RSVP required. Space is limited. To attend, email us at membership@museumofflight.org.

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).

WILD, WONDERFUL WIND!
6 sessions available!

Come investigate the movement of air around us and make a windsock to measure the wind outside.

Monday, March 2 and April 6
Two sessions each day: 1 p.m. and 2:15 p.m.
(Space limited to 20 participants per session)

WILLIAM M. ALLEN THEATER
Friday, March 6 | Movie starts at 6 p.m.
(Doors at 5:30 p.m.)
Rated PG. Family-friendly. Snacks provided.

Apollo 13
WILLIAM M. ALLEN THEATER
Friday, April 10 | Movie starts at 6 p.m.
(Doors at 5:30 p.m.)
Rated PG. Family-friendly. Snacks provided.

RSVP to membership@museumofflight.org.

THE G. HARRY STINE COLLECTION
Friday, April 17 | Noon to 1 p.m.
NORTHWEST AEROCLUB ROOM
(RED BARN 1ST FLOOR)
The G. Harry Stine Space History and Model Rocketry Collection encompasses the professional work of G. Harry Stine, the founder of model rocketry in the United States, and includes drafts of his writings, rocket designs, aeronautical research files, and materials related to the National Association of Rocketry. Learn about some of the significant items in the collection, the long process to make the collection accessible for research, and upcoming plans for model rocketry collections.

RSVP to membership@museumofflight.org.

See artifacts in the Museum Collection not normally on view! Come and light snacks provided. Featuring Red Barn Blend coffee, available exclusively at the Museum Store.

RSVP to membership@museumofflight.org.

APOLOFF!
FORGOTTEN WAR

MEMBER MOVIE NIGHTS

WILLIAM M. ALLEN THEATER
Friday, March 6 | Movie starts at 6 p.m.
(Doors at 5:30 p.m.)

Apollo 13
WILLIAM M. ALLEN THEATER
Friday, April 10 | Movie starts at 6 p.m.
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Rated PG. Family-friendly. Snacks provided.

YOU’RE INVITED TO THE ANNUAL MEETING

Members are invited to attend our Annual Meeting Tuesday, April 21. President and CEO, Matt Hayes will be joined by outgoing Board Chair, Bob Blackstone and will celebrate incoming Board Chair Charlie Lyford. They will discuss the Museum’s successes in 2019 and look ahead to the many exciting changes coming in 2020. Coffee and cookies will be provided.

WILLIAM M. ALLEN THEATER
Tuesday, April 21 | 4 p.m.
RSVP to membership@museumofflight.org.

J. ELROY MCCAW PERSONAL COURAGE WING
200 North Yarrow Way
Wallingford, WA 98002
206.764.5700
www.museumofflight.org
CONTACT THE MUSEUM
www.museumofflight.org
24-Hour Info Line: 206.764.5700

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LETTER FROM THE EDITOR: 2020 marks the 75th anniversary of the end of World War II; a war that TIME Magazine dubbed “The Good War” because it was a war that had to be fought and won. Untold Stories: World War II at 75, the Museum’s tribute to this important anniversary, combines new exhibition, special programs and events featuring a diverse array of some of the lesser known heroes and their stories. This issue of ALOFT introduces you to some of what you have to look forward to this year.

*NEW* COCKTAILS WITH THE CURATOR
Join the Museum’s curatorial team for our newest member event! We are offering our popular Coffee with the Curator event format in an evening session with cocktails and snacks. For our first event, we will have an encore edition of “A Few of Our Favorite Things” where each staff member will share some of their favorite items in the Museum’s vast collection. Come learn about some unique objects, interesting images, and hidden treasures. Tickets: $35/person (includes 1 drink ticket and nibbles) Tickets available at museumofflight.org/Calendar.

J. ELROY MCCAW PERSONAL COURAGE WING
Thursday, March 12 | 6 p.m.

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THE MUSEUM OF FLIGHT MAGAZINE

MARCH/APRIL 2020

25 SPEAKERS’ BUREAU

20 Space For The Earth

Contents
WHEN A PASSION GRABS YOU, it rarely lets you go. But as we know, it takes follow-through, support, and much, much more to successfully bring a passion to life. The difference between having a passion or a dream that nibles at your thoughts and one that actually leads to fulfillment can be vast.

