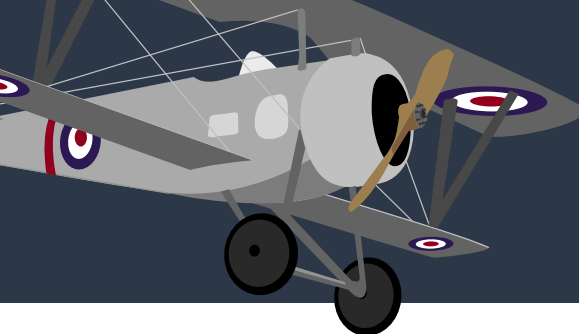


# aloft

THE MUSEUM OF FLIGHT MAGAZINE





# FREE MEMBER EVENTS

For all events, please RSVP to [membership@museumofflight.org](mailto:membership@museumofflight.org).

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THE MUSEUM OF FLIGHT MAGAZINE

MARCH/APRIL 2019

## CONTACT THE MUSEUM

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### EXCLUSIVE!

## MEMBER MOVIE NIGHT *Close Encounters of the Third Kind*

Power repairman Roy Neary's (Richard Dreyfuss) life is changed when he witnesses an unidentified flying object. Refusing to accept an explanation for what he saw, Roy is prepared to give up his life to pursue the truth about UFOs. Universally considered one of the best films ever made about alien visitation to Earth, Steven Spielberg's *Close Encounters of the Third Kind* was nominated for eight Academy Awards, winning for Best Cinematography. See it again on the big screen!

WILLIAM M. ALLEN THEATER

Friday, May 10 | Movie starts at 6 p.m.  
(Doors at 5:30 p.m.)

RSVP to [membership@museumofflight.org](mailto:membership@museumofflight.org).  
Rated PG. Family friendly. Snacks provided.



## See artifacts in the Museum Collection not normally on view!

Coffee and light snacks provided. Featuring Red Barn Blend coffee, available exclusively at the Museum Store.

RSVP to [membership@museumofflight.org](mailto:membership@museumofflight.org).

## THE BOEING B-17 FLYING FORTRESS

Friday, May 17 | Noon to 1 p.m.

NORTHWEST AEROCLUB ROOM  
(RED BARN, 1ST FLOOR)

Join us in May as we celebrate the legendary Boeing B-17. Collections staff will share unique objects, archival and library materials from our Collection that explore this bomber's history in Seattle and its role in World War II.

## BEHIND-THE-SCENES IN THE COLLECTIONS DEPARTMENT

Friday, June 21 | Noon to 1 p.m.

SKYLINE ROOM, 2ND FLOOR

Learn about the magic that happens behind the scenes in order to preserve our objects, archival and library collections and make them accessible for exhibits and researchers.



Join us for a night of aviation, space, and pop culture trivia! Come with a team or join one that night and compete for the honor of being a Museum of Flight Trivia Champ! Questions will include pop culture references to aerospace-inspired movies, historical events, and Museum-specific trivia. *Snacks provided.*

SOUTH VIEW LOUNGE

Friday, June 14 | 6 to 8 p.m.

RSVP required. To attend, email us at [membership@museumofflight.org](mailto:membership@museumofflight.org).



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## STEM starters

STEM Starters is a monthly program series geared to our youngest Members! Children ages 3 to 5 and their co-pilots (one adult per child) are invited to explore the wonders of aerospace during this fun, educational program.

### LUNAR LANDER 4 sessions available!

Our May and June STEM Starter sessions will explore the machines that take us to space! Understand how we keep our astronauts safe while making and testing your own lunar lander!

Mondays, May 13 and June 10

Two sessions each day:  
10:30 to 11:30 a.m. OR 3 to 4 p.m.

All sessions are in the  
NORTHWEST AEROCLUB ROOM  
Red Barn, 1st Floor

RSVP required. Space is limited. To attend, email us at [membership@museumofflight.org](mailto:membership@museumofflight.org).

Due to limited space, supplies, and developmentally appropriate curriculum, we are unable to accommodate additional children (such as younger siblings).



### EXCLUSIVE!

## MEMBER MONDAYS *Destination Moon: The Apollo 11 Mission*

Smithsonian traveling exhibition *Destination Moon: The Apollo 11 Mission* will make its only West Coast appearance at the Museum April 13 to September 2. Join your fellow Museum Members for a FREE access evening featuring new virtual reality experiences and exclusive exhibition access.

Mondays, May 20 and June 17  
from 5:30 to 8:30 p.m.

Reserve your timed ticket online today!  
[bit.ly/DM-Member-Monday](http://bit.ly/DM-Member-Monday)

IMAGE: Apollo 11 command module *Columbia* on temporary cradle. Photo by Eric Long, National Air and Space Museum, Smithsonian Institution

### ALOFT STAFF:

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Web Producer: Layne Benofsky

On the cover: An aerial view of the Vietnam Veterans Memorial Park due to open Saturday, May 25. (THE MUSEUM OF FLIGHT)

Questions or Comments?

Email us at [aloft@museumofflight.org](mailto:aloft@museumofflight.org)

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### THROUGH HIS LENS

MATT HAYES

**IT IS SATURDAY NIGHT** and I'm sitting with my laptop deciding what to type first. It's not writer's block; it's the sense of awe I feel when I look back on all that has happened in our Museum in just one week, or a mere 168 hours.

It starts on Sunday at midnight. Typically, our security staff is quietly guarding our artifacts, preparing for another busy day. But at 1 a.m., the silence is pierced by the sounds of forklifts and riggers, curators and exhibit professionals. For the next five hours, while the city sleeps, one of America's most treasured items—the Apollo 11 command module *Columbia*—is being moved into our Museum for the exhibition *Destination Moon: The Apollo 11 Mission* that opened on April 13.

About 24 hours later, our B-52 is painstakingly moved into place atop a memorial wall in our Vietnam Veterans Memorial Park, which is slated to open on May 25. The skill it takes to surgically move this 180,000-pound piece of history is astounding. Meanwhile upstairs, another team is securing flyovers and speakers for this powerful day. For many in the Museum, this project is a highlight of their career.

Elsewhere on Monday, the preschool STEM Starters program fills the Museum with enthusiasm. School buses arrive daily filled with students eager to explore our many education programs. And Monday through Thursday, high school juniors and seniors come here after their traditional school days to train in aeronautical pathways and earn free high school and college credits.

On Wednesday, our exhibits department demonstrates a new, immersive virtual reality experience that we soon will introduce in tandem with *Destination Moon*. Each weeknight, after the Museum closes, there is at least one private event happening, with hundreds enjoying the Museum in a totally different way. Come Friday, our world-class Collections Department is presenting their monthly "Coffee with the Curator" Member series. Yesterday, the spotlight was on paper stewardess dresses, heartbreaking photo collections, military hardware and more. Earlier today, we featured a day of activities called "Detective Day" that included activities for young and old and a timely public presentation on aircraft accident investigation.

With a week like this, I can't help but feel proud of how the Museum continues to demonstrate its relevance, its impact, and the fact that it is simply a great place to visit. I feel grateful for the staff, volunteers, and partners that make this place run. They are a credit to our profession and to our community.

Matt Hayes, President and CEO

**ABOVE:** The Museum's command module 007A leaves the Museum to make room for Apollo 11's command module *Columbia* as part of *Destination Moon: The Apollo 11 Mission*.



# Museum Flashbacks

**TOP LEFT:** Students aimed high in many ways during February's 10th Michael P. Anderson Memorial Aerospace Program—an annual event that gives Washington state underserved middle school children a chance to meet aerospace professionals and enjoy the Museum's educational programs./TED HUETTER • Hops and Props 2019. Need we say more?/JACQIE CALLAHAN • The B-52 had to be in place so the rest of the Vietnam Veterans Memorial Park could be finished around it, so the final move for the Stratofortress was in March. Tug driver Tom Cathcart showed how his experience towing wooden boats helps even when the ship is 170-feet long!/TED HUETTER • Over 400 students attended the Museum's March 21-22 Women Fly 2019 event for middle school and high school students. Since 2001 the annual program has invited students to participate in a day of motivational and career-oriented activities that allow them to meet and learn from professional women working in a variety of aviation and STEM careers./JACQIE CALLAHAN • The Museum's March 29 gala, "Apollo 11 in Living Color," lived up to its name with an evening of colorful stories about the historic Moon landing. Neil and Janet Armstrong's sons Rick and Mark chatted on stage with major *Destination Moon: The Apollo 11 Mission* sponsors Charles Simonyi, Bruce McCaw, Joe Clark and Jeff Bezos; plus Apollo 11 flight controllers Gerry Griffin and Milton Windler, and Apollo 11 astronaut Buzz Aldrin. Here Gerry watches as Buzz gestures how Neil leveled the LEM during the final approach to the Moon./TED HUETTER

# WHAT'S IN A NAME?

QUESTIONS ANSWERED BY: JOHN LITTLE, ASSISTANT CURATOR AND RESEARCH TEAM LEADER AND GEOFF NUNN, ADJUNCT CURATOR FOR SPACE HISTORY



CHAFF OR THE METAL STRIPS OF FOIL THAT WERE DROPPED TO BLIND RADAR SYSTEMS./ KAREN BEAN (TMOF STAFF) VIA THE NORMAN B. MOERBE WORLD WAR II COLLECTION/THE MUSEUM OF FLIGHT

**Q: I REALLY ENJOYED NICOLE DAVIS'S PRESENTATION AT JANUARY'S COFFEE WITH THE CURATOR, BUT I CAN'T REMEMBER THE NAME FOR THE STRIPS OF METAL FOIL THAT WWII BOMBERS DROPPED TO CONFUSE ENEMY RADAR. I'D LIKE TO READ MORE ABOUT THAT HISTORY. CAN YOU PLEASE REFRESH MY MEMORY?**

**A:** The "strips of metal foil" that Nicole showed went by several names. The British Royal Air Force called the strips "Window," the German Luftwaffe called them "Düppel," and the United States Army Air Forces called them "chaff," which remains the standard term for the strips today. By whatever name, the strips consisted of thin paper that was covered with aluminum foil on one side and then was cut into thin strips, like the tinsel that decorates Christmas trees. Bundles of the strips would be dropped from bombers, by hand, with thousands of strips per bundle, approximately every 30 to 60 seconds, as long as the bombers were over enemy territory. Upon release, the strips would separate and begin fluttering to the ground, blinding the enemy's air-defense radar system. The British Royal Air Force first used Window on the night of July 24, 1943, during the opening night of what the British called "the Battle of Hamburg." The Window worked so well that the British lost only twelve of the 791 bombers that had been dispatched.

