgilman@museumofflight.org | 206-764-0277 or Emily Thatcher, Project Manager, The Boeing Academy for STEM Learning, ethatcher@museumofflight.org | 206-764-0276



Curator's Corner

Your questions answered
by the Museum's Chief Curator,
Dan Hagedorn.

was meant to look like the famous Douglas SBD Dauntless dive-bomber of World War Two fame. It even had wings that would fold up. Unfortunately, when I 'flew' my toy airplane upside down, the wings would fold, which did not seem to me to be a very good idea at the time. I've never forgotten that toy, and wish I still had it! I'll bet you have a favorite airplane toy, and if you do, take good care of it! Toys like this help us learn about the real thing, and to ask good questions – like this one!

Q: Why did they make planes?
– Fredrick, age not given

A: Boy Fredrick, that is a huge question! We could sit down sometime and have a really long talk about this! But it is really a very good question, and one that we think about a lot here at your Museum. I guess it started a long time ago when young boys and girls took the time to watch different kinds of birds fly. Have you ever done that? I mean really watch a bird? It isn't easy, but if you sit in the same spot long enough, and maybe near where a bird family is building a nest in your yard, you can do some very interesting bird watching. And I think that is how the human idea of building something that would help us fly like birds actually started – by watching creatures that do it very well and naturally. Orville and Wilbur Wright, whom I mentioned above, studied birds, and so did almost all of the really serious pioneers who tried to build airplanes. People go to college to learn how to build airplanes today also sometimes go back and study birds. So we finally figured out how to do it, starting with the 1903 Wright Flyer. Of course it doesn't really look very much like a bird, does it?! But gradually, we got better at it, and we learned from the birds. We learned how to make our airplanes do many of the things that birds can do, but we also learned that we could build airplanes that would do things for people. So

Q: Why are there toy airplanes?
– Will, Age: 6

A: A long time ago, Will, there were two boys named Orville and Wilbur. When they were a little bit older than you, and while they were living in Indiana, their daddy brought them a toy that actually flew. It was not a plane like we knew it, but it did fly – and those two boys just loved that toy! If you haven't figured it out yet, their last name was Wright, and they invented airplanes pretty much as we know them today. Then about the same time that the Wright Brothers were inventing the airplane, another young man from Brazil named Alberto, living in Paris, France, was also trying to build airships and airplanes that would actually work. He invented and flew a little aircraft that we would call a blimp today; he flew it all over Paris, and everyone was amazed. Suddenly, everyone wanted a toy shaped like his blimp, and today, those toys are some of the rarest toys in the world. Ever since then, boys and girls have enjoyed toys shaped like airplanes. One of my very first toys (that I can remember!) was a pretty rough airplane that, much later, I learned

at the start, we built airplanes so that we could know what it was like to fly in the sky like birds do. Then we decided that we needed planes for going longer distances, higher, faster, and able to carry more people and things. Planes made for war were also important, and they helped save democracy as we enjoy it every day, from evil forces. Humans have probably always dreamed of flying like the birds, and now we can – and all of this in about 100 years!

Q: How do planes fly in bad weather?
– Claire, 6

A: For a long time, Claire, flying in bad weather usually did not end very well for the airplanes or the people in them! In the meantime, we have learned a lot about weather and how to watch it. The funny thing is that, although flying is now safer than it has ever been – in fact, it is safer than nearly every other form of transportation - it is still not a good idea to fly in really bad weather! Our airplanes and air traffic folks do a really good job of keeping airplanes out of trouble and away from bad weather. Sometimes airplanes can fly so high that they actually go over the top of bad weather. Other times, they are warned and are able to either fly around bad weather or avoid it. If you have been on an airliner, sometime you will feel it get a little bumpy, and sometimes the Captain will say "We want you to fasten your seat belt and stay in your seat while we find 'smoother' air." This usually means he is looking for a way around that thing they call turbulence, which is often a sign of bad weather.

Have a question for the curator? Send an email to aloft@museumofflight.org with your name and question. It may be featured in the next Curator's Corner!

What's new in the Collection?

By: Christine Runte, Registrar at The Museum of Flight

The following donations are some of the highlights of the 54 collection donations that were accepted by the Museum during the first half of 2015.



Kendall Russell was a Major General in the Air Force. He worked with Boeing from 1968 to 1973 as the Air Force System Program Director for AWACS (Airborne Warning and Control System). His donation included two AWACS models. The first concept model has the rotodome mounted on a vertical stabilizer (shown here). This concept did not move forward. The second model was the prototype which won the AWACS contract and was built. Both models were built by the Boeing Model Shop.



The Emile Chourre collection was donated by Gordon Lueckenotte. Emile Chourre was one of the early pioneers of Naval Aviation and one of the youngest flyers to attain the rank of Flight Lieutenant Commander. In 1945, the Navy named one of their new ships the USS Chourre in his honor for his contribution to the advancement of Naval Aviation.

September FLIGHT PLANS

**WELLS
FARGO**

Thursday, Sept. 1 | 5 to 9 p.m.
Museum-wide

Wells Fargo Free First Thursday

On the first Thursday of each month, the Museum stays open late – and admission is free. Enjoy the Museum's Great Gallery, Personal Courage Wing and more from 5 to 9 p.m., courtesy of Wells Fargo. Museum Store and Wings Café will also remain open for extended hours on this night. Airpark will be open free from 5 to 7 p.m.