The pictures shown are from Western New York. One shows my childhood neighbor’s farm and the small grass airstrip hewn from acreage normally used for crops. The other is of Batavia Airport (KGVQ) where I started my flight lessons. Although shot in the final days of 2019, the scene doesn’t look much different from that icy December day in 1986 when I took my first lesson. The Cesna 152 I sat in seemed downright modern compared to the Cesna 120 my farmer neighbor floated in over the power lines, often at 20 knots ground speed or less (it’s a bit windy where I’m from). I would stand on the fringes of that grass strip and allowed that passion to grow. I went from watching that farmer to working for him to raise a few dollars. Add that to a couple of other jobs, studying in school, sports and more, and this story starts to sound like a homespun tale of self-reliance, hard-work and all the other great aphorisms that come with a great bootstrap story. But my passion was made possible by the people who provided inspiration, encouragement, exploration, and made preparation and execution possible. Who gave me that great bootstrap story. But my passion was made possible by the people who provided inspiration, encouragement and exploration for the youth in our community. With inspirational programs and exhibits, with educational opportunities to allow students to explore the STEM world around them, and with year-round, perseverance to get into the air and it always takes a support team to stay up and get down safely. Here at The Museum of Flight, we exist to help students, their dreams and initiatives, and turn their passion into something real. Matt Hayes, President and CEO
These are some of the most interesting things I have learned through ASP so far! Learning how to decode an aviation weather report (METAR) has been a fascinating experience. There are so many abbreviations and codes used in these reports and all the different weather conditions are absolutely engrossing to me.

Who inspires you? Why?

I am inspired by my grandma, Gina. She worked as a secretary for the US Air Force at Clark Air Base in the Philippines during the Cold War, with dreams of living in the US. My grandma’s incredible work ethic led to her, and her children, being awarded special immigration status from the US. She taught me that I can accomplish anything if I work hard and put my mind to it.

What are some of your best memories from participating in this ASP program?

The first memory that comes to mind is the Pathfinder Awards Gala. I was able to immerse myself into the world of aviation and meet some amazing people like Dr. Pettit, a NASA astronaut! The other memory that comes to mind is starting ASP’s aircraft systems class. As the daughter of an aircraft mechanic, I enjoyed learning about fuel systems and how the different flight instruments worked. I love that through learning about and experiencing life in aviation, I am able to form a unique connection with my dad.

What is your favorite letter of STEM?

Science! Learning about all the different sciences has always been something that I have loved doing.

Do you have a favorite exhibit in the museum?

My favorite exhibit is of the WASPs in the J. Elroy McCaw Personal Courage Wing. As a young woman wanting to pursue military aviation, looking at the history of women who flew as auxiliary pilots in World War II is very inspiring. I like how the Museum highlights and acknowledges the women who paved the way for female pilots.

What are your dreams for the future?

My goal for the future is to be a fighter pilot in the US Air Force. ASP has helped me get an early start by teaching me the fundamentals of flight, immersing me in many settings rich in opportunity, as well as teaching me professional skills while I’m still in high school.

This is one of many quotes from comedian W.C. Fields. As a long-time air and space museum curator, I have never worked with animals or children, and these interactions have given me some very fond memories.

It is the time of year when students across the country are preparing for National History Day, and the archives staff is busy fielding questions from students that run the gamut from how Bessie Coleman broke barriers to the launch of Sputnik. As a curator, some of the questions come to me. I recently found a handwritten letter on my desk from Vicky, who attends Wilder Elementary in Woodinville, Washington. Vicky is in the gifted program with animals, but I have certainly worked with kids.

Never work with animals or children

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April 22, 2020 marks the 50th Anniversary of Earth Day. The first Earth Day marked an inflection point in an environmental movement that had been growing throughout the 1960s. First created in 1970, the event was conceived as a day of demonstration to raise awareness of issues affecting the quality of our environment.

BY: GEOFF NUNN, ADJUNCT CURATOR FOR SPACE HISTORY

IT IS NOT MERE COINCIDENCE that our awareness of challenges facing the Earth arose during the height of the Space Race. Despite the common criticism that spending time, money and effort on space exploration pulls focus from pressing problems here on Earth, our access to space has been vital for monitoring and finding solutions to these problems. In fact, space has provided a unique vantage point from which to better understand our home planet, since the earliest days of exploration beyond Earth’s atmosphere. The very first satellite launches by the Soviet Union and United States stand as examples of going to space to benefit the Earth. Both were conducted as part of a yearlong global focus on Earth science from 1957–58 called the International Geophysical Year. The United States’ launch of the Explorer 1 satellite as part of that effort led to the discovery of the Van Allen Radiation Belts, which shield the planet from harmful cosmic radiation.

“Earthrise” has been called a “driving force” behind the growing environmental movement, and the first Earth Day was celebrated just 16 months after it was taken.

Space continued to play an important role in building our understanding of Earth during the 30 years of the Space Shuttle era. The reusable orbiter made several flights to measure the composition and depletion of Earth’s ozone layer in the 1990s. Photos taken by astronauts aboard the Space Shuttle Columbia in 1994 revealed that dust from the Sahara Desert in Africa can be blown clear across the Atlantic Ocean to the Americas. Subsequent observations by astronauts and satellites have now confirmed that Saharan dust helps “feed” the trees of the Amazon rainforest.

