



GROUP 3 AEROSPACE EDUCATION *FLYER*

<http://gp3.cawgcap.org>

Welcome 1st Lt. Carolyn Usher as the new Group 3 Aerospace Education Officer. Lt. Usher has accepted the role as of 1 October 2017. She has been active in the Riverside Senior Squadron and will be a tremendous addition to the Group Staff. Please give her your full support in her new role.

WHAT IS ON THE CALENDAR:

Group 3 TLC

14-15 October, 2017

Hosted by March ARB Squadron

Wing Conference

16-19 November 2017

Ontario Convention Center

Thank you to Captain Edwin Bennett, SQ6750 for the following information.

[Another Chance to Put Your Name on Mars](#)

When it lands on Mars in November of 2018, NASA's InSight lander will be carrying several science instruments -- along with hundreds of thousands of names from members of the public. New submissions will be accepted through Nov. 1, 2017, at the following link: <https://mars.nasa.gov/syn/insight>

"Mars continues to excite space enthusiasts of all ages," said Bruce Banerdt, the InSight mission's principal investigator at NASA's Jet Propulsion Laboratory in Pasadena, California. "This opportunity lets them become a part of the spacecraft that will study the inside of the Red Planet."

This fly-your-name opportunity comes with "frequent flier" points reflecting an individual's personal participation in NASA's exploration of Mars. These points span multiple missions and multiple decades. Participants who sent their names on the previous InSight opportunity in 2015 can download a "boarding pass" and see their "frequent flier" miles. As part of this frequent flier program, a chip carrying the names of 1.38 million people also flew aboard the first flight of NASA's Orion spacecraft in 2014. NASA is building Orion to carry astronauts to deep space destinations that will enable future missions to Mars.

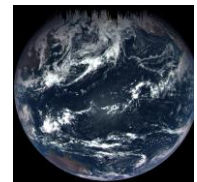
After InSight, the next opportunity to earn frequent flier points will be NASA's Exploration Mission-1, the first flight bringing together the Space Launch System rocket and Orion spacecraft to travel thousands of miles beyond the Moon in preparation for human missions to Mars and beyond.

InSight will be the first mission to explore Mars' deep interior. The spacecraft will set down a seismometer to detect marsquakes and meteor strikes, using the seismic energy of these phenomena to study material far below the Martian surface. It also will deploy a self-hammering heat probe that will burrow deeper into the ground than any previous device on the Red Planet. These and other InSight investigations will improve our understanding about the formation and evolution of all rocky planets, including Earth. InSight is scheduled to launch from Vandenberg Air Force Base, California, in May of 2018. For more information on InSight, visit: <https://nasa.gov/insight>

TAKE ADVANTAGE OF NASA EDUCATIONAL RESOURCES –

NASA will continue the Agency's tradition of investing in the Nation's education programs and supporting the country's educators who play a key role in preparing, inspiring, exciting, encouraging, and nurturing the young minds of today who will be the workforce of tomorrow. See the link below.

https://www.nasa.gov/offices/education/programs/gen_overview.html



[Robot Spelunkers Go for a Dip](#)

NASA has changed the perspective of science, building satellites to study Earth's surface. Deep below that surface, where it's harder for satellites to see, is another story -- but robotic technology might change that.

NASA roboticists are exploring moulins, places where water has punched through thousands of feet of ice to form a waterfall through a glacier. They hope to match these watery labyrinths to features that can be surveyed by satellite, such as openings in the glacier's surface. This past July, two researchers from NASA's Jet Propulsion Laboratory in Pasadena, California, traveled by plane to Alaska's Matanuska Glacier. There, they tested robotic mapping techniques while exploring these icy labyrinths.

Moulins are too small and dangerous for humans to enter, so the best way to explore them is with robotic submersibles. NASA has been interested in these flooded structures [in the past](#) because they serve as a glacier's "plumbing," carrying meltwater throughout the ice and controlling how fast a glacier moves. In the distant future, understanding ice formations like moulins might help with deep space exploration. They could provide entrances into icy worlds like Jupiter's moon Europa.

"To get under the surface of Europa or [Saturn's moon] Enceladus, we need to find the quickest way in," said Andy Klesh of JPL, one of the researchers who ventured out to Matanuska Glacier. "Can we map and navigate these subglacial lakes with robots? Are there accessible passageways hidden just beneath the surface? This first foray to Alaska tested the technology to begin answering these questions."

Alaska Adventure

Klesh was joined by John Leichty, another JPL roboticist, and a guide named Keeton Kroon. They flew in a two-seater plane and backpacked to their field sites over the course of six days. The field site was as remote as it was visually stunning, Klesh said. They were completely alone, save for a couple of bears they encountered and the occasional passing plane. At one point they came across an "ice fence" -- a set of 7-foot-tall ice pillars that included a heart-shaped hole. One of them photographed it; the next day, they passed by and the shape had completely melted away. "The terrain changes daily," Klesh said. "Because of the way everything melts out there, you're the first -- and maybe the last -- to see it." At each moulin, streams of blue water emptied into pools on the surface. This liquid water is warmer than the ice, melting into it and carving different formations. Some of it melts all the way into the glacier, creating a network of underwater passages.