Friday to Monday, Sept. 4-7 | 2 to 5 p.m.
East Parking Lot

EAA's B-17, *Aluminum Overcast*, visits The Museum of Flight

The Museum of Flight will host the Experimental Aircraft Association's classic Boeing B-17 bomber, *Aluminum Overcast*, for ground tours during Labor Day weekend, Sept. 4-7. The Flying Fortress will be open from 2 to 5 p.m. The EAA flies *Aluminum Overcast* to dozens of American cities every year to share this rare aircraft as a living tribute to those who built and served with them during World War II.

Saturday, Sept. 5 | 2 to 3:30 p.m.
Murdock Theater

WACO: A Legacy of Excellence

Museum Docent Bill McCutcheon talks about the Waco Aircraft Company (WACO), one of the greatest producers of planes during the "golden age of aviation." From the 1920s through the 1940s the sturdy, attractive WACOs earned a special place for aviators of all stripes. Vintage WACO biplanes are still carrying passengers. Visitors to the Museum can even experience a ride in one at Olde Thyme Aviation, based right next to The Museum of Flight.

Saturday, Sept. 19 | 2 to 3:30 p.m.
William M. Allen Theater

Secrets from Space: lecture with National Reconnaissance Office Official Historian Dr. James Outzen

The secret is out! This Sept. 19 lecture and presentation by Dr. James Outzen will share some of the U.S. Government's recently declassified info from spy satellites. Outzen is the Chief of Historical Documentation and Research for the Center for the Study of National Reconnaissance. The Center is part of the National Reconnaissance Office (NRO), the agency in charge of designing, building, launching, and maintaining America's intelligence satellites. Outzen will offer an unprecedented look behind the scenes of some of the NRO's most important projects.



Saturday, Sept. 19 | 10 a.m. to 5 p.m.
Museum-wide

The Museum of Flight's 50th Anniversary Celebration

On Sept. 19 the Museum celebrates the big five-o with an all-day birthday party and 50-cent admission price. Visitors are encouraged to dress for the party's 1960s theme. At noon we will have a brief ceremony that will announce the Astronauts on the Town Instagram contest winners and the final results from the online auction. All 25 of the life-size, uniquely decorated astronaut statues that have been on display around town this summer will be back at the Museum and in formation below the M/D-21 Blackbird. The noon program also includes a groovy 1960's costume and fashion contest open that is open to all visitors. The audience determines who wins a prize. Family activities include a scavenger hunt, and a design-your-own-astronaut coloring project. A Museum archivist will also be on hand to answer questions about preserving family photos and other personal treasures.

Tuesday to Sunday, Sept. 22-27
10 a.m. to 5 p.m.
Museum-wide

NASA's Journey to Mars

For one week the Museum hosts NASA's new interactive traveling exhibit, "Journey to Mars." The exhibit will be staffed by NASA, and in addition to the exhibit there will be programs for the public and school groups on weekdays, and a special NASA day on Saturday, Sept. 26 that will include an astronaut "meet and greet" and lectures by NASA experts. "Journey to Mars" examines NASA's future expeditions to the Red Planet featuring the RS-25 engine rocket, and how humans will someday set foot on Martian soil.

Saturday and Sunday, Sept. 26-27
10 a.m. to 5 p.m.
East Parking Lot

Flying it Foward

The Museum of Flight again offers free first flights in small planes to girls and young women. The planes only accommodate three to six passengers, so prior registration is encouraged to assure a seat. See the Museum's website for registration information.

Calendar subject to change.
Visit museumofflight.org for updates.

THE MUSEUM OF FLIGHT
Boeing WB-47E



The Museum's Boeing WB-47E before it was moved to its permanent home in front of the Museum, c. 1982 (The Boeing Company/The Museum of Flight)

Programs made possible by **Bank of America**

Every Saturday and Sunday at 11 a.m. and 1 p.m.

WELLS FARGO

Thursday, Oct. 1 | 5 to 9 p.m.
Museum-wide

Wells Fargo Free First Thursday and Astronomy Day

This month's Free First Thursday is geared toward astronomy. Local science and astronomy clubs will be at the Museum to share their knowledge of the heavens with viewing opportunities through their telescopes. Visitors can also marvel at the wonders of the night sky in the Museum's portable planetarium. At 6 p.m. UW Dept. of Astronomy Professor Bruce Balick, will present "Star Formation & Nebulas as Cosmic Science & Song." Accompanying the presentation will be multimedia previews of *Origins: Life and the Universe*, a concert premiering at Seattle's Benaroya Hall in November. The composers will be at the Museum's preview.



Saturday, Oct. 10 | 10 a.m. to 5 p.m.
Museum-wide

Star Wars Reads Day

Disney Publishing Worldwide and its publishing partners hold the fourth annual Star Wars Reads Day on October 10. Star Wars authors and costumed volunteers will participate in over 2,000 Star Wars Reads Day events across North America including one at the Museum. May the force of Star Wars Reads Day programs, activities, arts and crafts, and giveaways be with you.



Saturday, Oct. 17 | 2 to 3:30 p.m.
William M. Allen Theater

Origins: Life and the Universe

UW Dept. of Astronomy Assistant Professor Matt McQuinn will talk about the "Origin of the Universe and Everything In It." Accompanying the presentation will be a preview of *Origins: Life and the Universe*, the first astrobology symphony to be performed by Northwest Sinfonia. The concert will make its world premiere at Benaroya Hall on Nov. 7.



Saturday and Sunday, Oct. 3-4
2 to 3:30 p.m.