Today in the United States, NASA continues to work with other government agencies like the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS), international partners, professional scientists, and even citizen scientists to study Earth’s many interconnected systems. A network of ground-based instruments, aircraft, orbital satellites and scientific experiments on the International Space Station monitor environmental changes and provide data to researchers looking for solutions. NASA monitors everything from ocean temperature and sea level rise, to atmospheric carbon levels, polar ice recession and global rain and snowfall. Satellites help track and predict natural disasters like wildfires, hurricanes, droughts and even landslides.

The images and data generated from these observations contribute to real solutions here on Earth, not just for overarching global problems, but also for local challenges. One small example with big impact is happening right now in the Republic of Benin in Africa. Ulusoma Oviennihedaa, a graduate student at MIT’s Media Lab, has been leading a collaboration between MIT and the Benin-based company Green Keeper Africa. The project uses satellite imagery to monitor the spread of the invasive water hyacinth on Lake Nokoue. While the research may sound esoteric, it addresses a real environmental and economic problem for the people living around the lake. The hyacinth plants grow in large, densely packed clusters that can block boat travel across the lake, and starve the water of oxygen, threatening fish populations. For the 40,000 villagers who rely on the lake as a vital fishing ground and transport corridor, the plant represents a real threat to their livelihood. Using data from satellites like the NASA/USGS Landsat series dating back to the 1970s, and more recently the European Space Agency’s SENTINEL missions, the project can track and predict the spread of the hyacinth on the lake. Green Keeper Africa is using these predictions to help them turn an environmental nuisance into an opportunity: using these predictions to help them turn an environmental nuisance into an opportunity: they have started training the local population to harvest and process the water hyacinth into fertilizer and a fiber product used to clean up industrial oil spills.

As space exploration becomes more entrepreneurial in the age of New Space, private space companies and startups are also beginning to recognize the potential of Earth observations as a viable business, and are adding to the work done by NASA and its partners. Tokyo-based startup Axelspace offers one unique example with potential environmental and economic benefits. The company’s WNISAT-1 microsatellite was built for Japanese company Weathernews and launched in 2013, with a follow-up satellite in 2017. WNISAT’s main mission is to monitor sea ice in the Arctic. WNISAT-1 provides valuable data for researchers by tracking the seasonal ebb and flow of sea ice. For Japan, the timing and availability of open water routes north of the Asian continent represents a faster shipping lane to European markets than the alternative traveling south through the Suez Canal. The satellite also carries a magnetometer to observe the effect of solar weather on the Earth’s magnetic field. This information is used to provide information to flights traveling across the North Pole where they might experience adverse effects from electromagnetic disturbances.

Access to space has dramatically changed our understanding of the Earth. Just as addressing the challenges of space exploration is not mutually exclusive from our efforts to tackle terrestrial problems, solutions that improve environmental quality and understanding can also offer economic opportunities. The Museum of Flight will celebrate the 50th anniversary of Earth Day on Saturday, April 18 with a day of Earth science programming (see page 18). Stop by to join in on hands-on activities, presentations and a focus on the challenges of growing plants in space. The Museum’s Green team will also collect old electronics for an e-recycling event in partnership with 3R Technology so bring in your old computers, phones and batteries. For a list of items accepted and more details about 3R’s collection events, visit 3rtechnology.com/collection-events-2 or the Museum’s website.
In 1936, just 20 years after Boeing's founding by William A. Boeing, the company won a contract to build the Model 299, better known as the B-17 Flying Fortress. From Boeing's inception the company did not employ African Americans, and despite President Roosevelt's executive order, the federal government did not consider discriminatory labor practices when it awarded contracts.

The award of the contract, Boeing allowed the International Association of Machinists Local 751 (IAM) to represent workers. The IAM also did not allow African Americans, other minorities or women to join the rank and file. For those not allowed the privilege of membership, the union used a permit system. Permits cost African Americans $3.50 per month while other minorities and white women paid $1.50, both above what union dues would have been. Until 1942 Boeing and the IAM pointed fingers at each other for maintaining discriminatory hiring.

Outside demand and production requirements ultimately pushed Boeing to fully use the available labor force. In January 1942, Boeing hired stenographer Flore Speerman, its first African American employee. Dorothy Williams was hired in April as the first African American sheet metal worker. Within 18 months, Boeing had 329 African American employees of whom 86 percent were women. Women of all ethnicities made up about 40% of the workforce at war's end.

African American employment at Boeing reached 1,600 employees, 7% of the 31,750 peak employment in Seattle. The African American population in Seattle at the time was about 1% compared to 8.9% in the United States overall.