To learn more, see Martin Middlebrook's *The Battle of Hamburg: Allied Bomber Forces*

*against a German City in 1943* and Sir Charles Webster and Noble Frankland's *The Strategic Air Offensive against Germany, 1939-1945*, Vols. II and III.

**Q: ON THE LOCKHEED MODEL 10 ELECTRA, WHAT SYSTEM(S) DID LOCKHEED USE FOR THE LANDING GEAR AND THE TOE BRAKES?**

**A:** According to Joseph P. Juptner, *U. S. Civil Aircraft*, vol. 6, all production series of the Lockheed Model 10 Electra "were fitted with hydraulic brakes. Electric motors retracted the landing gear into the engine nacelles" (187).

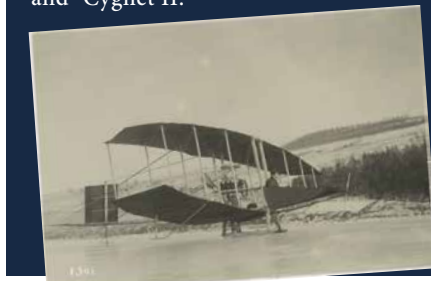
**Q: IN 1922, THE FAMED POLAR EXPLORER ROALD AMUNDSEN MADE HIS FIRST ATTEMPT TO FLY OVER THE NORTH POLE, IN A JUNKERS-LARSEN JL-6. WITH THE FAILURE OF THAT FIRST ATTEMPT, THE AIRCRAFT RETURNED TO SEATTLE AND WAS SOLD TO ALASKA AIRWAYS COMPANY FOR ANTICIPATED USE IN AIR SERVICE BETWEEN SEATTLE, VICTORIA, AND VANCOUVER. WOULD YOU POSSIBLY HAVE ANY HISTORY OF THAT AIRCRAFT AFTER IT RETURNED TO SEATTLE?**

**A:** One of our research volunteers, Steve Ellis, found a November 8, 1924 article from the Seattle Daily Times that describes how Amundsen sold his JL-6 (the American version of the Junkers F 13) to a Seattleite named Earl Gray, who intended to use the JL-6 commercially. On November 7, 1924, while being flown by Gray's brother, Wesley, the JL-6

# What's new in the collection?

BY: CHRISTINE RUNTE, REGISTRAR

The Alexander Graham Bell and the Aerial Experiment Association Photograph Collection consists of 25 photographs depicting Bell and other members of the Association. The Association was founded by Bell along with John Alexander Douglas McCurdy and Frederick W. Baldwin on October 1, 1907 in Nova Scotia. Glenn Curtiss and U.S. Army Lieutenant Thomas Selfridge were also members. The Association's goal was to construct a practical flying machine driven through the air by its own power while carrying a man. The photographs in the Collection date from 1908 to 1909 and depict the group members and their "aerodrome" aircraft, both on the ground and in flight, in Nova Scotia and New York. Also part of the collection is a souvenir booklet issued April 12, 1909 which consists of 8 pages of text and 31 enlarged photographs illustrating their flight attempts as well as Bell's "Kite Cygnet I" and "Cygnet II."



crashed shortly after takeoff from "the tideflats" adjacent to the Duwamish River. The crash occurred near what is now the intersection of 4th Avenue S. and S. Michigan St. Wesley Gray was injured and the plane was destroyed. Gray was taken, unconscious, to Swedish Hospital, where it was determined that he had suffered only "severe bruises and a wrenched back."

**UPDATE:** The Curator's Corner column in the March/April issue asked whether any readers could confirm or refute the claim of a 737 captain that every Boeing airplane ever built contains at least one piece of wood in it. We have had several helpful replies, but still nothing definitive, so this question remains open!

**HAVE A QUESTION?**

Submit it to aloft@museumofflight.org and it could appear in the next issue of Aloft!

THE ALEXANDER GRAHAM BELL AND THE AERIAL EXPERIMENT ASSOCIATION PHOTOGRAPH COLLECTION/THE MUSEUM OF FLIGHT



# We're 10 Years Old!

**ON MARCH 2,** 129 scholars from 24 cities across Washington and 57 schools in 21 districts gathered at the Museum for our annual Michael P. Anderson Memorial Aerospace Program event. During the ten years of the program's operation, the number of participants has grown each year and their opportunities for learning and mentorship have also increased. This year, we partnered with First Tech Credit Union for a grant that would supply laptops to 20 students for one year.

The event began with students participating in a variety of STEM-related activities throughout the Museum, such as building and coding robots, creating whirly-gigs that could fly up to 8 feet in the air, and enjoying rides in our simulators.

The highlights of this year's event were presentations from NASA astronauts Dottie Metcalf-Lindenburger and Grey C. "Ray Jay" Johnson. There was even a special guest appearance from astronaut Anne McLain from aboard the International Space Station. During her message to the students, she said "I'm sure there's a lot of energy in the room, and that the great volunteers and sponsors can help you channel that energy into something amazing in your life."



**STAY UP-TO-DATE** by liking and following our new **Boeing Academy for STEM Learning Facebook, Instagram and Twitter** pages to keep up with news, updates, and videos about our hands-on education programs.

# Women Fly

**THANKS TO GENEROUS SUPPORT** of the Port of Seattle, King County International Airport, and Alaska Airlines, over 400 young women from the Puget Sound region were able to participate in our annual Women Fly event. On March 21-22, middle school and high school girls spent a day with mentors in the aviation field who gave them insights on college readiness and tips on how to navigate their course to a career in flight. Some of the attendees' favorite activities included Arcs and Sparks, a workshop that showed how electricity affects aircraft navigation, and Suited for Space, an experiment where participants designed a spacesuit for a marshmallow astronaut that would protect it from differences in air pressure. The participants also enjoyed a Resource Fair where they met representatives from local air and space organizations, and got a chance to experience a virtual reality tour of a Mars habitat in Utah, provided to us by The Mars Society.