William M. Allen Theater

Battle of Britain 75th Anniversary

The Museum celebrates the 75th anniversary of the Battle of Britain with vivid presentations by those who now fly and photograph the famous British war birds. Renowned aviation photographer John Dibbs will accompany pilots John Romain and Andy Wyatt for this two-day symposium. Romain is one of the highest-time Spitfire pilots in the world, and he is the chief executive for the Duxford, England-based Historic Flying Limited. Wyatt was the last commanding officer of the famous 92 Squadron, and he was a member of the Red Arrows aerobatic flight team. Dibbs has set the standard for exciting, contemporary aerial photographs of World War II aircraft.



Sunday, Oct. 25 | 10 a.m. to 3 p.m.
Museum-wide

The Museum of Fright

Every year around Halloween, The Museum of Flight becomes The Museum of Fright. The Museum will offer such a huge selection of family fun and games, it's scary. Bigger than a haunted castle, the Museum's spacious galleries provide safe Halloween strolling and treating where every child's imagination takes flight. See ad on opposite page.



Sunday, Oct. 25 | 2 to 3:30 p.m.
William M. Allen Theater

Sci-Fi or Sci-Fact?

During The Museum of Fright, there will be a special presentation by University of Washington professor, Dr. Robert Winglee, and Rob Hoyt of Tethers, Unlimited. These two NASA Innovative Advanced Concepts Fellows will share how they make science fiction into reality.

Explore the exciting world of flight in fun hands-on workshops offered every Saturday and Sunday! Family workshops are free with Museum admission and open to all ages (kids six and younger should come with an adult helper). Groups with ten or more children please call ahead to find out whether we will be able to accommodate your group. Contact our Interpretive Programs Coordinator at 206.768.7187 with any questions.



Uncle Wiggly-Wings: The Candy Bomber

Sept. 5, 6, 12, 13 | 11 a.m. and 1 p.m.

Come hear the story of Uncle Wiggly-Wings, the Berlin Airlift, and the candy that dropped from the sky. During Operation Vittles, Col. Halvorsen dropped more than 850 pounds of candy to the children in Germany.



21st Century Airships

Sept. 20, 26, 27 | 11 a.m. and 1 p.m.

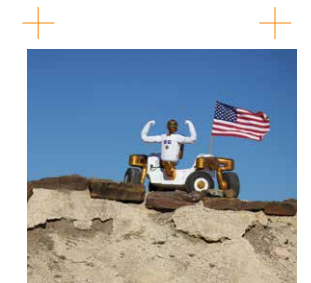
Overshadowed by the airplane, the airship—a rigid or semi-rigid balloon powered by engines—has a colorful history. Learn about these fascinating machines and the new airship designs for the 21st century. Then design your own airship!



Extraterrestrial Existence

Oct. 3, 4, 11 | 11 a.m. and 1 p.m.

What was that in the sky last night? Do aliens really exist, or is that just silly science fiction? How do they phone home? Come and join this exciting conversation and design a UFO of your very own.



Robot Revolution!

Oct. 17, 18, 24, 31 | 11 a.m. and 1 p.m.

Learn how robots work, and help prevent a robot revolution when creating your own robot.

Calendar subject to change.
Visit museumofflight.org for updates.

Fly your broomstick to the Museum and join in on the flightfully spooky fun - that is, if you're not too scared!

The Museum of Fright

Sunday, October 25
10am to 3pm

FREE - 17 and under
(in costume with adult supervision)
\$5 - 17 and under
(without a costume)
\$10 - adults



TAXPAYER'S BARGAIN

DOUGLAS B-18 – AMERICA'S FORSAKEN WARRIOR

By: Dan Hagedorn, Chief Curator at The Museum of Flight

About 20 years ago, I completed a book entitled *Alae Supra Canalem: Wings Over the Canal*, a study of U.S. aviation in defense of what was then known as the strategic Panama Canal. During the extensive research leading up to publication, I had the honor of interviewing a very large number of former U.S. Army Air Corps and Army Air Forces crews that served in the Caribbean region up to and through the end of World War II. Of these crewmembers, 31 had served on the Douglas B-18 in that vast area.

Something puzzled me, however. Of those 31 first-person accounts, not a single one had a negative thing to say about the B-18. Indeed, without exception, they praised the aircraft and extolled its virtues. And that is what perplexed me, because up until that time, every word I had ever read about the B-18 had consisted of an unbroken litany of derision, belittlement and disparagement. The general line was that it never went anywhere and never did anything, and was totally outclassed up one side and down the other.

And so I asked myself, how could all 31 crewmen be mistaken? Then I started to do my homework, and tried to see beyond the negative, largely anecdotal and frankly superficial periodical accounts of the life and times of the B-18 that I had read all my life. The story that slowly emerged was, in a word, amazing and one of my sons, Dan Jr., and I subsequently determined to try to vindicate the honor of the old girl. The fruits of those labors will be released, in book form, from Crécy in the United Kingdom by the time these words are read.

Virtually everyone knows of the Boeing B-17 series and the legendary role that it played

in securing democracy during WWII. And, perhaps a select few are aware that its grand sire, the Boeing Model 299, was entered in a 1935 "multi-engine" Army Air Corps bomber competition held during the fall of 1935 at Wright Field in Dayton, Ohio. What's less widely known however is that there were two other contenders in that competition: the obscure Martin Model 146 (essentially a modernized Martin B-10) and the Douglas DB-1. And (get ready for it), the winner of that seminal competition was not the Boeing Model 299, but rather the twin-engine DB-1 – on nearly every measurable Air Corps yardstick of the competition. The basic Air Corps specification required that the winner be able to carry a bomb load of at least 2,000 pounds, for a minimum of 1,020 miles (and if possible, 2,200 miles) at a speed of at least 200mph (and if possible, 250mph). Contrary to popular belief, the competition did not specify a four-engine aircraft—rather it used the term 'multi-engine.'