Navy Yard Puget Sound (now called the Naval Shipyard) in Bremerton was the largest Navy facility on the West Coast because it was the only one with dry docks large enough to handle major repairs to the battleships damaged at Pearl Harbor. The shipyard had grown throughout the 1930s in response to earlier noted world tensions. Non-discriminatory employment practices helped growth. African Americans made up 14% (4,600) of the workforce at peak in 1945. Bremerton's population in 1940 was 12,498 (4,600 people) of the workforce at peak in 1945. Sinclair Park was one of Bremerton's new housing areas, with a difference: Sinclair Park was designated for African American residents. The 40-acre forested area was about three miles from the shipyard. There were 280 new 1-, 2- and 3-bedroom houses, and a community center in the middle of the development. The first residents arrived in March 1943. Quincy Jones, Sr. arrived there from Chicago on July 4, 1943.

Life in preplanned communities typically revolved around the community center. Here residents paid their monthly rent, received their mail, held dances, attended church services and other community events. Oral histories given by Sinclair Park residents all talk about the strength of the community and strong personal connections made in the three years of existence.

One of the community center's rooms housed an old upright piano that attracted a young Quincy Jones, Jr. He later said "there was a tiny stage in the room and on it was an old upright piano... that's where I began to find peace. I was eleven, I knew it was for me. Forever!"

At the end of the war, women and minorities had proved their work skills and the need to remain employed, and refused to go back to pre-war roles. The fight for employment and housing rights continued into the 1960s civil right movement, a direct result of World War II.
IT WAS CALLED the “Forgotten War” and for good reason. The area was remote, the weather harsh, and there wasn’t much action. Yet, it was a part of the war that was vitally important. Think of all those nights you spent in college playing the board game Risk. The area on the board called “Kamchatka” was one of the few places where an invading army from the east could easily gain a foothold in North America. The game designers used history to their advantage.

In 1935, controversial U.S. General Billy Mitchell told Congress, “I believe that in the future, whoever holds Alaska will hold the world. I think it is the most important strategic place in the world.” While he may have been unpopular with his peers, Mitchell wasn’t wrong. The island’s strategic value was not lost for years; however, they did not have any up-to-date information on American forces in the region. Luckily, United States Naval Intelligence had already broken the Japanese naval codes, and weather conditions were optimized for the mission.

After the Japanese attack on Pearl Harbor, it didn’t take long for both sides to begin to focus their attention on the Territory of Alaska. The Japanese Navy had been gathering information on the area for years, they needed to have an up-to-date plan. By June 1942, American strength in Alaska stood at 45,000 men: 13,000 at Fort Randall at Cold Bay on the tip of the Alaskan Peninsula, and the rest divided between the naval base at Dutch Harbor on Unalaska Island and Fort Glenn Army Airfield on Unimak Island. In reality, the actual strength of the three bases was no more than 2,100 troops. The Air Force couldn’t keep up with the American gunners early in the war. The Eleventh Air Force consisted of just ten B-17 Flying Fortresses and 34 outdated B-18 Rolo bombers stationed at Elmendorf Airfield. For fighter cover, there were 95 P-40 Warhawks divided between Fort Randall and Fort Glenn.

To probe the American defenses, Admiral Isoroku Yamamoto, commander-in-chief of the Japanese Navy’s Combined Fleet, sent a small task force of two aircraft carriers and their support ships to attack Dutch Harbor where the Japanese thought the majority of American units might be. The plan was to launch an air attack against Dutch Harbor, then follow it up with an amphibious attack on the island of Adak to destroy whatever American forces and facilities were found there. Afterward, the remaining Japanese troops would then become a reserve for two more landings: the recapture of Kiska, and a year after the attack on Dutch Harbor, American forces invaded Attu, resulting in 19 days of heavy fighting to clear it of the enemy. Two months later, American and Canadian forces landed on Kiska, where they discovered the Japanese had evacuated their entire force. With the recapture of Kiska, the Aleutian Islands Campaign was considered over, but an American presence in the region lasted until the war ended.

The ability to control Pacific transportation routes and close off both countries’ “back door” was seen as invaluable. The Japanese reasoned that controlling the Aleutians might prevent the U.S. from attacking across the Northern Pacific. Similarly, the U.S. worried that the remote islands could be used as staging points for large-scale aerial attacks on U.S. cities like Seattle, Portland or Los Angeles.

American military planners quickly discovered that the Japanese had also occupied Attu and Kiska, and a year after the attack on Dutch Harbor, American forces invaded Attu, resulting in 19 days of heavy fighting to clear it of the enemy. Two months later, American and Canadian forces landed on Kiska, where they discovered the Japanese had evacuated their entire force. With the recapture of Kiska, the Aleutian Islands Campaign was considered over, but an American presence in the region lasted until the war ended.