Robots and DIY Probes

The team lowered a robotic submersible into these moulins, which descended to 150 feet (46 meters) at one point. Klesh said they could have descended farther, but the water became too cloudy to keep going. Underwater cameras recorded their passage; in the future, they plan to use acoustic sensors to map out surroundings when it becomes too dirty to see.

Cameras and laser scans allowed them to create 3-D maps of these glacier caves. "The idea is to identify and map out these underwater channels," Leichty said. "We want to know if they're correlated to surface features that we can identify using satellite or overhead images."

Understanding the relationship between the worlds above and below will let scientists guess where to lower probes to gather the best science. Klesh and Leichty's recent expedition relied on a commercial grade submersible and a "homemade" glacial probe. The latter was built using off-the-shelf and 3-D printed parts. They did all their own wiring and programming.

CubeSat Know-How

They said their experience with CubeSats -- tiny, modular spacecraft that rely heavily on commercial parts -- helped them create this probe. Both Klesh and Leichty are involved with another icy, underwater project called [BRUIE](#), or the Bouyant Rover for Under-Ice Exploration. BRUIE has been tested under Alaskan ice in the past, and prepared them for the challenges of working on the Matanuska Glacier. Pro tip: bring small handpicks to chip out ice that freezes in your robot's bolts and prevents you from tightening them. "We're combining our experience with BRUIE and CubeSats and bringing that into a new area of exploration," Klesh said. "CubeSats rely on the miniaturization of electronics to explore low-cost platforms. That allows us to explore areas that would otherwise be too risky or costly to access." This trial run of moulin mapping was just a start. Klesh and Leichty are roboticists, so their focus is developing the right technology. They want to partner with scientists for a more detailed exploration of moulins next summer.

Thank you Capt. Bennett.

REMEMBER WHY WE ARE HERE

The authority for CAP's aerospace education and training mission is derived from Title 36 of the United States Code, Section 40302. The law states that among the organization's purposes are "To provide an organization to encourage and aid citizens of the United States in contributing their efforts, services, and resources in developing aviation and in maintaining air supremacy" and "To provide aviation education and training especially to its senior and cadet members."

Aviation History

Aviation History Facts: October and November

October 01

- In 1861... The United States Army Balloon Corps, consisting of five balloons and fifty men, is formed. (AYY)

October 05

- In 1751... Italian Andrea Grimaldi, exhibits a flying carriage: the machine, which remains untested, has a complex structure and a wingspan of 22 feet. (AYY)
- In 1905... Wilbur Wright in the Flyer II makes the 1st flight of over a half-an-hour at Simms Station, Ohio. (AYY)

October 06

- In 1908... Wilbur Wright and a French writer make the 1st passenger flight of over one hour. (OTM)

October 07

- In 1909... Glenn Curtiss becomes the 1st American to hold an FAI airplane certificate. (AYY)

October 11

- In 1910... President Teddy Roosevelt becomes the 1st US president to fly when he is taken up in St. Louis. (AYY)

October 14

- In 1947... Captain Charles "Chuck" Yeager becomes the 1st person to fly faster than sound. Yeager "breaks the sound barrier" in his Bell X-1 airplane, Glamorous Glennis, named after his wife. He was able to reach 670-mph or Mach 1.015 at Muroc Dry Lake, California. (AYY)

October 17

- In 1922... Lieutenant V.C. Griffin, in a Vought VE-7SF airplane, achieves the 1st take-off from the USS Langley, America's 1st operational aircraft carrier. (AYY)

October 18

- In 1909... Charles Comte de Lambert, Wilbur Wright's 1st aviation pupil, flies around the Eiffel Tower in Paris. (OTM)

October 24

- In 1912... Harry Hawker wins the British Empire Michelin Cup for endurance. He flies for over 8 hours in a Burgess-Wright airplane. (AYY)

October 30

- In 1908... Henry Farman performs the 1st cross-country flight in Europe as well as the 1st flight between two towns. (AYY)
- In 1909... Claude Moore-Brabazon wins a £1,000 prize offered by the Daily Mail for a circular flight of one mile. (AYY)

October 31

- In 1933... France's air minister Pierre Cot formally inaugurates the country's national airline, Air France. (AYY)

November 3

- In 1897... The 1st all-metal rigid airship is tested in Germany. It uses wafer-thin aluminum, a major innovation, but crashes soon after taking off. (OTM)
- In 1926... Captain Charles Lindbergh jumps from his disabled airplane during a night airmail flight, making this his 4th time he has had to use his parachute to save his life. (OTM)