The Air Corps shortly thereafter ordered a whopping 133 DB-1s "as" B-18s and, two weeks earlier, 13 service test Y1B-17s from Boeing. Quite simply, the Air Corps, very much under the thumb of the Army and War Department hierarchy of the time, had to be able to show that it was getting the largest number of aircraft it could for what was, at the time, the largest order to date for a peacetime bomber series. Pre-war budgets were extremely tight, the Air Corps needed to equip at least one complete Group (of two bombardment squadrons and a reconnaissance squadron each) on both the East and West coast, plus Hawaii and Panama. The winning entry not only had to meet the stated criteria - which it did - but also had to be economical enough to furnish these line units. The Y1B-17s were

acquired to 'hedge the bet' and, of course, the rest is history.

The pug-nosed B-18s were followed by 217 shark-nosed B-18As, for a grand total of an even 350 aircraft – compared to the 12,371 B-17 variants that were subsequently produced. But the B-18s were all produced and delivered to a slowly building Air Corps between 1936 and the final example, in April 1938. The first fully-developed Flying Fortress variant, the B-17B, wasn't even ordered until 1938 and the first of these did not fly until June 1939. By then, every single B-18 and B-18A built had been delivered and was in active, line service with a tactical Air Corps squadron, both domestically and in overseas units in Hawaii and Panama.

Which brings us to what is really the first, but certainly not the last, of the unsung contributions of the B-18 series to Allied victory in WWII. The aircraft was very much state-of-the-art for 1936, and easily incorporated into what was soon to become the standard mix of crew for every USAAF medium and heavy bombardment aircraft that followed during the war: Pilot, Co-Pilot, Navigator, Bombardier, Radio Operator and Gunner and, as with most subsequent aircraft, some of these stations also doubled as gunners. It was the first production U.S. bomber to incorporate all of these essential functions. More importantly, the B-18 enabled crews of operating squadrons to train as a team for the first time in an aircraft which was reliable and durable. Most importantly, the B-18s were in sufficient numbers to actually make the expansion and training of these crews meaningful.

As later versions of the B-17 started reaching expansion units that were being established rapidly, nearly every crew member trained initially on B-18s. That the aircraft also incorporated crew amenities such as heating, cooking, crew rest and lavatory facilities, with easy movement between crew stations, was also a pleasant change for veteran B-10 crews. One aircraft commander of the period said that flying the B-18 was "...like driving a Cadillac; she was just rock-steady, extremely stable and landed like a feather." Those are not characteristics usually associated with heavy bombers, as the type was classified until 1941.

The B-18 and B-18A series represented the solitary first-line USAAC bombardment aircraft that not only had completed production and entered squadron service, but which remained in service completely through the war years. And that brings us to the secret life of the B-18 series and, in the view of this historian, the real reason why her contributions to the subsequent war effort were out of all proportion to her total number built.

Between December 1941 and August 1942, German and Italian submarine packs ran rampant, not only off the Eastern Seaboard of the U.S. – often within sight of coastal citizens – but, more urgently, in the midst of Caribbean sea lanes and the Gulf approaches to the vital Panama Canal. During the roughly eight month period, not less than 330 Allied surface vessels were sunk in the Caribbean alone, and this assault threatened the crucial flow of crude oil from the Maracaibo oil fields in Venezuela, and the Bauxite mines of Surinam, vital for the production of aluminum.

The British shared one of their most secret developments with us at this crucial moment, (Air-to-Surface Vessel) ASV-X Radar. What 10 aircraft do you think mounted the very first, M.I.T. hand-built examples of this Radar? You guessed it: hastily converted B-18As, which were re-designated as B-18Bs. At least 73 more were added, on an extremely high priority crash basis. It was these aircraft, dear readers, which won the day against the Axis submarines in the Caribbean, and which ensured our supply of crude oil and aluminum to run our burgeoning military establishment – and build the B-17s, B-24s and thousands of other war-winning aircraft that followed.

Because of the extremely high security classification attached to this incredibly capable ASV, the exploits of the B-18B (and later B-18C aircraft) operating units, known as Sea-Search Attack Squadrons, were almost completely unknown to the American public, and to subsequent generations of aviation historians. And therein lies "the rest of the story!"

A Night to Remember

Record temperatures greeted the 850 revelers who poured into the cool, welcoming arms of the Museum of Flight on June 27 to celebrate its First Fifty Gala.

First, our car vanished as we trod the red carpet, up the grand stairway marking time to Fred Radke's big band sounds and flashing camera lights. Next, we were surrounded by the warmth of old and dear friends down in the Great Gallery and did our best to catch up with their busy lives while applying ourselves to consuming bountiful refreshments. The setting was, of course, pitch perfect, under the beloved wings of the Museum's historic airplanes. At the appointed time, Scottish bagpipes led everyone toward dinner. Behold! Our asphalt parking lot had magically become a huge air-conditioned auditorium, set with 85 tables, a 40-foot long stage and wall-sized television screens.

Table decorations included elegant 40-page commemorative programs and catalogs describing the evening's featured auction where the Museum's party organizers hoped to raise \$1.5 million in support of education. (Later reports said \$1.6 million was raised.)