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A B-18 Bolo referenced in the "Forgotten War" on the previous page. An American medium bomber which served with the United States Army Air Corps and the Royal Canadian Air Force (as the Digby) during the late 1930s and early 1940s. The Bolo was built by the Douglas Aircraft Company, based on its DC-2, and was developed to replace the Martin B-10. (DOUGLAS AIRCRAFT COMPANY VIA THE PETER M. BOWERS COLLECTION/THE MUSEUM OF FLIGHT)
March

FILM SCREENING

When the Fog Clears

Though often overlooked in the broader scope of the conflict between America and Japan, the Aleutian Island Campaign had an important impact on the course of WWII. Producer Director Tadashi Ogawa will introduce When the Fog Clears, his new documentary about the campaign, which traces an unexpected connection between the USS Grunion, lost in the Aleutians in 1942, and a Japanese war widow. Q&A with Mr. Ogawa will follow.

Film length: 80 minutes

WILLIAM M. ALLEN THEATER
Saturday, March 28 | 2 to 4:30 p.m.

SPECIAL EVENT

Beauty and Duty: WWII Edition

Museum of Flight Living History performer Alice Miller will present authentic women’s military uniforms from WWII from her personal collection. Miller will speak about the history behind each uniform, and about the women who proudly wore them. The uniforms will be modeled with Living History performers.

WILLIAM M. ALLEN THEATER
Saturday, March 14 | 2 to 3:30 p.m.

SIDE GALLERY
Saturdays and Sundays, Feb. 29-March 1, 7-8, 14-15, 21-22, 28-29
11 a.m. to 2 p.m.

Sound Science

Come make some noise in our workshops this month! We’ll investigate the science of sound by making instruments, exploring the work of early sound engineers, and see ways computer science and sound collide.

Please visit museumofflight.org/Calendar for more details.

WEEKEND FAMILY WORKSHOPS

Join us on Saturdays and Sundays for our Weekend Family Workshops. Each month, we’ll explore a new topic through a hands-on activity designed for all ages!

Sensory Day

In advance of World Autism Awareness Month, the Museum invites children with autism and their families to join us for an early opening to visit exhibits in a sensory-friendly environment, as well as 10% off purchases in the Museum Store. The J. Elroy McCaw Personal Courage Wing and T. A., Wilson Great Gallery will have adjusted lighting and sound to provide the best possible experience.

Free admission offered to children with autism and their families from 8 a.m. to 10 a.m. only.

T.A. WILSON GREAT GALLERY & PERSONAL COURAGE WING
Sunday, March 29 | 8 to 10 a.m.

NOTE: Times and locations subject to change. Please check our website for changes.

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, March 5 | 5 to 9 p.m.

SPECIAL EVENT

Phantom Drivers: Flying the F-4 in Combat over Vietnam

Presented by the NW Chapter of the Friends of the American Fighter Aces, join us for a discussion of aerial operations over Vietnam/Southeast Asia. Our guests will include USAF Phantom pilots John Madden, Ed Kobleigh & Gail Peck who will share their experiences flying this iconic aircraft. Autographed photos will be available after the presentation.

WILLIAM M. ALLEN THEATER
Saturday, March 21 | 2 to 3:30 p.m.

WILLIAM M. ALLEN THEATER
Saturday, March 28 | 2 to 4:30 p.m.

T.A. WILSON GREAT GALLERY & PERSONAL COURAGE WING
Sunday, March 29 | 8 to 10 a.m.

NOTE: Times and locations subject to change. Please check our website for changes.

SPECIAL EVENT

Sensory Day Early Opening

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NOTE: Times and locations subject to change. Please check our website for changes.

U.S. NAVY

Celebrate human space exploration and honor the first man in space Yuri Gagarin!

Saturday, April 11
11 a.m. to 3 p.m.

All ages | FREE with Museum admission

Family Activities
Virtual Reality
Local Space Groups
360° Photobooth
Spacesuit Design Challenge
• Top 15 Fashion Show
• and so much more!

Please visit museumofflight.org/Calendar for more details.

U.S. AIR FORCE

Celebrate human space exploration and honor the first man in space Yuri Gagarin!

Saturday, April 11
11 a.m. to 3 p.m.

All ages | FREE with Museum admission

Family Activities
Virtual Reality
Local Space Groups
360° Photobooth
Spacesuit Design Challenge
• Top 15 Fashion Show
• and so much more!

Please visit museumofflight.org/Calendar for more details.

Note: Times and locations subject to change. Please check our website for changes.
**GOVERNMENT BUILDINGS**

**U.S. AIR FORCE**

**QUONSET HUT, WORLD WAR II GALLERY**

**Lecture**

"A World in Conflict" WWII Storytelling

In connection with the 75th Anniversary of the end of World War II, the Museum is proud to present a series of tales of innovation, endurance, bravery, and sacrifice from the world's greatest conflict. These 30-minute presentations given by Museum volunteers will be offered on the 1st and 3rd Sunday of each month at 1 p.m. Please visit the Museum's calendar at museumofflight.org/Calendar for details on what stories will be offered each month.