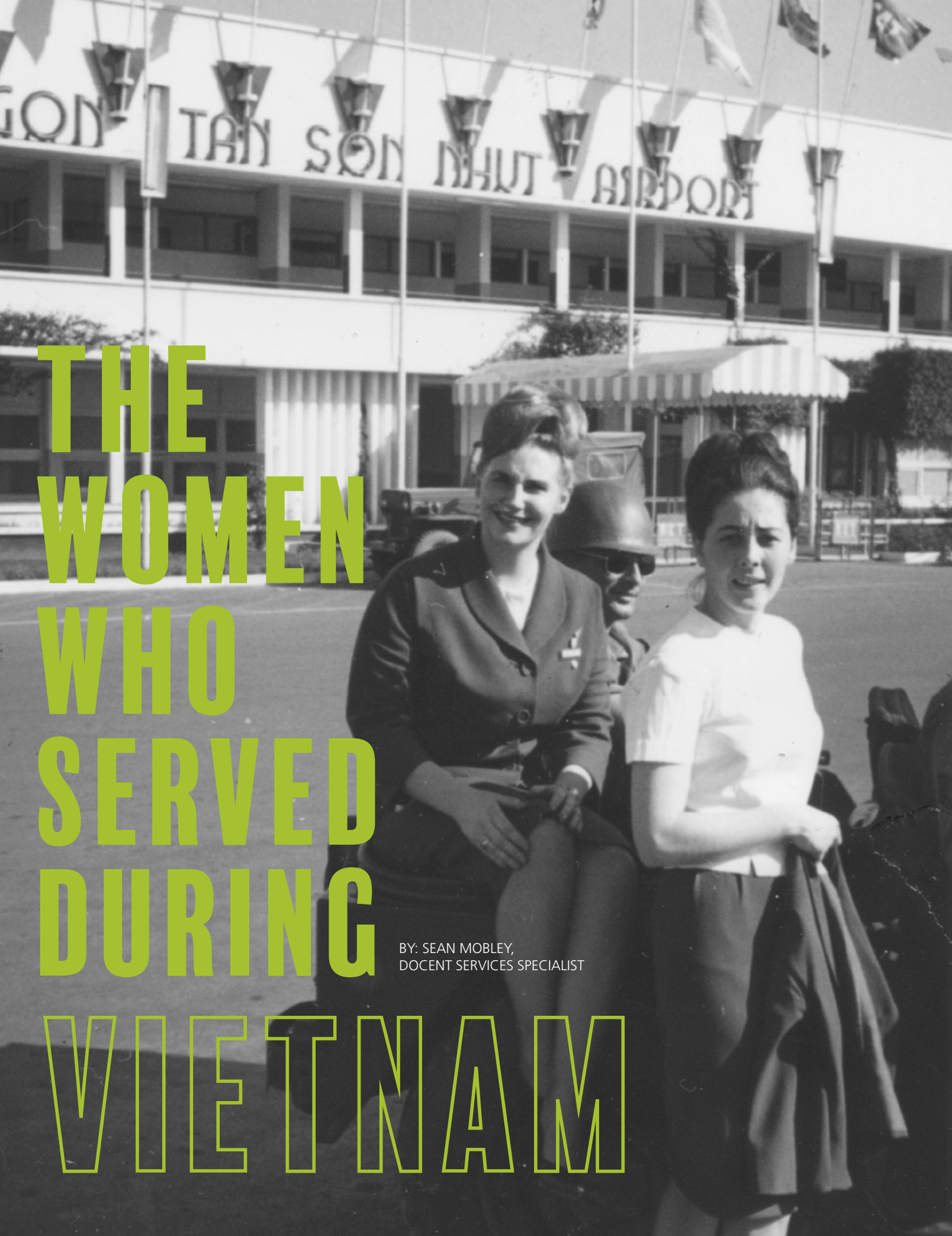


# Captain Marvel's Girls

**CAPTAIN MARVEL, THE LATEST** installment from Marvel Studios, officially opened in theaters nationwide on March 8, but a lucky group of 36 girls in our Boeing Academy for STEM Learning programs got to see the film early on March 6. Sponsored by Allied Global Marketing, the screening event took place at Regal Cinemas Thornton Place at Northgate Mall and received great reviews from its audience of Education program participants. Girls from Amelia's Aero Club, Michael P. Anderson Memorial Aerospace Program, Western Aerospace Scholars, and the Aeronautical Science Pathway program all loved the film and its inspirational message: "Fear is not a choice; what you do with it."

# THE WOMEN WHO SERVED DURING VIETNAM

BY: SEAN MOBLEY,  
DOCENT SERVICES SPECIALIST



## DARLENE JEVNE REMEMBERS THE SWELTERING HEAT.

**WHAT I REALLY REMEMBER** is how hot it was when we landed. The humidity was horrible,” she says, recalling her time in Vietnam in the 1970s. At the time, Jevne answered to several names: Stewardess. Flight attendant. Purser. As a civilian in a war zone, though, she felt she had one job.

“You know, Northwest Airlines was the first airline to fly MAC, Military Airlift Command,” she states.

As the United States became overtly embroiled in the Vietnam conflict, the military realized very quickly it needed more aircraft than it had to transport people and supplies. It turned to the private sector.

Several airlines answered the military’s call for help and entered into contracts to use civilian aircraft and crews to transport military logistics and personnel. Northwest, United, Pan Am, and more pulled aircraft off regular revenue-generating passenger routes and crews began taking orders from the United States Air Force.

Before long, Douglas DC-8s and Boeing 707s and 727s bearing their familiar commercial livery were making regular landings in places like Saigon, Cam Ranh Bay, and De Nang ferrying soldiers and supplies. This turn of events presented a significant opportunity for American women like Jevne who yearned for ways to serve their country.

The Women’s Armed Services Integration Act of 1948, though limited in scope, removed the formal legal barrier keeping women from joining the regular military forces. It prevented many women from serving in combat zones, save for a select few nurses and medical assistants. The glass ceiling became enshrined in military code and women could not legally achieve the rank of General or Admiral. Women were not even allowed in direct combat roles until 2013.

This didn’t stop determined women from assisting in the war efforts. Approximately 11,000 women served in the US military during the Vietnam War, of those about 5,000 were on active duty in Vietnam itself. Compared to the near 2.7 million men who served in Vietnam, the percentage of women on the front was small, but their contributions were just as essential.

The female medical staff saved lives. On a good day, a soldier wounded in the field could get evacuated by a Huey within 15-20 minutes and be in a medical tent in another 15-20 minutes. Women provided emergency care and stabilization to keep soldiers alive. Other women served on ships off the coast of Vietnam, providing similar services to maritime forces.

When a soldier could not be saved, these women were often the last faces the soldier saw. “I would just stand near him,” said one nurse, according to Dr. Elizabeth Norman in a speech at the Vietnam Women’s Memorial in Washington DC, “I felt that his mother would feel better knowing that someone was with her son when he died.”

Just a few steps from the Vietnam Women’s Memorial, the names of eight military women who were killed in action stand forever engraved on the granite wall of the Vietnam Veterans Memorial Wall.

Because the military offered few avenues for women, they found ways to serve in civilian capacities. Some actively sought out opportunities,



such as those who volunteered for the American Red Cross. Others, like Jevne, said ‘yes’ when the opportunity came to them.

Lourdes E. ‘Alfie’ Alvarado-Ramos, Director of the Washington State Department of Veterans Affairs and a 22-year active duty veteran says, “As we celebrate the accomplishments of our service members in and during the Vietnam War, we must also remember the thousands of women who served and died for our country. They continue to suffer the effects of Agent Orange and Post Traumatic Stress, just like their male counterparts. They are not only the nurses who saved so many lives but also the supply clerks, communications and public relations specialists and personnel crews. Many endured significant hardships and paved the way for the equipment and gender-specific services that our women warriors enjoy today. We honor our Vietnam War women veterans.”

When Northwest Airlines began operating MAC flights, Jevne was already a veteran flight attendant, having worked for Northwest for several years. “We flew to all the bases, all over the east and west coasts, and across the Midwest, we were all over,” she recalls.

Initial flights were limited to the US, often transporting families of service members from base to base. Before long, the need for support overseas became apparent and the private sector responded by moving their civilian flight crews into the war zone, sometimes carrying people, medical supplies or ordinance.

“Flights [to Vietnam] were all troops, they were fully dressed, all their gear, guns everything,” says Jevne. By that point in the conflict, the American casualties were piling up. In 1969 alone, an estimated 11,780 servicemen were killed. The reality of war was not lost on the civilian air crews. “They were young, young guys. And we knew we wouldn’t bring a lot of them home.”

For the crews of Northwest Airlines, an additional question worried them whenever they landed in Vietnam. Before joining the Air Force, Wesley Schierman, born and raised in Washington south of Spokane,

OPPOSITE: Northwest Airlines flight attendant/purser Darlene Jevne (left), an unidentified GI (middle) and a fellow NWA flight attendant outside the Tan Son Nhut International Airport, a joint military/civilian airport, in 1975. Many NWA MAC flights to Saigon operated out of the military side of the airport.

THIS PAGE: The distinctive tail of the Northwest Airlines plane, not at an airport but at a military base in Vietnam, 1975. INSET: Northwest Airlines flight attendant/purser Darlene Jevne in uniform aboard an NWA MAC flight in Vietnam in 1975.

Photos: Courtesy Darlene Jevne

# FLIGHTS TO VIETNAM WERE ALL TROOPS, THEY WERE FULLY DRESSED, ALL THEIR GEAR, GUNS, EVERYTHING.



## New Park Set to Open in May

BY: SEAN MOBLEY, DOCENT SERVICES SPECIALIST, AND LOUISA GAYLORD, DEVELOPMENT COMMUNICATIONS COORDINATOR

**THE MUSEUM ACQUIRED** the veteran B-52G Stratofortress #59-2584 when it was retired from service by the United States Air Force. It had accumulated 15,305 hours of flight time and had played an integral role in bringing 591 American prisoners of war home as part of Operation Linebacker II (OLB II) in 1972 during the Vietnam War. When the Museum received the B-52 it didn't have enough space for the massive aircraft on its main campus at Boeing Field; the B-52 sat quietly for 20 years at Paine Field in Everett, until it was "rediscovered" by some familiar faces.

Former B-52 navigator Carl Hanson-Carnethon was planning a reunion in 2012 with several of his fellow E-12 crewmembers. They wanted to reconnect with each other and revisit the aircraft they flew together during OLB II. The reunion convinced the

Museum that although the B-52 was rusted and run-down, it still held a special place in the hearts of many veterans across the country. Museum Trustee Jim Farmer also flew B-52s in Vietnam and has been a tireless advocate for the restoration of #59-2584. A committee of veterans, including Jim, began to envision more than simply restoring the aircraft; they saw an opportunity to properly honor veterans of the Vietnam War, many of whom hadn't been recognized when they returned home from their service. The *Project Welcome Home* campaign to restore the B-52 and build the Vietnam Veterans Memorial Park was born from this vision.

*Project Welcome Home* began in earnest in 2017 when the B-52 was repainted in its original Vietnam-era camouflage livery and carefully disassembled. Many of the smaller pieces were easily transported down to the

flew for Northwest as a pilot. In 1965, Major Schierman was shot down, his fate unknown. "I flew with him," remembers Jevne. "All of us knew he was MIA. All of us at Northwest. But you don't know... you don't know anything."

In 1973, Major Schierman was released from a Prisoner of War camp in northern Vietnam and returned to life in the US. He eventually resumed piloting for Northwest Airlines.

Northwest Airlines was one of several involved in the evacuation of Saigon in 1975. Darlene Jevne crewed the last Northwest flight out of the city as it fell. "It was absolute chaos," she says. "People knew that if they did not get on the aircraft..." She pauses. "It was life or death."