As we wine and dined, Master of Ceremonies Steve Pool introduced David Foster, an extraordinary showman, who delivered an amazing show, slick and thrilling as any Las Vegas extravaganza. He showcased local talents that he had auditioned himself, and there was Kenny G. strolling around the tables playing favorites on his sax! When the final applause subsided, another surprise. The Total Experience Gospel Choir appears, belting out gospel melodies. We revelers were on our feet again, joyfully singing, clapping and feeling oh so good. We looked at our watches. 11:30. What a night to remember.

I can't stop without honoring the Museum employees and volunteers who made it happen. And put the spotlight, for once, on Master Planner, Alison Bailey.

Recounted by Nancy Wright, Volunteer at The Museum of Flight



(Ted Huetter)

a few of our favorite things

Chapter 1
Collections Department Staff

Every member of the Collections department was asked to choose their favorite item from the collection, something that isn't on display in the current exhibits, be it a single photograph, a book or even an aircraft, and to explain why they find it so interesting. Our favorite things will be featured throughout the next three issues!

DAN HAGEDORN

Senior Curator and Director of Collections

When I was young, reading and devouring everything I could find on aircraft, three aircraft types that I encountered over-and-over again struck my impressionable mind as "just looking right." I really didn't know that this axiom had already been coined by a number of eminent aeronautical engineers long before my conclusion. The three, that have remained constant throughout the years, were the North American NA-16 (AT-6 family), the Curtiss-Wright 19R and the Stinson Model "O".

As the literature became more readily available, and as my own appetite for learning more and actually conducting primary research on my own became a reality, I became determined to learn all that I could about these aircraft. The CW-19R and Model "O" were fairly straightforward, as only relatively small numbers of each were ever built. But the NA-16 family, now that was something else. The definitive versions were, almost universally, cited as merely "T-6's" or "SNJ's," but it slowly dawned on me that there was much, much more to the story, and that the "T-6" was, notwithstanding my admitted prejudices, truly one of the greatest of all aircraft of the first century of manned flight.



(The Museum of Flight)

My favorite thing: **NORTH AMERICAN AT-6 TEXAN**



(Dan Hagedorn)

Looking back, it is safe to say that more military and naval pilots were trained on variants of the T-6 than any aircraft in history and – what is more – that is a record that almost certainly will never be equaled. Today, of the thousands built, perhaps 500 or more still fly regularly which, for a series that was manufactured between 1935 and 1955, a scant 20 years, is some sort of record in itself.

I love her looks, and her sound, and – honestly – don't you just want to give a T-6 a hug?

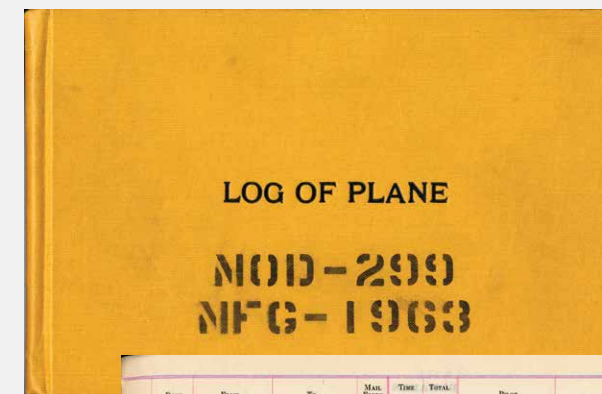
JOHN LITTLE

Assistant Curator and Research Team Leader

My favorite thing: **BOEING MODEL 299 LOG BOOK**

While picking up the Collections department's paychecks at the Museum's Reception Desk on Friday, June 11, 2010, a woman approached me and asked, "Do you think that the Museum would be interested in this?" Almost immediately, I recognized that "this" was the log book for Boeing's original Model 299, the prototype for the legendary B-17 Flying Fortress bomber, perhaps the most famous design in Boeing's history. The Model 299 had crashed during its service tests on October 30, 1935, killing the Army Air Corps pilot and fatally burning Boeing's project pilot, Les Tower.

The log book had never been recovered from the plane's burnt-out wreckage and was assumed to have been destroyed in the fire. Now, nearly 75 years later, here was the Model 299's log book, intact, in the possession of the daughter of Boeing's legendary engineer and executive, Ed Wells. The logbook was officially donated to the Museum that day and Senior Curator Dan Hagedorn showed it off at the next night's Gala, whose theme was appropriately: "The 75th Anniversary of the B-17." The logbook is truly priceless aviation artifact, one that had long been assumed lost forever.



Date	From	To	Man Hours	Time	Remarks	Pilot	Remarks (For additional remarks see reverse side)
7-25-35	Seattle	Seattle	Int	1:30 / 1:30		Townsend	
7-29-35	"	"	"	1:00 / 2:30	"	"	"
8-3-35	"	"	"	1:40 / 0:00	"	"	"
8-6-35	"	"	"	2:20 / 6:10	"	"	"
8-13-35	"	"	"	3:30 / 7:40	"	"	"
8-18-35	"	"	"	4:0 / 10:20	"	"	"
8-19-35	"	"	"	3:45 / 19:05	"	"	"
8-20-35	"	Dayton	Day	7:03 / 23:05	"	"	"
8-24-35	"	Dayton	Day	1:20 / 2:55	"	"	"
"	"	"	"	1:40 / 2:05	"	"	"
10-7-35	"	"	"	1:35 / 27:43	"	"	"
12	"	"	"	1:59 / 29:20	"	"	"
14	"	"	"	1:25 / 30:45	"	"	"
17	"	"	"	1:00 / 31:45	"	"	"
21	"	"	"	1:00 / 32:45	"	"	"
22	"	"	"	1:00 / 33:45	"	"	"
23	"	"	"	25 / 34:10	"	"	"
24	"	"	"	1:45 / 35:55	"	"	"