QUONSET HUT, WORLD WAR II GALLERY

March 1, 15 & April 5, 19 | 1 to 1:30 p.m.

**FILM SCREENING**

LGBTQ+ Rights in WWII and Beyond

A special screening of Coming Out Under Fire, a 1994 documentary featuring nine gay and lesbian veterans who recount how they joined the patriotic war against fascism in the 1940s only to find themselves fighting two battles: one for their country and another for their right to serve. Introductions given by Kevin McKenna, PhD in US and LGBTQ History. His research is on Seattle's gay community.

WILLIAM M. ALLEN THEATER

Saturday, April 25 | 2 p.m. to 3:30 p.m.

**WEEKEND FAMILY WORKSHOPS**

Join us on Saturdays and Sundays for our Weekend Family Workshops. Each month, we'll explore a new topic through a hands-on activity designed for all ages!

**Reduce, Reuse, Recycle!**

In celebration of the 50th Anniversary of Earth Day, join us in some activities highlighting all the ways—from creating art to surviving in space—we can use the three Rs to experiment and explore!

WEEKEND FAMILY WORKSHOPS

Join us on Saturdays and Sundays for our Weekend Family Workshops. Each month, we'll explore a new topic through a hands-on activity designed for all ages!

**Night Witches at War**

By: Bruce Berglund
Illustrated by: Trevor Goring

Imagine flying combat missions in a slow, rickety biplane, at night, with no lights or navigational equipment of any kind. Sound impossible? It wasn’t for the Soviet Night Witches. This unit of incredibly brave women flew hundreds of missions to attack German forces on the front lines during World War II. Learn all about these brave women and how their skill and courage in battle helped defeat the Nazis to win the war.

MEMBER PRICE: $6.76 ($7.95 retail)
Available in the Museum Store and online at museumofflightstore.org

**BOOK RECOMMENDATION**

Night Witches at War

**TOY FROM THE COLLECTION**

Space Shuttle 101 Board Game

Space Shuttle 101 is a board game developed by the Ungame Company in 1978, with help from technical consultant Rockwell International Space Systems Group. This strategy game allows players to command space missions into outer reaches for the benefit of mankind... including exploration and rescues. Gameplay is based around two decks of emergency and mission cards, with a die roll and Shuttle cards. The first player to complete 5 successful missions wins. Examples of missions include performing a fly-by of Pluto, launching a Mercury orbiter and delivering initial components for a self-sufficient space colony. This game was donated to the Museum by Ann Stephens in 2017, along with some other Shuttle-related artifacts and photographs. The donor worked for a variety of aerospace companies in the 1970s and 80s, including Draper Labs where she worked on programming for the Apollo and Space Shuttle inertial guidance systems. She was later an onsite test engineer at Dryden Space Flight Center. She worked at Rockwell in the late 70s, and also worked for the European Space Agency in software development and on the Space Lab for the Space Shuttle.

**Activity**

Space Shuttle Word Search

Answer key on page 25.

**Charlies Simony Space Gallery**

**Space**

**Columbus**

**Discovery**

**Endeavor**

**Astronaut**

**Challenger**

**Docking**

**Satellite**

**Space Shuttle 101 Board Game**

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**Credit: The Museum of Flight, donated by Ann Stephens**
Mike Rose

BY: STEVE DENNIS, VOLUNTEER

I RECENTLY CAME ACROSS a new book that, despite its boring cover, is fascinating! It’s about people with aviation and space careers, plus some dedicated enthusiasts. Amazing folks, really. Welcome to The Museum of Flight Docent Directory.

The directory includes short bios of each docent, and evidences how fortunate we are to have this amazing team of volunteers (and the docents are merely the tip of the volunteer iceberg). If we were a major modern art museum, it would be as if our docents were the artists who created the works in the galleries!

There are over 200 docent volunteers, so there’s no fair way to generalize about them. Instead, imagine a composite individual woven from cherry picked one-liners in the bios. And this Super Docent doesn’t even represent half of them!