Chaos indeed. Mothers, unable to fit themselves on the planes, passed their children to those boarding. "The pilot kept saying we had to shut the door, we're too heavy. We're not going to get off the ground." Packed well past its normal load, the distinctive red-tailed Northwest aircraft lumbered down the runway before finally lifting off.

That red tail of a Northwest aircraft was a welcome signal to soldiers on the ground. They knew it was their ride home. "We were there for years welcoming home the troops. They were so happy to see Americans. We were there in our Northwest uniforms. And they got an ice-cold Cokes and sandwiches and they were happy."

Darlene, and the Vietnam veterans she served, is why The Museum of Flight chose to build the Vietnam Veterans Memorial Park at its main Tukwila campus. As part of the larger *Project Welcome Home* initiative, the park honors those who served during one of the most difficult times in our country's history. A dedication ceremony will take place on May 25 at 11:00 a.m. to open the park to the public. Please join us in saying "Welcome Home" to our veterans.

◀ A rendering of the Vietnam Veterans Memorial Park with the Museum's B-52G Stratofortress as the centerpiece.

Museum over several weeks, but the 159-foot fuselage and the 92-foot wings required a bit more planning. These final pieces were transported on semi trucks and escorted by the Washington State Patrol and the Tukwila Police and Fire Departments, avoiding highway overpasses and road construction between Everett and Tukwila. More than 300 supporters welcomed the trucks as they backed into the parking lot of Raisbeck Aviation High School at the Museum. The B-52 was reassembled last June next to the site where the park is being constructed.

A committee of Vietnam veterans has guided our *Project Welcome Home* efforts every step of the way; their perspectives and military experience ensure that the park, and our supporting programs, are respectful and meaningful to all veterans who served between 1955 and 1975. Although the park's name and design have changed since we began, our mission remains the same: to honor the legacies of the many veterans who were not recognized or welcomed when they returned home. The Memorial Park will encourage an important conversation in our community about those who served, how they were treated when they returned home, and the conflicting narratives perpetuated by the media about the Vietnam War.

**Join us for the momentous opening and dedication of the Vietnam Veterans Memorial Park on Saturday, May 25 over Memorial Day weekend. See ad on back cover for details.**



MUSEUM NEWS

COURTESY OF THE ARMSTRONG FAMILY

◀ Neil Armstrong (second from left) poses with his high school jazz quartet, the Mississippi Moonshiners.

## A Unique Tribute to Neil Armstrong

BY GEOFF NUNN, ADJUNCT CURATOR FOR SPACE HISTORY

**THE EXHIBITION DESTINATION MOON:** *The Apollo 11 Mission* is now open and tells the story of how NASA landed the first people on the surface of the Moon. Though the key artifacts and much of the interpretation was developed by the Smithsonian and has remained constant throughout the tour, each host venue has had the opportunity to enhance this wonderful exhibition with its own materials. We have taken a similar approach, supplementing the artifacts and interpretive content on display to create a truly unique experience for our visitors.

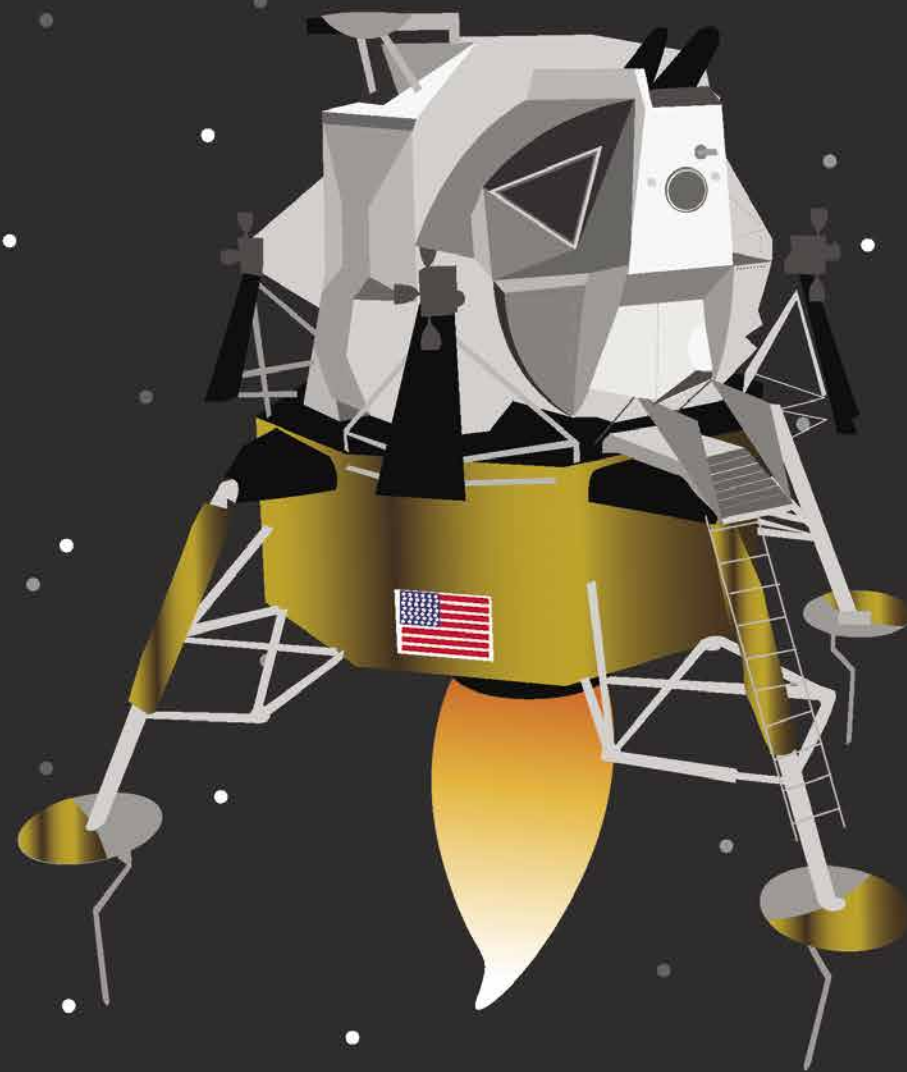
One custom addition, which appears halfway through the exhibit, is a highly unique selection of artifacts from the personal collection of Neil Armstrong. The Museum worked closely with the Armstrong family—in particular his youngest son, Mark—to curate a selection of objects that reflect the family's memory of Neil. The display juxtaposes objects of great significance to aerospace history, and to the Space Race, with pieces that represent a more personal side of the man best known as the first Moonwalker.

Included in the collection are fragments of the original 1903 Wright Flyer, the world's first airplane, which Armstrong carried with him to the Moon. These relics representing the continuum of aviation history sit above Armstrong's Congressional Space Medal of Honor, which was the first such award presented. Armstrong's medal was bestowed by President Jimmy Carter during a ceremony in 1978. Though other Apollo astronauts have received the award, this was the only one presented for a Moon landing.

Flanking these pieces of aerospace history are a selection of musical programs and a euphonium which belonged to Armstrong. In addition to being an incredible pilot and astronaut, Armstrong was a proud band nerd. The programs detail performances dating back to Armstrong's days at Blume High School, where he not only played in the school band, but also entertained students before assemblies with his jazz quartet, the perhaps prophetically named Mississippi Moonshiners. A second display case nearby holds an official NASA flight suit issued to Armstrong. The suit fit

Armstrong poorly, so he preferred not to wear it in his official duties, but for years after he left NASA, it served as a coverall when working on his farm in Ohio.

We are incredibly grateful to Mark and the rest of the Armstrong family for helping us to provide this peek into the less well-known side of Neil Armstrong. This tribute display represents just one of the unique additions to *Destination Moon*, which can only be seen here at The Museum of Flight.



Join our mission May 8

[givebig2019.org/museum-of-flight](http://givebig2019.org/museum-of-flight)



Taken in Houston, TX, sometime between 1989-1991, the windowless structure at Ellington Field provides a cathedral-like backdrop for these T-38s./STORY MUSGRAVE

## MUSEUM MUSINGS

# The Aircraft That Trains Astronauts

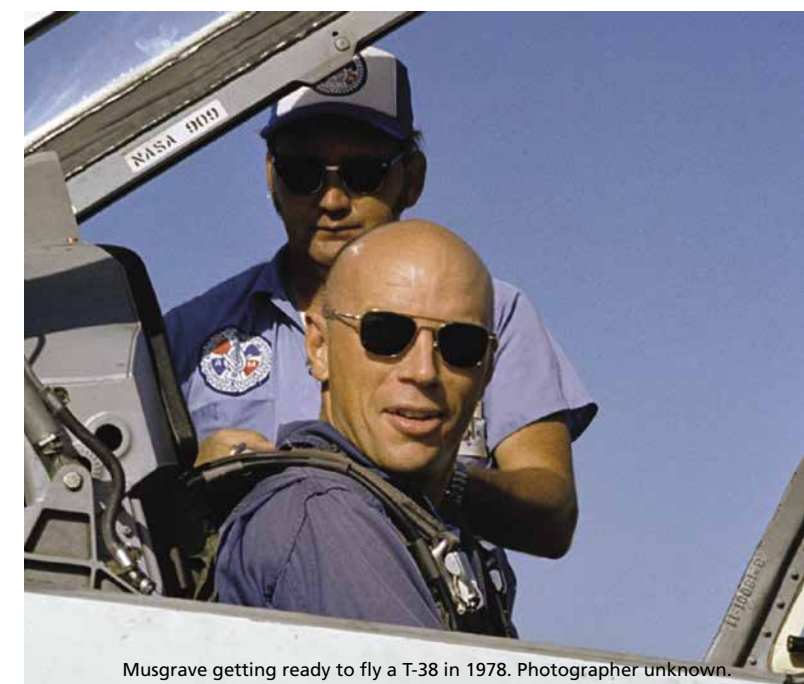
BY: CALE WILCOX, PUBLIC ENGAGEMENT MANAGER

**WHEN YOU THINK OF NASA**, you most likely picture spacecraft like the Space Shuttle, lunar rovers, or space capsules. Aircraft, however, play a key role in human space exploration as well. One of the most iconic aircraft operated by NASA is the Northrop T-38 Talon.