(The Museum of Flight)

ALLISON LOVELAND

Collections Specialist

My favorite thing: **AERIAL STUNT PHOTOGRAPHS FROM THE DAVID D. HATFIELD COLLECTION**

Early aviation was such a novelty, and pilots were interested in testing the limits not only of the aircraft but also of themselves. Barnstorming and stunt flying was the way in which they did this. The pilots started by flying in loops and upside down, and soon after, they began combining loops and upside downs and dives. It didn't take long to get to an entirely different level of daring when they added wing walkers.

The wing walkers would walk along the wings of the airplane mid-flight, they would jump between two planes that were flying, and they would jump between planes and automobiles. They would even fly close enough to the ground that people hanging upside down on the wings could grab their hats from someone on the ground! In the David D. Hatfield Collection, we have a number of images of an aerial stunt troop called "The 13 Black Cats." This stunt group included one woman, Gladys Ingle, and claimed to be able to do any stunt. They were based out of the greater Los Angeles area and were featured in a few films, including "Hells Angels."

I picked this particular image of an airplane-to-automobile swap as my favorite stunting image because for me it perfectly captures the excitement and daring of these early aerial stunts, at a time when flying was still a novelty.



(David D. Hatfield Collection/The Museum of Flight)

A Whole New World

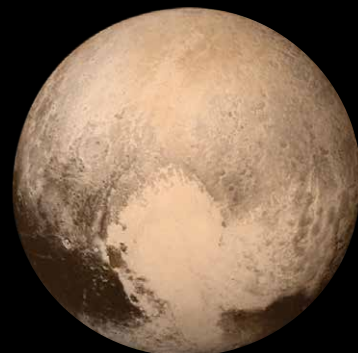
NASA's New Horizons Visits Pluto for the First Time

By: Geoff Nunn, Adjunct Curator for Space History at The Museum of Flight



2003

Hubble Space Telescope



2015

New Horizons

On July 14, 2015 NASA's New Horizons spacecraft became the first to visit Pluto. During the flyby, the piano-sized spacecraft passed just 7,750 miles above Pluto's surface and captured our first close-up images of the dwarf planet and its system of moons.

New Horizons traveled for nearly a decade to reach the remote, icy body orbiting at the edge of the solar system 3 billion miles from Earth. In fact, when New Horizons launched in January of 2006, Pluto was still considered a planet. Its reclassification at the hands of the International Astronomical Union did not come until eight months into the flight. Nevertheless, the "demotion" of Pluto has done nothing to diminish the impact of this achievement.

The scientific significance of New Horizons is perhaps best summarized in viewing the two photos above. The image on the left is the best image we had of Pluto prior to New Horizons. Compiled from a series of

observations taken by the Hubble Space Telescope in 2002 and 2003, its blurry contours resolve surface variations a few hundred miles across. The image on the right is from New Horizons' Long Range Reconnaissance Imager (LORRI), which was taken on July 13 from a distance of 476,000 miles, just before the closest approach phase of the mission began. The LORRI image has already been surpassed in detail by close-up shots of Pluto's surface, which resolve features down to about half a mile across.

Preliminary analysis of the flyby images has already yielded some startling discoveries for researchers. Regions devoid of craters on Pluto and its largest moon Charon surprised scientists. Parts of Pluto's surface are now believed to be some of the youngest of any in the solar system. Smooth, icy plains, and geologically young mountains as tall as the Rockies are estimated to have formed less than 100 million years ago. Though New Horizons sped past Pluto at more

than 30,000 miles per hour, the data it gathered from its seven scientific instruments during closest approach will fuel research for years to come. The spacecraft finished transmitting its "First Look" data set on July 20. However, this represents just 1% of the information gathered during the flyby, the rest of the data is scheduled to download in September. It is expected to take scientists several months to review and analyze the findings.

New Horizons is now flying away from Pluto at more than a million kilometers per day, headed deeper into the Kuiper Belt. The mission team plans to set course by late October for one of two unnamed Kuiper Belt objects; a flyby is predicted post 2017. May the journey of exploration continue!

Hubble photo credit (NASA/ESA/M. Buie (Southwest Research Institute) New Horizons photo credit (NASA/JHUAPL/SwRI)

Pluto-Palooza: The Museum of Flight Celebrates Historic Flyby

After the historic New Horizons mission arrived at Pluto after a nine-year trip through the solar system, The Museum of Flight celebrated by holding a Pluto-Palooza on July 19. Museum visitors gathered in the Charles Simonyi Space Gallery to learn more about the distant, dwarf planet and to view stunning new images of the probe's discoveries. Pluto enthusiasts met with folks from the National Space Society and the Seattle Astronomical Society, watched the video "New Horizons: 3000 days from Earth," and heard presentations by Ron Hobbs, NASA/JPL Solar System Ambassador as well as Alan Boyle, award winning science writer and author of "The Case For Pluto" (available for purchase in the Museum store). A variety of Pluto-themed activities were also offered for children in the Aerospace Education Center. By: Melanie Kwong, Public Programs Coordinator at The Museum of Flight