This person went to Lockheed in 1958 and worked on various missile and satellite designs, including ten years with the Hubble Telescope; had the most fun working on Unmanned Aircraft Flight Control Systems that included the Museum’s RQ-3A Darkstar; for almost 30 years worked as an Air Traffic Controller at the Seattle Air Route Traffic Control Center; from 1959 to 1990 worked on Bomarc Missile, Minuteman IC BM, 757, 767, NASA Satellites, and military Elint Satellites; worked for several companies as a tool and die maker, some of which were involved in aerospace and other industries; became a Naval Aviator and flew the A-4 Skyhawks, F-4 Phantoms, and Lockheed
of landings will always be slightly smaller than the number of take-offs as a result of a youthful venture into sport parachuting, was a Customer Engineer on the 727/737/757 Programs; flew the 727, 737, 747, and 7330, is an expert modeler of airplanes for 40 years, has a career spanning jewelry design and the aerospace sector; solved an airplane before solosing the family car; flew mostly lighter and tactical aircraft, including the T-31, T-35, T-38, T-33, EB-57, F-106, and F-15; was a pilot with single engine land, sea, glider, and commercial ratings; was lead engineer for Apollo docking simulator problems assessment and preliminary design of Apollo/Sojya docking simulator; and was test engineer on the Space Shuttle Carrier Aircraft during Space Shuttle Landing tests at Edwards AFB; was the Lead Test Engineer and Test Director of the first 777; was the captain on a variety of airplanes for one of the largest air-taxis in Interior Alaska; was an airline pilot for Midwest Airlines, Markair, Reno Air, and American Airlines; was in the US Air Force from 1951 to 1955, flying the F-86 in Korea; was responsible for the systems engineering, avionics modernization, and flight test integration for the Air Force F-22 fighter; was a pilot for When Air Alaska, Inc. on DH-6, F-27/FF-227, B-737, and B-727 aircraft in bush and mainline operations; worked for Northwest Orient Airlines as a glamorous international airline stewardess. And this person is a Solar System Ambassador for NASA’s Jet Propulsion Laboratory; a fighter and reconnaissance pilot in the F-100, F-101, F-104, and RF-4C; is a founding member of The Museum of Flight; has a 40-year career in aviation; was a Customer Engineer coordinating foreign airline accounts including British Airways, South China, Air Zimbabwe, Air 2000, and others; had Military Pilot License for the T-37, T-38, F-104, T-33, G-91, and Alpha Jet; has been a classroom teacher for over 20 years; was an Aviation Safety Inspector and Supervisor for the FAA; worked in a variety of engineer, nuclear energy, and consulting positions; flew over 800 combat missions in Vietnam; worked on the B-52, Dyna-Soar, Saturn, and 747, designed remotely-operated processing machinery and other nuclear related R&D projects; was one of United Airlines first female pilots.

And this person designed and built Drake Offy engines for Indy racing cars; served on the Air Force Scientific Advisory Board considering the concept of Predictive Battlespace Awareness; worked hands-on in the manufacture of the Concorde and Trident aircraft; was certified as a flight instructor and commercial pilot, and received an instrument and airplane single and multi-engine land aircraft ratings; since February 1979 has worked for Blue Origin as a Senior Aerospace Engineer on the New Glenn Launch System; also flew DC-3x for Aloha Airlines; flew 100 missions in the Air-1 Introduct over North Vietnam, and was awarded the Distinguished Flying Cross, 12 Air Medals, three Navy Commendation Medals, and the Navy Unit Citation; flew gliders full of tourists on sightseeing trips (852 flights in Hawaii); flew over 300 combat and combat support missions in Southeast Asia during the Vietnam War, flying the A-1 Skyraider, the A-4 Skyhawk, and the A-7 Corsair II; is a practicing artist whose work is in the collections of several Seattle art museums as well as many private collections both here and abroad; was responsible for the B-18 terrain following system, flew the F-4C, F-101, and F-162, served as a consultant to Top Gun, has authored many professional publications and presented on library and archival services. And this person flew Boeing, McDonald Douglas, and Airbus aircraft all over the world, flew medevacs with a helicopter squadron in Da Nang, has over 3,000 military flying hours; has professional interests including thermodynamics, propulsion, energy conversion, and aerodynamics; retired from The Boeing Company in 1995 as an experimental flight test engineer, pilot, and instructor; served as an Air Force Air Traffic Control Radar Supervisor; worked on the development of B-52 flight test and space shuttle launch and landing systems in the Air Force; possesses a vast knowledge of Chinese aviation history; held management and executive positions in higher education (University of Washington, Department of Philosophy and Biology) and has ATP certificate in the B-70, B-720, B-724, B-737, 757, DC-9, and L-1011, briefed Air Force crews staff officers on enemy weapon systems, terrorism, and geopolitical events. And this person flew the A-7 Corsair for four years and then the F-18 Hornet for three years; specialized in the design of advanced carbon-fiber reinforced composites; has over 40 years of experience in all phases of design, development, certification, and support of full-flight (motion and visual) simulators; is an active General Aviation pilot whose number
Spacesuit Design Challenge: What Would Yuri Wear?