Designed in the late 1950s as an advance military trainer, the T-38 was introduced in 1961 and was quickly adopted by NASA as its primary training platform for astronauts, as well as a chase plane. The T-38 has proven so reliable that it is still in use by NASA today, close to sixty years later. Capable of supersonic flight and able to reach altitudes of 40,000 feet, the T-38's high performance and safe design make it ideal for astronaut training. Every American astronaut, from Neil Armstrong to the newest astronaut candidates today, has flown and trained aboard this long-lasting jet.

Flight training is an extremely important part of astronaut training, as the environment inside the cockpit of a high-performance jet has many parallels to the intense experience, both mentally and physically, of operating spacecraft. Astronauts who are pilots are required to maintain flying proficiency by logging at least fifteen flight hours per month, and non-pilot astronauts must log at least four hours per month. In addition to maintaining "flight readiness," training in T-38s helps astronauts prepare for the g-forces that they will experience during space launches.

Perhaps there is no one more intimately knowledgeable about



Musgrave getting ready to fly a T-38 in 1978. Photographer unknown.



AN AIRBORNE VIEW OF A T-38 WHILE LANDING AT EDWARDS AIR FORCE BASE IN CALIFORNIA MARCH 4, 1990.  
CREDIT: NASA MISSION SPECIALIST RICHARD M. "MIKE" MULLANE

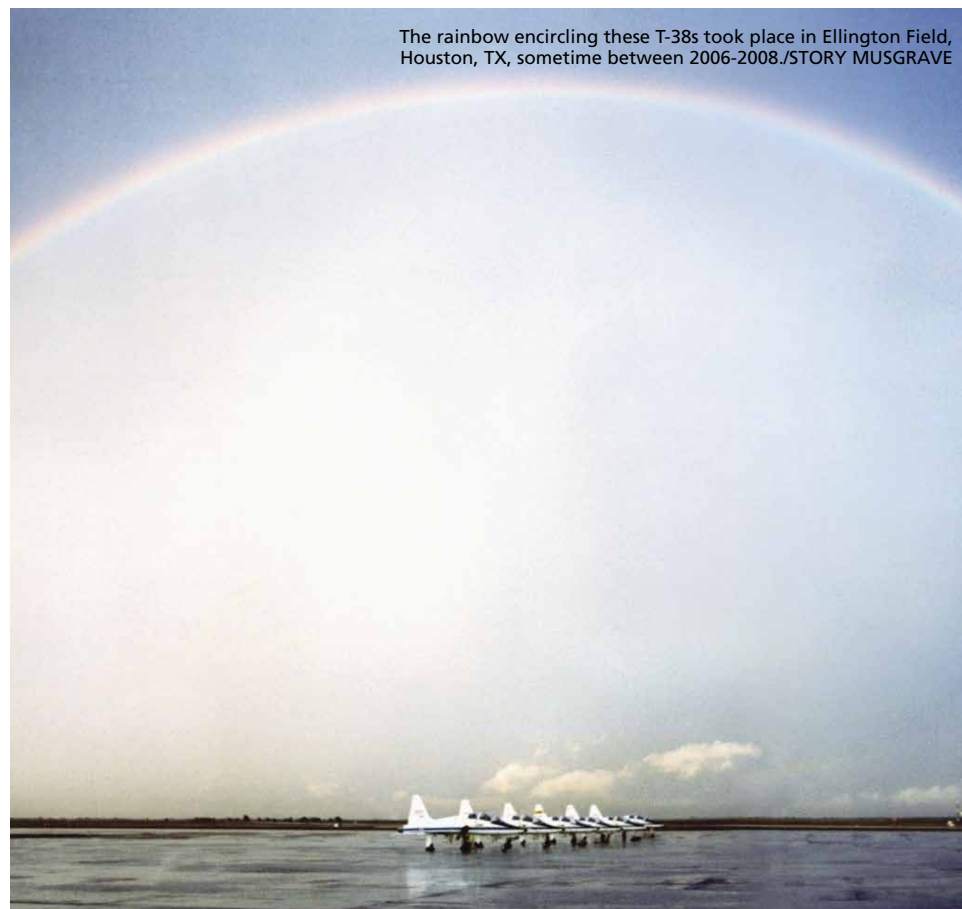




Formation of T-38's flying by space shuttle Atlantis on May 9, 2009 two days prior to STS-125./NASA

the T-38 than six-time spaceflight veteran and retired NASA astronaut Dr. Story Musgrave, who became an astronaut in 1967 (two years before the Apollo 11 Moon landing) and flew to space aboard the Space Shuttle. Among an extensive list of other incredible achievements in the fields of spaceflight, medicine, science, art, and education, Dr. Musgrave has over 8,000 hours flying the T-38. On July 6, Dr. Musgrave will share the history of the T-38 at 2 p.m. in the William M. Allen Theater and sign copies of his book *The NASA Northrop T-38: Photographic Art from an Astronaut Pilot*. A static display T-38 will be available for walk-around tours in the Museum's parking lot, and later that same day, Dr. Musgrave will give a second presentation detailing his achievements in life, entitled *Design a Life for Yourself*.

Join us on July 6 to learn more about two iconic parts of NASA history: The T-38 Talon and astronaut Dr. Story Musgrave!



The rainbow encircling these T-38s took place in Ellington Field, Houston, TX, sometime between 2006-2008./STORY MUSGRAVE

CALENDAR OF EVENTS

# May

## TO THE MOON!

Learn more about this exciting program series. All in celebration of *Destination Moon: The Apollo 11 Mission!*

Page 20



**SPECIAL EVENT** **TO THE MOON!**  
**Prospect Screening and Q&A**

Join us for a special screening of the locally-produced, independent sci-fi film *Prospect*, followed by Q&A with the film's creators. Released in 2018, the film follows the adventures of a man and his teenage daughter as they mine gems in a moon's poisonous forest, and their situation quickly devolves into a fight for survival. *Rated R*.

**WILLIAM M. ALLEN THEATER**  
**Saturday, May 11 | 2:30 to 5 p.m.**

**LECTURE**

### B-52s and American POWs in Vietnam

A panel of five Vietnam Veterans will explore the connection between the B-52 Stratofortress and American POWs in the Vietnam War, and they will share their experiences during that time. Moderated by Matt Lorch, Q13 FOX Evening News anchor. And don't forget to join us at 11 a.m. for the Vietnam Veterans Memorial Park Dedication. See back page for details.

**WILLIAM M. ALLEN THEATER**  
**Saturday, May 25 | 2 to 3:30 p.m.**

**SPECIAL EVENT**

### Memorial Day 2019

We recognize Memorial Day with a musical performance by the Boeing Employee Concert Band followed by a special commemoration ceremony featuring keynote speaker Lourdes E. 'Alfie' Alvarado-Ramos, Director of the Washington State Department of Veteran's Affairs. **Veterans and active U.S. Military personnel receive free admission to the Museum with identification.**

**T.A. WILSON GREAT GALLERY**  
**Monday, May 27 | 11 a.m. to 1 p.m.**

### TO THE MOON! Operation Lunar Eclipse and the Moon Rock Project

Joe Gutheinz takes us on his journey to locate and recover Apollo-era Moon Rocks, some of the most valuable items on Earth. Learn about how he and a team of Federal Agents recovered the Apollo 17 Goodwill Moon Rock, valued at \$5 million.

**Saturday, May 4 | 2 to 3 p.m. Location: Charles Simonyi Space Gallery**

**LECTURE**

### Apollo 10 50th Anniversary

Aerospace historian, author and pilot Ted Spitzmiller remembers Apollo 10, a "dress rehearsal" for the first Moon landing, on its 50th anniversary. The mission also paid tribute to the wildly popular Peanuts comic strip by naming the command module "Charlie Brown" and the lunar module "Snoopy." Ted will sign copies of his book *The History of Human Space Flight* following the presentation.

**CHARLES SIMONYI SPACE GALLERY** **TO THE MOON!**  
**Saturday, May 18 | 2 to 3 p.m.**

**LECTURE**

### Protecting Tranquility Base

Here how Michelle Hanlon of For All Moonkind.org is working to ensure the six Apollo lunar landing sites are recognized for their value and are preserved and protected for prosperity.

**CHARLES SIMONYI SPACE GALLERY**  
**Sunday, May 19 | 2 to 3 p.m.**



**WELLS FARGO**

**FAMILY EVENT**

### Wells Fargo Free First Thursday Space Night

On the first Thursday of each month, the Museum stays open late—and admission is FREE. This month celebrate **Space Day** with astronomy clubs who will share their telescopes with the public to view solar activity and the night sky. Families can attend planetarium shows and other educational activities.

From 7 to 8 p.m. the local chapter of the Planetary Society will present another **Science Café Talk** in the Charles Simonyi Space Gallery.