VOLUNTEER PROFILE

Alfred Cecil

master shuttle booster builder

By: Dennis Parks, Volunteer at The Museum of Flight

A trip to the Charles Simonyi Space Gallery in 2013 really picqued Alfred Cecil's interest. While visiting the gallery, Cecil noticed that the Space Shuttle Orbiter on display lacked an external fuel tank and booster rockets that would propel a real orbiter into space. Coincidentally enough, Cecil owned a 1/72nd scale model of the missing tank and boosters, and offered his services to build a replica. While Cecil was not a model-builder by profession, he had a solid background in structural engineering, having worked on a variety of projects such as the SST, the hydrofoil, the Minuteman Missile and the F-22 Raptor. He felt he could employ his engineering skills to "scale up" his 1/72nd model to match the 1/16th scale of the Museum's shuttle orbiter and managed to convince Patrick Kam, the Museum's Exhibit Manager to endorse his efforts.

In the spring of 2013, with the support of the Museum, Cecil turned his garage into a model building shop to accommodate the sheer size of the project—three of the main components would each spread over ten feet in length. For the external tank, Alfred fashioned a structure from a series of plywood discs, connected by sections of 2x4. Over this framework he laid 1/8th inch of Masonite, which curved nicely to the correct shape. The tapered nose and tail sections were made of 36 Masonite "wedges." When completed, the "tank" was sent to an auto painting shop for a fiberglass skin and a final coat of paint. The smaller diameter of the two booster rockets presented a different challenge. For the basic rocket form he selected 10" diameter Sonotube, a laminated waxed paper concrete form material. The tapered nose and tail sections were constructed of additional pieces of steel and wood. The finished "boosters" then followed the tank to the auto shop for detailing.

While the tank and boosters were complete, Cecil had to ensure that they were adhered to the Museum's shuttle orbiter in a manner that was true to the original design. Cecil, meticulous and determined, visited the plumbing department of the home improvement store to find the pipes, fixtures and other bits and pieces that not only matched the look of the original, but also could connect the whole system together.

A testament to precision and ingenuity, the finished system is on display on the starboard side of the FFT Shuttle Trainer mock-up in the Charles Simonyi Space Gallery appearing to the visitor, like an accurate (yet smaller) version of the real deal. "The tank and rocket booster models are a wonderful addition to our collection," said Patrick Kam. "Models of that quality could easily cost over \$20,000. We have less than \$5,000, for materials and paintings, invested in this model system. And, of course, Alfred Cecil's time and skill were invaluable and essential to the project's success."

Alfred shares, "I'm not sure I realized I would be spending nearly 800 hours and over a year of my life on this project but I enjoyed the work and am pleased with the final product."

After such an impressive first project for the Museum, it's only natural to wonder what's next for Cecil, he exclaims, "I would enjoy working on the B-29. I'm looking forward to the time it moves to the new Aviation Pavilion and comes out from under its current wraps."



Top: The 1/16th scale model of the tank and boosters Cecil completed for the Museum. Bottom: Cecil with his 1/72nd scale model of the same tank and boosters. (Photos courtesy Alfred Cecil)



memories create a lasting legacy

By: Louisa Gaylord,
Campaign Communications Coordinator at The Museum of Flight

“Seeing the impact our family can have makes it more real...”

Museum of Flight trustee Tom Gibbons and his wife, Susan, have built their family around their shared love for aviation. Tom originally became interested in airplanes through his father, who delivered newspapers to the Ephrata Army Air Base during World War II in central Washington. By the time Tom reached high school and Top Gun was released, he was hooked for life.

Tom remembers, “Susan and I flew up to the San Juan Islands for dinner many Friday nights when we were dating.” They enjoyed those flights so much that they decided to get married at Roche Harbor. With aviation playing such a central part of their relationship, it was only natural for Susan and Tom to share their passion for flying with their twin boys when they were born.

“We have been involved with The Museum of Flight for more than 20 years. It helps us to better understand and preserve the history of the Pacific Northwest,” says Susan. Investing as a family in local organizations, either by giving time or money, is an important part of the Gibbons’ lives. “We are adding to the educational development of our community,” adds Tom. “We love the Seattle area and we want it to remain a healthy and vibrant place.”

Giving as a family helps teach their children what it takes to create a balanced society. “By donating to the Museum, our kids learn that nonprofit organizations are part of a well-developed community,” Susan explains. “Seeing the impact our family can have makes it more real for them in understanding these needs and benefits.” An important part of parenting is to teach children how to manage their money, but also the value of investing in nonprofits that they believe in.

As soon as they were old enough, Tom and Susan enrolled their sons in the Museum’s summer Aerospace Camp Experience program. “The ACE camp I attended made me aware of all the engineering that goes into airplanes,” says Anders Gibbons. “It’s really fascinating that there are so many different types of engineering I can pursue!” His brother Tate adds: “I’m not exactly sure what I want to be when I grow up, but the Museum taught me about the advancements and discoveries that are possible in our world. I want to pioneer something new, or be part of a revolutionary breakthrough.”

The Museum of Flight knows how important it is to prepare students for the future, and to open their eyes to a world of possibilities. Tom was especially excited about the recent announcement of the new Boeing Academy for STEM Learning. “I’m so thrilled that the new educational initiative will bring even more inquisitive learners to The Museum of Flight and expose them to a world of possibilities,” Tom says. “To have our family involved in such a special organization that impacts so many, it gives us all tremendous pride!”