November 5

- In 1911... Calbraith Rodgers becomes the 1st person to cross the United States in an airplane. (AYY)

November 6

- In 1915... The 1st catapult launching of an airplane from a moving ship is made from the USS North Carolina in Pensacola, Florida. (OTM)
- In 1945... The 1st jet plane to land on an aircraft carrier is a Ryan FR-1 piloted by U.S. Navy Ensign Jake West. (OTM)

November 9

- In 1904... Wilbur Wright flies for five minutes, four seconds over Huffman Prairie, Ohio, covering 2 ¾ miles. (OTM)
- In 1932... Wolfgang von Gronau and crew in a Dornier Wal complete the 1st flight around the world by a seaplane. Their flight takes 111 days (OTM)

November 12

- In 1912... The 1st successful catapult launch of a seaplane is made at the Washington, D.C. Navy Yard. Catapulted by a compressed air system from an anchored barge, the floatplane is a Curtiss A-1. (OTM)

November 14

- In 1910... The birth of the aircraft carrier occurs when Eugene Ely takes off from the cruiser USS Birmingham in Virginia, on a Curtiss biplane. The warship has an 83-foot platform built over the foredeck for the take-off. (OTM)

November 20

- In 1919... The 1st municipal airport in the United States opens in Tucson, Arizona and is still in use today. (OTM)
- In 1953... The 1st man to exceed Mach 2 (twice the speed of sound) is American test pilot Scott Crossfield in a Douglas D-558-2 Skyrocket. (OTM)

November 22

- In 1909... Wright Company is incorporated with a capital stock of \$1,000,000. Formed to manufacture airplanes, the company's president is Wilbur Wright and his brother Orville is the vice president. (OTM)

November 27

- In 1912... The aeronautical division of the US Army Signal Corps receives the 1st "flying boat", a Curtiss Model F, capable of takeoff from water. (AYY)

Works Cited

Editor-in-Chief: Bill Gunston, *Aviation: Year by Year*, Amber Books Limited, London, UK, 2001. (AYY)
Leonard C. Bruno, *On the Move: A Chronology of Advances in Transportation*, Gale Research Inc., Detroit, MI, 1993. (OTM)
Arthur George Renstrom, *Wilbur & Orville Wright: A Chronology*, United States, Library of Congress, 1971 (COFC)

AEX PROGRAM

Civil Air Patrol's Aerospace Education offers a very popular program free to its members that involves doing hands-on aviation and space-related activities with students. It is called AEX, and the acronym stands for "Aerospace Education Excellence". Members receive full-color books that feature national standards-based aerospace activities or can download them in AE Downloads and Resources. All you have to do is complete six activities (from any of our AE resources or an aerospace education lesson plan of your choice) during the school year and complete at least a two-hour field experience (such as a space day, aerospace-related field trip, rocket launch, etc.) to earn color certificates for your students. The activities are designed to fit into any curriculum.

FLYING LUCKY LINDY

This activity is fun to build and even more fun to fly. It is a good activity to start your way to the AEX award program. We have used it in the past for some of your but always a winner.



Make sure you have completed your Squadron Application for the AEX Program. A great way to acknowledge the work your Squadron is doing in Aerospace Education. Applications can be found in E-Services under the Aerospace Education tab on the left side. Just click on the AEX link and you are on your way. The same location can be used to order STEM kits. Take advantage of the AE Resources available.

BACKGROUND

Charles Augustus Lindbergh was not the first person to fly the Atlantic Ocean; however, he was the first to do it alone, or "solo" as they say in aviation terms. Lindbergh, or "Lucky Lindy," as the press called him, was a native of Minnesota and he learned to fly in Lincoln, Nebraska. He started his career by flying from town to town offering rides and putting on aerial shows. This adventure was known as barnstorming! He later joined the U.S. Army Signal Corps as a reserve pilot and that eventually led to a time when he flew for the U.S. Mail Service between Chicago and St. Louis.

Lindbergh heard about a \$25,000 prize (called the Orteig Prize) for the first person to fly nonstop from New York to Paris. He decided to go for the award and solicited sponsorship from a group of St. Louis (Missouri) businessmen. A contract was made with the Ryan Company in San Diego, California, to build a single wing (monoplane). It was named the "Spirit of St. Louis" in honor of the businessmen who backed the project.

On the morning of May 20th, 1927, Lindbergh took to the skies over Roosevelt Field, Long Island, NY, and flew for 33 ½ hours. On the evening of May 21st, he came in over the city of Paris (including the Eiffel Tower) and landed at LeBourget Field. It is estimated that he was greeted by more than 400,000 people at the airport. From that time on, Charles Lindbergh became a world celebrity and his success proved that aircraft were safe and that international air travel was possible. He brought credibility to aviation.