The Museum Store and Wings Café will also remain open for extended hours.

**T.A. WILSON GREAT GALLERY**  
**Thursday, May 2 | 5 to 9 p.m.**

**WEEKEND FAMILY WORKSHOPS**

### Robot Revolution!

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

**T.A. WILSON GREAT GALLERY**  
**Saturday and Sunday, May 4-5, 11, 18-19, 25-26**  
**11 a.m. and 1 p.m.**

### Our Marvelous Moms!

Join us as we celebrate our marvelous moms at this special Mother's Day event!

**T.A. WILSON GREAT GALLERY**  
**Sunday, May 12 | 11 a.m. and 1 p.m.**

# June

**Weekly Aerospace Update**

Get the latest news in astronomy, aviation and spaceflight from our own experts. Q&A follows. **Every Saturday at 1 p.m. in May & June** in the Charles Simonyi Space Gallery.



**LECTURE**

## Around the World with the Apollo 11 Crew

After Neil Armstrong, Buzz Aldrin, and Michael Collins voyaged to the Moon, they undertook another journey: the Giantstep Goodwill World Tour. National Air and Space Museum Curator Dr. Teasel Muir-Harmony explains how this 45-day trip around the world amplified the message that the Moon landing was “for all mankind,” at every stop. Book signing to follow.

WILLIAM M. ALLEN THEATER

**TO THE MOON!**

**Saturday, June 22 | 2 to 3:30 p.m.**

**LECTURE**

## Moon Rush: **TO THE MOON!** The New Space Race

Leonard David discusses how multiple nations and corporations have been targeting the Moon as a source for scientific research and mining ventures, and how these projects may also reach destinations outward, such as Mars. Leonard will sign copies of his book *Moon Rush: The New Space Race* after the presentation.

CHARLES SIMONYI SPACE GALLERY

**Saturday, June 1 | 2 to 3 p.m.**

**LECTURE**

## Divided D-Day with Dr. Edward Gordon

For the 75th Anniversary of D-Day comes this fresh perspective on the Normandy Invasion and the following three-month campaign. Historian Ed Gordon spotlights the conflicting egos, national rivalries, and professional abilities of the principal D-Day commanders, and how certain decisions may have prolonged the war. Book signing to follow.

WILLIAM M. ALLEN THEATER

**Saturday, June 8 | 2 to 3:30 p.m.**

**LECTURE**

## Landing **TO THE MOON!** Apollo: Searching for the Truth

How do we know we went to the Moon and how can we prove it? Tony Gondola of the New Mexico Museum of Space History presents a science-based review of the Apollo landings and moonwalks.

CHARLES SIMONYI SPACE GALLERY

**Saturday, June 15 | 2 to 3 p.m.**

**LECTURE**

## Ancient Life **TO THE MOON!** on the Moon?

Given that the Moon is today a lifeless barren rock in space, it's difficult to imagine that it could have hosted life in the past. Astrobiologist Dirk Schulze-Makuch explains how 3.5 billion years ago major volcanic outgassing may have created an atmosphere that allowed life on the Moon.

CHARLES SIMONYI SPACE GALLERY

**Saturday, June 29 | 2 to 3 p.m.**

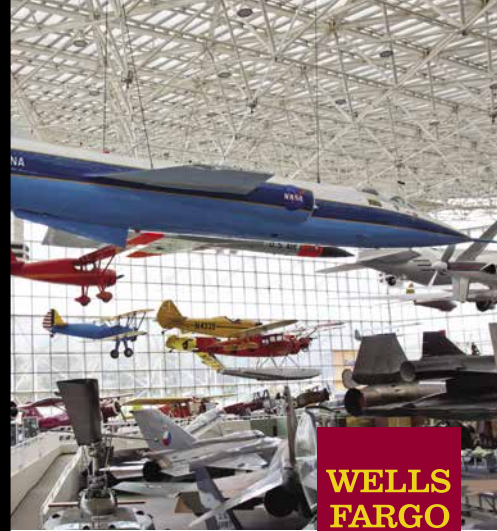
**LECTURE**

## Red Eagles Project **CONSTANT PEG**

Hear the tale of military pioneers using their experience and knowledge to develop a new training paradigm for fighter pilots. Vietnam veteran and F-4 Phantom pilot, Col. Gail Peck (call-sign "EVIL") worked under utmost secrecy to ensure that US fighter pilots were unbeatable in the air, particularly against their Cold War adversaries. A book signing will follow.

NORTHWEST AERO CLUB ROOM (RED BARN)

**Sunday, June 23 | 2 to 3:30 p.m.**



**FAMILY EVENT**

## 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 T.A. Wilson Great Gallery, J. Elroy McCaw Personal Courage Wing, Charles Simonyi, Space Gallery, Aviation Pavilion and more from 5 to 9 p.m. The Museum Store and Wings Café will also remain open for extended hours.

T.A. WILSON GREAT GALLERY

**Thursday, June 6 | 5 to 9 p.m.**

**WEEKEND FAMILY WORKSHOPS**

## Constellations: Pictures in the Night Sky

Some of the oldest stories in the World can be seen in the night sky. Hear how people have used the stars to instruct and entertain each other.

T.A. WILSON GREAT GALLERY

**Saturday and Sunday, June 1-2, 8-9, 15, 22-23, and 29-30**

**11 a.m. and 1 p.m.**

## Our Fantastic Fathers!

Join us as we celebrate our fantastic fathers this Father's Day! Enjoy a hands-on activity that you can take home as a gift for dad.

T.A. WILSON GREAT GALLERY

**Sunday, June 16 | 11 a.m. and 1 p.m.**

# Junior Aviators

**TOY FROM THE COLLECTION**

## Largest Toy Plane

**"EVERY BOYS WANTS A REMCO TOY, AND SO DO GIRLS!"**

Most of the model airplanes we have in the collection were not made to be played with, only to sit on a shelf and be (safely) admired, but this model airplane is different! Made entirely from plastic, and large enough for small hands to grab and tough enough to crash, this toy Boeing 727 sporting United Airlines livery was played with by the donor as a child and was built by his father. The donor just happened to grow up and become a pilot! This toy plane takes batteries, which power the lights of the cockpit interior, propel the plane forward on its wheels and allow it to make a jet engine noise. Advertised as the “The Largest Toy Plane in the World,” it was made by the Remco Company in 1968 and is a fairly rare toy to find. Measuring just over 3 feet wide and 4 feet long, the largest in the world claim is dubious, but it is the largest toy plane in the Museum's collection! Come see the Museum's United 727 in the Aviation Pavilion!

1998-9-24/1, DONATED BY BRIAN BAUM



## Airport Word Search

Can you find all the airport terms? Words can be found forwards, backwards, and diagonally. Good luck!

- |           |               |
|-----------|---------------|
| TERMINAL  | TOWER         |
| PILOT     | BOARDING      |
| PLANE     | TAKEOFF       |
| RUNWAY    | DOMESTIC      |
| TRAFFIC   | INTERNATIONAL |
| LUGGAGE   | PASSENGER     |
| ATTENDANT | TICKET        |
| CAPTAIN   | AIRLINE       |
| FUEL      | WEATHER       |
| SAFETY    |               |

V Y A W N U R Y T E F A S C T N G V L Q  
 S X M P K P M E C O N M F T G Z I A V U  
 G L U G G A G E Z Q E R F H S Y N D D I  
 C R R V O N F W L G Z U O A F O B A Y Q  
 O E I Y S F T C E M O O E T I X P F H W  
 N G L I B D D T A L K K K T L V D P I W  
 B N U N P O B P Z P T L A E M B F K V O  
 O E T Q L Q A H N I T N T N Z I U C I Q  
 T S X U A Y E R C Q R A R D E D B A C Z  
 U S J S N T R K D E S M I A V A O I V X  
 G A S L E Z E F T I X Z Y N H D F R W T  
 J P L V K T H N B V N M K T M F O L J H  
 Z W P B B O I H Q F Z G Z T A C X I W Y  
 U I K P T E R M I N A L G R W P T N Z E  
 N N T I Y A S J W V Z I T E Y F X E Z S  
 I O O L I X D X W B Z H B Z U E X P F A  
 I L W O C I T S E M O D L E C A N K E B  
 B H E T O I S V X I C C L D R C M W M L  
 O C R E H T A E W J K K L M G Y N S I H  
 W G L W T F X M I H G K S N N J L Q I Q



**BOOK RECOMMENDATION**

## First Sticker Book Airport

BY: USBORNE

An airport is like its own little city, with buses and transportation, restaurants, stores, and people. There's lots to do at a busy airport, and this lively book is packed with illustrations that will show you what all the trucks, buses, planes and people do to keep the airport running. See if you can spot over 60 things at the airport with the help of simple descriptions and fun sticker illustrations. This sticker book is a great planespotting activity you can do right at home—no trip to the airport necessary!

**MEMBER PRICE: \$5.95**

Available in the Museum Store and online at [museumofflightstore.org](http://museumofflightstore.org)

MUSEUM MUSINGS

# Luxury Leftovers



BY: IRENE JAGLA, CONTENT MARKETING MANAGER

**ON MAY 6, 1937, THE HINDENBURG** airship burst into flames and crashed onto the Naval Air Station at Lakehurst, New Jersey. Thirty-six people perished aboard the aircraft—roughly one-third of the passengers and crew on board.

Airship travel came to an abrupt halt after the Hindenburg tragedy, but the legacy of these luxury airliners lives on in our collection with the addition of artifacts from the Hindenburg.