For more information about how your family can create a lasting legacy at The Museum of Flight, visit our website or please contact Trip Switzer, Vice President of Development at (206) 764-5700.

Left: Tom Gibbons and his two sons, Anders and Tate, on one of their first visits to the Museum. (Susan Gibbons) Right: Gibbons and sons photo re-enactment. (Ted Huetter)

IN MEMORIAM

The Museum of Flight offers its sincere condolences to the families and friends of departed Museum volunteers, members, and supporters.

Rulon D. Banford
Linda L. Bauknecht
Louise M. Beiter
Bonnie Bell
Mildred E. Bigford
Donald W. Burns
Daniel G. Cabuco
William E. Carney
David R. Cary
Rosina M. Castner
Thomas H. Clark
Christopher W. Collins

Jerry Crowder
Robert W. Curran
Barnard M. Davis
Arthur R. Dusto
William W. Ebsen
Ola K. Eggen
Robert P. Fash, Sr.
Carolyn R. Fenner
Samuel C. Fenner
Sol Freedman
Ruthmarie M. Gratzner
Marie-Elizabeth E. Haase

Tim V. Hoard
Jack C. Johnson
Millard C. Jones, Jr.
Michael A. Katsaros
James H. Keeffe, Jr.
James A. Kneeland
George W. Knighton, Jr.
Merlene LeMaster
Ella M. Link
George E. Luck
Joseph D. McGraw
Bruce H. McKibbin

William J. McNabb
Kaye E. Mohr
Susan M. Monchil
Patricia Neale
Martin D. Ringhofer
James E. Romero, Jr.
Helen Schultz
Ralph M. Shape
Richard B. Wasson
John W. Westergaard
Leo Yanoff
Robert E. Zwink

TRIBUTE GIFTS

June 1 to July 31, 2015

In Memory

In memory of Eric “Doc” Anders
James A. Compton

In memory of Linda L. Bauknecht
Dana Flanegin

In memory of Phil and Meredith Beatty
Mark J. Antush

In memory of Inga L. Bolang
Karin B. and Frederic W. Harder

In memory of Elliott W. Brogren
Elwood V. and Barbara E. Budnik
C. David and Deborah A. Grant
Ken and Sally Skinner

In memory of David R. Cary
Larry J. and Shirley J. Gillespie

In memory of Christopher J. Duplechin
Dana Flanegin

In memory of James P. Eagan
Bob and Jean Gillespie
William and Beverly Gillespie

In memory of Richard H. Elfers
Richard H. and Priscilla P. Elfers
Douglas and Barbara O’Brien
Charles F. Twiss
Barbara Urich

In memory of Robert P. Fash, Sr.
Beast/Company 3/ Method Studios
William Bender
Dennis and Carolyn Fitzgerald
Geraldine Gaj
Tom and Virginia Johnson
Margaret Koeck
Elaine Lapotosky
Peter Larson
Joseph Mattia
Fran Peters
Tyler Roth
Barbara Scheuer
Jay Spak
Pete Stofen
Karen Such
Jennifer Tripoli
William DeWoskin & Associates

In memory of Jane Isakson Lea
John W. Purvis and Nancy L. Wright

In memory of Arthur F. Jeffrey
Gloria M. Clinton

In memory of Philip G. Johnson
Malcolm G. Witter and Marcia Johnson Witter

In memory of Arthur H. Lowell
Suzanne M. Lowell

In memory of George E. Luck
Ronald H. Robinson

In memory of Bruce H. McKibbin
Toni Dewan
Vincent and Linda Dwan
John W. Purvis and Nancy L. Wright
Carolyn and Dave Rice
Rob R. Sullivan Jr. and Penny S. Sullivan
Paul W. and Betsy A. Sunich

In memory of Susan M. Monchil
John W. Purvis and Nancy L. Wright

In memory of Harold L. Nordwall
Alice Nordwall

In memory of Ralph M. Shape
Angle Lake Shore Club
Alden B. Chace Jr. and Diane Chace
Don M. and G. Elizabeth Drury
Zac R. and Sharene R. Elander
Sue Kaas
Maxine R. Leshner
City of SeaTac

In memory of Barrie H. Simonson
Thomas G. and Sarmite P. Davidson

In memory of David L. Warrick
Thomas G. and Sarmite P. Davidson

In memory of James H. West
Rosalee Ball

In Honor

In honor of Alison Bailey
Randa Cleaves Abramson and Jonathan J. Abramson

In honor of Eugene L. Brady’s 91st Birthday
Wendy Brady and Terry Estes

In honor of Charles G. “Chick” Cleveland
Johnson Sterling Consulting, Inc.

In honor of Jim Jackson’s 100th birthday
Carol Thomson

In honor of Gene and Nikki McBrayer
Diane B. Harper

In honor of Peter M. Morton
Ronald H. Robinson

In honor of Frank A. Shrontz
CG “Jerry” King

In honor of Anne Simpson’s birthday
Christine S. Brent



50th Birthday Celebration

Saturday, Sept. 19, 2015 | 10 a.m. to 5 p.m.

You are invited to join us as we blow out the candles and celebrate our 50th anniversary!

And in honor of this momentous occasion, we will offer our original admission price of **50 cents!**

activities include:

60s throwback costume contest | special display from Archives & Collections fun giveaways* | scavenger hunt | Astronauts on the Town under the MD-21 Blackbird
Astronauts on the Town Instagram winner announcement | and much more!



Check our website as more activities are posted.
*while supplies last.