CALLING ALL SPACESUIT DESIGNERS! Last year, the Museum hosted its first ever Spacesuit Design Challenge for kids ages 5 to 17. This year, we are putting a little twist on the challenge and posing the question “What would Yuri wear?” This year’s fashion show is during Yuri’s Day on Saturday, April 11 and will be a celebration of space past, present and future inspired by Yuri Gagarin, the first person in space! As a tribute to Yuri and the beginning of space travel, we are asking all designers to take inspiration from retro spacesuit design, as well as current spacesuit technology. Use your imagination to the fullest to create something unique to you! The winning spacesuit design from each age group will be displayed in the Museum’s Alaska Airlines Aerospace Education Center from April 14 until May 25. If you are interested in participating or have any questions, please visit museumofflight.org/Kids-Challenges.

ELLING HALVORSON OFTEN attributes his extraordinary life to having an “old Viking stubbornness.” For the astonishing things he has accomplished for the aviation industry, especially for his work involving Papillon Helicopters, in January, the Living Legends of Aviation Awards ceremony announced and bestowed “The Elling Halvorson Vertical Flight Hall of Fame Award.” These awards are given to remarkable people with extraordinary aviation accomplishments. Elling says, “I am honored they named that award for me. It touched me when I heard of it.” Elling was talked into writing a memoir of his extraordinary life: “You should write a book,” his close friends would say. Elling would humbly respond, “I’ll let you help me write it.” And so his adventures became a memoir titled Detour to Destiny. Elling recounts his stories saying, “The maze of detours I encountered had the potential to veer me permanently off course. Instead they created a zigzag path to greater successes than I ever could have imagined.” Elling’s experiences include barely surviving a catastrophic helicopter accident in the Grand Canyon as part of a high-risk construction project on the canyon floor. He innovated quiet technology for helicopters, even when fellow aviators thought it impossible. In his personal life, he designed life-extending devices for his twin sons battling a rare form of muscular dystrophy. Through all of this, Elling maintained his great spiritual faith with his wife Barbara of 66 years, who he calls “my greatest cheerleader,” and his five children. Elling and Barbara’s attention to philanthropy is immense too; they have a deep understanding that they have been given much and feel compelled to give back. Though Elling thinks living his life was ordinary, he recounts, “I thought I was doing the things I should do. I didn’t know it was doing anything extraordinary.”

However, he thoughtfully acknowledges his unusual course and offers this advice, “Navigate each detour with the knowledge that creativity, hard work and a spirit of generosity truly are the keys to success.” The extraordinary award is well deserved. Congratulations Elling!

Mary Kay and Michael Hallman Oral Histories Available Online

Since 2013, The Museum of Flight Oral History Team has been working to document the life stories of aviation and aerospace professionals. This ever-growing collection features a diverse cross-section of interviewees, from pilots to engineers to astronauts to executives, and emphasizes the personal impact made by individuals on these larger-than-life industries. Now, thanks to a grant from 4Culture, Museum’s Archives team is working to make these unique interviews accessible online. For the past several months, archives intern Jonathan Thompson has been processing the finished interviews and readying them for online access. This process, which can be quite labor-intensive, includes reviewing and correcting transcripts, generating metadata, and creating archival records for each recording. We are proud to announce that the first batch of completed oral histories is available on our newly revamped digital collections website: digitalcollections.museumofflight.org. Each record includes a video of the interview, a downloadable transcript, and searchable metadata about the people, places, aircraft and subjects discussed. We will continue to upload new interviews as they are processed, so be sure to check back often. In the interim, video recordings (minus transcripts and metadata) for all our interviews can be viewed in the Kenneth H. Dahlberg Research Center during our drop-in hours.

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

Speakers’ Bureau

The Museum Day ticket provides free admission for (2) two adults, youth or seniors to participating museums and cultural institutions across the country.

To download your ticket, visit: smithsonianmag.com/museumday/museum-day-2020

THE MUSEUM OF FLIGHT’S SPEAKERS’ BUREAU program has been restructured with a collection of aviation and space experts who share their knowledge and stories about aerospace history, military and commercial aviation, and the future of spaceflight. Many of our speakers have first-hand experience with these topics because they’ve worked in the field or completed years of research and training. Presentations are designed for adult audiences only. The only fee associated with Speakers’ Bureau is a travel reimbursement if the organization is located further than 50 miles from the Museum or if there are any additional transportation costs. Our main requirement is that organizations cannot directly benefit financially in any way by hosting a speaker. This includes, but is not limited to, fundraisers and/or ticketed events. Contact our Speakers’ Bureau at sbspeakers@museumofflight.org or 206-768-7171 today for more information about finding the right speaker and topic for your next event!
YURI'S NIGHT
SATURDAY, APRIL 11
6-11 P.M.

DANCE MUSIC
SILENT DISCO
3D PHOTOBOTH
VIRTUAL REALITY DEMOS
FOOD TRUCKS

MOON BOOTS
JORDAN GOFF · SAMAH

SILENT DISCO
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THANK YOU TO OUR PARTNERS!

MORE INFO AT MUSEUMOFFLIGHT.ORG/YURI