A dining set—which includes tea cups, a glass oyster cup, plates, a bowl, coffee cup, and a saucer—from the Hindenburg was donated last year by Aaron Cardis, who received the dinnerware from his mother Maxine McKernan. She's the daughter of Max Henneberg, one of the stewards aboard the Hindenburg who survived the crash.

Christine Runte, the Museum's registrar, recalls the day that the items were donated: "Aaron came here with his family over the weekend, so I came in on a Saturday to meet him and register the artifacts." We don't have many airship artifacts at the Museum—save for some fabric belonging to the L70 German Navy airship—so the Hindenburg china set is a unique addition.

Although McKernan does not recall the details of how her father acquired the dinnerware, she does remember that he was well-respected and that her mother, Marta, held on to the dishes in his memory. They came with her from Germany and sat hidden away in a box for decades.

The dishes harken back to a time of luxury transoceanic air travel, with round-trip tickets from Germany to the United States costing

approximately \$800 (\$14,000 today, adjusted for inflation). James F. Danner, whose book *Graf Zeppelin and Hindenburg: A Handbook of Airship Memorabilia*, describes airships as "huge hotels, featuring the appointments of a fine ocean liner at twice the speed" that float gently through the sky (19).

Flights in the lap of luxury aboard the Hindenburg were made possible with funding from the Nazi government, which also deployed these airships to play patriotic marches from its loudspeakers and drop leaflets around the country during elections.

After the Hindenburg's crash, airships were all but discontinued. People all over the world heard Herbert Morrison's eyewitness report of the incident for the radio station WLS Chicago in which he famously

exclaimed, "Oh, the humanity!" Even more people went to their local cinemas in the days following the crash to see video footage of the flaming wreckage. Although airplanes crashed fairly often, they never got the negative press coverage that the Hindenburg received, and thus continued flying.

Given the excellent conditions of the artifacts, the dishware most likely was not involved in the crash. John Little, the Museum's assistant curator and research team leader, surmises that the dishware was kept in a warehouse in Germany and then given to Henneberg either before or after the incident. It's possible you may see the Hindenburg artifacts in the Museum in the future, so stay tuned for more information!

THE MUSEUM OF FLIGHT COLLECTION



MUSEUM NEWS

## Moms and Dads get in FREE!

**JOIN US IN CELEBRATION** of all the moms and dads out there! Moms and dads accompanied by their kids (of any age) on Mothers Day (May 12) and Fathers Day (June 16) receive FREE general admission. Each day will have themed Weekend Family Workshops to create fun keepsakes. See the calendar for workshop details.




### SOARING INTO TOMORROW

Make an Impact For Future Generations

Join the Museum's Legacy Challenge and make a bigger impact than you ever thought possible.







Leave a gift in your will or living trust (and let us know).      A \$5,000 matching gift is made in your honor to the area of your choice.      Impact future generations today.

Help secure the future of the Museum by notifying us of your intention today. Contact Sandra Dolese at 206-768-7199 or [sdolese@museumofflight.org](mailto:sdolese@museumofflight.org).



**The Legacy Challenge has donated \$100,000 to the Museum so far, in honor of the following supporters:** Richard and Dianne Arensberg, Alison G. Bailey, Thomas A. Baillie, John and Carolyn Brantigan, Jeanne and Jon Cantalini, Cliff Crandall and Sandy Stelling, Tom and Sarma Davidson, Sandra Dolese, Marilyn Goo and Michael Sill, Kathryn Thuet-Gould *in memory of Thomas C. Gould, Sr.*, Catherine E. Hall, Rick Hardin and June Moore, Museum Friends Who Wish to Remain Anonymous, Fred C. Smyth *in memory of Margaret Neyman Smyth, WASP*, Lowell Houtchens\* and Marlene Taylor Houtchens, Greg Walker, John and Fran Weiss, and Bob\* and Pat Wilshusen. **Matching funds are still available.**

\*Deceased

# TO THE MOON!

## PROGRAM SERIES

- SCIENTISTS!
- SPACE EXPERTS!
- AUTHORS!
- HISTORIANS!
- PILOTS!
- AND MORE!

## LUNAR EXPLORATION: PAST, PRESENT AND FUTURE

In honor of our newest exhibition, *Destination Moon: The Apollo 11 Mission*, we're proud to introduce a new series that will complement the stories behind the artifacts, people, and places that made the Moon landing possible.



Keep an eye out for the *To The Moon!* series logo on our website calendar and start planning your next outing to the Museum today!



### MUSEUM MUSINGS

## How to Investigate a Plane Crash

ORIGINALLY PUBLISHED BY IRENE JAGLA IN THE MUSEUM OF FLIGHT BLOG

**ON MARCH 16**, curious aviation geeks joined children and families for our first ever Detective Day, an event dedicated to the complex craft of investigating and reconstructing plane accidents. While kids enjoyed virtual reality experiences and scavenger hunts in our Aviation Learning Center, a crowd of aviation enthusiasts older was transfixed by a presentation from Dr. Bob Winn, an expert in aircraft accident reconstruction, who illustrated the finer points of how to investigate a plane crash.

Although commercial aircraft safety has improved dramatically over the years, the history of aviation is replete with tragic incidents that cost many lives. When these incidents occur, it's up to plane crash investigators to discover what went wrong and how to prevent future accidents. John Purvis and Barry Latter, Museum volunteers and former Boeing investigators with similar expertise to Dr. Winn, shared with me the basics of investigating a crash.

### ASSEMBLE THE TEAM

Before any actual investigating happens, the people doing the investigating have to gather and organize their roles and responsibilities. The airplane manufacturer assembles two teams: one on-site (the team that John Purvis directly worked with), and another team of specialist engineers within the airplane program (the team that Barry Latter managed). Information passes between all the team members as needed to get a

complete picture of what happened.

Representatives from the airlines, aircraft manufacturers, the NTSB (National Transportation Safety Board), the FAA (Federal Aviation Administration) and other national agencies also get involved as necessary. In the US, an official from the NTSB usually directs the investigation and provides leadership to the investigators.

Back in Purvis' day, the investigative team would exchange mailing addresses, phone numbers, and affiliations. Now, with improved communications tools, these exchanges happen more efficiently and with the help of numerous digital platforms.

### GET, AND SHARE, ALL INFORMATION

Once the team is assembled, each investigator is responsible for a particular segment of the investigation. There are experts dedicated to gathering information about the conditions of the airframe, electronics, engines, etc.

A lot of information can also be found in the flight recorder and the cockpit voice recorder. The flight recorder holds information about the plane's altitude, speed, attitude, and direction. "It will also tell you what switches were in what position and whether the gears or flaps are down, and what RPM the engines were running at," says Latter.

The cockpit voice recorder contains the last 30 minutes of the cockpit's communications, but barely anyone in the

investigation team listens to this recording unless they absolutely must hear it. During the investigation, the team must remain open-minded and not jump to conclusions. "It's important that the conclusion of any accident report fits all of the data not just part of it," says Latter. The narrative that investigators craft about how the accident happens must match the kinds of damage they observed in the aircraft.

After the investigation, "the industry comes together to share information between technical groups and pilot groups from other companies," says Latter, so that the same issue with one plane does not affect more than one airline.

### RECONSTRUCT THE INCIDENT

While the team at the crash site gathers information, the aircraft manufacturer's engineering team recreates the incident using models and mathematical formulas. This is where the expertise of Latter and Purvis come in. They work on creating models of the incident to match the data gathered at the crash team site. Most of the time, the engineering team can recreate certain conditions in a lab and introduce failure modes that confirm the data found in the flight recorder and out in the field.

Sometimes, though, accident reconstruction occurs in an improvised laboratory and with the help of locals, like when the NTSB, FAA, and Boeing investigated the crash of TWA 800, which crashed over the waters of Long Island in what was widely assumed to be a terrorist attack. "They hired scallop fisherman who used rakes dragged behind their boats looking for airplane parts, which came back to a hangar at an old aircraft manufacture facility," recalls Purvis, who worked that investigation.

The four-year process of investigation and re-assembly revealed a bulge in the center wing tank, which indicated an explosion that originated from inside the wing; in other words, the accident was not caused by external sources. This revelation spurred Boeing to develop a fuel tank inerting mechanism that would prevent the fuel-air ratio in the wings from reaching a flammable point.

The plane crashes that make national news represent a tiny percentage of the incidents that investigators work on. Most aircraft investigations concern minor incidents that can be solved without visiting a crash site. According to the experience of Purvis and Latter, the incidents that they investigated by visiting a crash site are a small portion of their total careers as engineers. And both experts emphasize that objectivity and critical thinking are key to all effective plane crash investigations, whether they're on site or in a lab.

# now showing

in the William M. Allen Theater



## VOLUNTER PROFILE

# David Waggoner

BY: STEVE DENNIS, VOLUNTEER

**AS A BOY, DAVID** Waggoner attended Van Asselt Elementary School, on Beacon Hill overlooking Boeing Field. Watching the first giant B-52 bombers roll out of the Boeing plant and take to the air, he never suspected his life would cross paths with the iconic plane 60 years later. Now, in addition to many other Museum activities, Waggoner is a member of the *Project Welcome Home* committee that spearheaded efforts to create a Vietnam Veterans Memorial Park west of the Aviation Pavilion. The centerpiece of the memorial will be the Museum's B-52G, *Midnight Express*.

"It's like my connection with the B-52 has come full circle. While the B-52 gives the Memorial Park an aviation theme, as an old Army guy, I'm glad that flags and plaques at the memorial will honor veterans of all services who served in that era," said Waggoner, who is a Vietnam veteran and served 26 years in the Army. "While I spent most of my in-country time on the ground, I participated in over 125 air assaults," he added.

Waggoner joined our docent corps in 2016 and comes to the Museum each Thursday with his wife, Roberta, who is a volunteer in the Aviation Pavilion. He is also a regular storyteller in the J. Elroy McCaw Personal Courage Wing, where he introduces visitors to life as an infantryman in Vietnam and to some of his men, like Doc, a medic who left an indelible impression on Waggoner as a young officer. In addition to his docent duties, he raises funds for and awareness of the Vietnam Veterans Memorial Park, which will open on May 25.

Waggoner also volunteers with the Historic Flight Foundation, the Issaquah Food Bank



and is a Master Docent at the Issaquah Fish Hatchery. He also serves on the King County Veterans Advisory Board.

He has a particular passion for his work with Puget Sound Honor Flight where he has served on the board since 2010. Honor Flight arranges trips to Washington, D.C for older veterans. While there, the veterans are treated like royalty while they visit Arlington National Cemetery, the Tomb of the Unknown Soldier and other memorials that honor veterans. The Puget Sound chapter arranges four trips each year and Waggoner attends two of them to assist veterans with physical disabilities.

Waggoner loves his work and relationships at the Museum. And he never stops promoting his favorite project! "*Project Welcome Home*

always welcomes volunteer and financial help. If readers wish to learn more about the memorial, just visit the Museum's website and type '*Project Welcome Home*' in the search box," he says. David Waggoner is an exceptional ambassador for the Museum and *Project Welcome Home*.

ABOVE: Waggoner poses with the Museum's Bell UH-1H Iroquois (Huey) in the permanent exhibit, "Vietnam Divided: War Above Southeast Asia" located in our T.A. Wilson Great Gallery. (IRENE JAGLA)



**POWER OF GIVING**

# In Memory of Bob Flanegin

BY: DANA FLANEGIN, DONOR SYSTEMS COORDINATOR

**THIS MONTH, I'M HONORING** my dad and his love of aviation with a tribute gift to The Museum of Flight. I've worked for the Museum for years but have never thought about honoring my father this way. Bob Flanegin, who passed away long before I moved to Seattle, had many roles: he was a son, brother, husband, father, uncle, veteran, teacher, coach, volunteer and a private pilot.

I was in elementary school when my dad decided to learn how to fly. According to my mom, he always wanted to take flying lessons but it wasn't until a juvenile life insurance policy matured, yielding a bit of extra cash, that he decided to follow his dream.

I often accompanied my father to our local airport to watch the runway activity during his flying lessons. The most vivid memory I have of that time is when Don Hughes, one of my dad's flight instructors and a family friend, took me up in a four-seater. Once we were airborne, a deafening rush of air filled the cockpit. I remember desperately trying to make sense of what was happening. Don calmly looked over and told me to reach back and close the window. It took a moment to register what he said, but when I finally closed it the rush of air whipping through the cockpit was silenced and

my heartbeat returned to normal.

It never occurred to me to ask my father what motivated his desire to fly, but long after his passing, I began to wonder about his aviation experiences. When my mom unearthed one of my dad's pilot's logs and sent it to me, I studied it with a magnifying glass. I logged all the airports he'd been to and scoured the routes, hoping to identify a family trip I remembered we'd taken to Yosemite. I noted all his instructors' names and flight certificate numbers, and wondered if any of them were still flying.

While reviewing the log, I realized many of the trips my father made originated from the Van Nuys Airport in California, less than five miles from Granada Hills High School where he taught physical education and coached football and soccer for the Los Angeles Unified School District. The airport was home to Van Nuys Skyways, a now defunct Cessna sales and service business where my dad took flight lessons. He flew with four instructors in several different Cessna models: 150, 172, 177 and 182. Each flight is noted in my father's pilot's log but the details are very difficult to read. Most of the text I can decipher are notations about practicing certain maneuvers, but the

remainder is lost to the past.

Many of the flights my dad made originated from the Santa Susana Airport near Simi Valley where my family lived. At the time, the public airport was only used for small, private planes and had just one 1,900-foot runway. The airport did not have a tower or lights, but it was often used as a location for filming television shows and movies because it was near the San Fernando Valley. During my research, I discovered that celebrated pilot and Museum Board Member Clay Lacy had performed at the Santa Susana Airport in 1972 in his P-51 Mustang "Snoopy" to much fanfare from my hometown. Unfortunately, the airport closed in the 1980's and the property became a housing development which, humorously, includes a street named Runway.

Today most children experience their first flight on a commercial airline, and I treasure the fact that many of my early flights took place in a small plane with my dad at the controls.

ABOVE: Bob Flanegin, Simi Valley, CA. Courtesy Flanegin Family.

## Tribute Gifts

### In Memory

**In memory of Peter G. Anderson**  
*Rosemary A. and Larry J. Brester*  
*Central Flying Service*  
*Joe and Jana Crawford*  
*Jayne and Mike Kaszycki*  
*Loyd's Aviation*  
*Genjo (Joe) Marinello and Carolyn Sterens*  
*Peter and Anna Marie Morton*  
*Anne Simpson and Charlie Conner*

**In memory of Sarah M. Barbour**  
*Paula Clark*

**In memory of Donald V. Birdsall**  
*Anonymous*

**In memory of William E. Boeing, Jr.**  
*Brad and Sandy Barnard*

**In memory of Charles W. Bosworth**  
*The Bosworth Family*

**In memory of John I. Beaudreaux, Jr.**  
*Spencer Lance*

**In memory of Paul (Bill) V. Byrne**  
*Jody Byrne*

**In memory of Robert H. Flanegin**  
*Dana Flanegin*

**In memory of Donald V. Hanson**  
*Vivian Hanson*

**In memory of Joe M. Jackson**  
*Paula Clark*

**In memory of Donald B. Jacobs**  
*Edith and Ray Aspiri*

**In memory of George M. Kau**  
*Peggy A. Kau (Margaret A. Kau)*

**In memory of Tommie E. Lamb**  
*Paula Clark*

**In memory of James (Lou) F. Luma**  
*Paula Clark*

**In memory of Terrence (Terry) M. McCosh**  
*Paula Clark*

**In memory of Theodore (Dale) Moors**  
*Anonymous*

**In memory of Julian P. Morris**  
*Thea Levkovitz*

**In memory of Leslie (Les) S. Olson**  
*Peter Johnson*  
*Elaine Olson*  
*Howard and Elaine Storms*

**In memory of Raymond P. Pennock, Sr.**  
*Paula Clark*

**In memory of Lloyd D. Picha**  
*Jean Picha-Parker*

**In memory of John (Jack) P. Reid**  
*Suzy Kopp*

**In memory of Wilbur R. Scheible**  
*Bernice Scheible*

**In memory of Joseph F. Sutter**  
*Emil and Terry Martin*

**In memory of Jesse A. Wallick**  
*Annette Wallick*

**In memory of David M. Wilde**  
*Carol Wilde*

**In memory of David C. Wilhelm**  
*Paula Clark*

### In Honor

**In honor of The American Fighter Aces Association**  
*Paula Clark*

**In honor of Joe Crecca**  
*Steven Pennington*

**In honor of Jon P. Fehrenbach**  
*Friends of the Marysville Library*

**In honor of The Incredibles**  
*Anonymous*

**In honor of Brien S. Wygle**  
*Jon and Ann Bowman*

## In Memoriam

Rae E. Agar  
 Steven C. Alber  
 Peter G. Anderson  
 Evalea S. Beck  
 Helen L. Belvin  
 Charles W. Bosworth  
 Robert T. Bragg  
 Shirley C. Buchholz  
 William E. Caddey  
 Dexter R. Eng  
 Ramiro G. Fernandez

Virgil L. Gorans  
 Charles A. Grotz  
 Geraldine H. Hansen  
 Robert A. Hass  
 Marjorie Hoffman  
 Joe M. Jackson  
 Daniel Ledbetter  
 Donald C. Lopp  
 James F. Luma  
 Michael R. Mariano  
 Donald S. McKenzie

Janis McRoberts  
 Kenzo Moriguchi  
 Julian P. Morris  
 Leslie S. Olson  
 James D. Pugel  
 Rodney T. Quin  
 William H. Reetz  
 Francis D. Reynolds  
 L. Athlene Schneider  
 Sterling J. Sessions  
 Noreen Sholes

John F. Totosz  
 Eric P. Van  
 Richard L. VanDerschelden  
 Douglas R. Wake  
 Richard A. Weiner  
 Gary E. Wining  
 Gregory L. Wood  
 James L. Zerby

THE MUSEUM OF FLIGHT FOUNDATION  
9404 East Marginal Way South  
Seattle, WA 98108  
206.764.5720 | museumofflight.org

**FREE &  
Open to  
the Public**



**SATURDAY  
May 25  
11 a.m.**

**Memorial Day Weekend**

The Museum of Flight invites  
you to this momentous occasion!

# GRAND OPENING & DEDICATION

**Vietnam Veterans Memorial Park**

9305 East Marginal Way South, Tukwila, Washington - *Behind the Aviation Pavilion*

Aircraft Fly-Overs, Color Guard,  
Vietnam Veteran Pinning Ceremony, and so much more!



Special thanks to:



**Humana.**