

MSO GA NEWS

Spring 2022



Red Sleighs Over Montana flies again. Santa Ernie Hummer and elf Janet Hummer. *Read more*



MSO ground handlers get charged up. *Read more*



Remembering Uncle Wiggly Wings & CAP news. *Read more*



Coming soon to an airport near you. *Read more*



Missoula hosts Aviation Conference. *Read more*



MSO Air Traffic Manager hands off the baton. *Read more*





CFII Kurt Kleiner considers turbulence. *Read more*

Right: 50 years of aviation excellence. Pete Graf receives award. *Read more*

Left: Museum of Mountain Flying opens Stevi Chapter. *Read more*



Update from MSO's neighbor, National Museum of Forest Service History. *Read more*



More aviation topics. Read more



Page 2 Red Sleighs Over Montana, 2021 By Aaron Foster

I was fortunate enough to have the opportunity again this year to participate in the 2nd annual "Red Sleighs over MT" project. This year I was directed to help guide Santa's sleigh to White Sulphur Springs (last year was Butte and Anaconda) where I was again amazed at the amazing turnout. Probably the most memorable moment for me this year was when the throng of waiting children began chanting "Santa, Santa..." the moment our Santa deplaned. With that in mind I have to give a huge shout out to our Santa, Matt Madsen and his helper Josh Johnson who both are truly amazing in bringing smiles to so many kids' faces! This project that I've been lucky enough to be involved with the past couple years has become an annual highlight for me. It's also worth knowing that while the beaming children greeting Santa are the focus of the mission, all the adults responsible for getting them there have been wonderful to meet and extremely appreciative as well. Finally in the appreciation department, I'd be remiss if I didn't mention how grateful I am to Eric Komberec and his amazing ground crew who are responsible for organizing and making this project happen each year.



Museum volunteer Jim Noon gives sleigh pilot Art Dykstra the ears. Keely Flatow photo.



Art preflights the Mark Bretz rotor sleigh. Keely Flatow photo.







Left: Sleigh pilot Aaron Foster, Santa Matt Madsen, elf Josh Johnson.

Center: Santa Matt Madsen and an admirer at White Sulfur Springs.

Right: Santa Matt Madsen checking his list at White Sulfur Springs. Photos by Josh Johnson

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New terminal MSO GA News

Years of planning and construction will come to a dramatic conclusion with the opening of the new terminal on June 8, 2022. The terminal will offer travelers a welcoming inside environment that's designed to not only be efficient for travelers but also to show off much of what's special about Missoula, Montana. The building is attractive inside and out. On the practical side, it was built to satisfy LEED standards, which provide a framework for healthy, efficient, carbon and cost-saving green buildings. The extensive use of large glass plates for exterior walls in passenger areas provide travelers with bright interior environment while showing off the natural beauty of the Missoula valley. The glass itself is a special type that prevents the unwanted temperature exchange between inside and outside. It's among the construction methods and materials that make the building energy efficient. Heating and cooling are accomplished by a 2-well ground source geothermal system. Overall, the building is so efficient that it qualifies for a NorthWestern Energy energy efficiency rebate amounting to about \$80,000. Its energy efficient characteristics will help Missoula County succeed in its goal of 100% clean electricity by 2030. The energy efficiency exemplified in the new terminal is an important contribution.

Some of the features of the new terminal are illustrated below. Among those not pictured but a boon to travelers is the pet restroom, complete with fire hydrant. Also not shown is a valuable enhancement of baggage handling, a one-stop baggage drop off. Instead of travelers taking their bags from ticketing to TSA for screening, they will leave bags at ticketing. Bags will be placed on a conveyor belt that takes them past automatic screening equipment that doesn't require human intervention. Bags containing items of concern are automatically identified and shunted off from the others for closer screening by TSA personnel.

> What a difference 2 1/2 years makes! Top: November 2019

Bottom: May 2022

Page 4: Top left: A favorite spot for pilots and the public will be this pre-security viewing area. Persons can sit comfortably with a snack or drink and watch airplanes arrive and depart! One whole wall depicts a VFR sectional chart. An informational panel (inset) describes the chart symbols.

Page 4: Top right: May 4 media tour participants found the construction nearing completion. The ticketing stations just inside the main entry have an enhancement that recognizes Montana's river attractions. Each station has on its back wall an illuminated name of a local river; Blackfoot, Clark Fork, etc. The escalator taking passengers upstairs for TSA screening is the only one in the state. Page 4: Middle left: Passenger hold areas are brightly lit by natural outdoor lighting that also offers classic Montana views.





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Below: The airport held a media "sneak preview" of the new terminal on 2/22/22. Top left: Airport Deputy Director Tim Damrow conducts his umpteenth terminal tour. Top right: Airport Director Brian Ellestad presents former Director Cris Jensen with a token of appreciation for his role in getting the terminal project started. Bottom left: Airport Board Chair Adriane Beck addresses the 2/2/22 gathering. Bottom right: Senator Jon Tester provided invaluable help in obtaining funding for the terminal project.







MSO Air Traffic Control Manager Changes Hands MSO GA News

A message from MSO ATC Manager Christel Terrell

Hello, my name is Christel Terrell. I was born and raised in Superior, MT just west of Missoula about 55 miles. (I now live in Clinton, MT just east of Missoula about 30 miles.) I wrote a paper in 6^{th} grade about air traffic control and immediately knew that was the career for me. I still have that paper. In our small town we had a couple local families with pilots that had planes and when you graduate 6^{th} grade if you read a certain number of books, you were given the opportunity to go to Missoula at the Minuteman ramp and go take a flight with one of our local pilots. I realized flying wasn't in my cards but



MSO's new Air Traffic Manage, Christel Terrell. Christel Terrell photo

controlling still was. LOL.

I joined the Marine Corps 2 weeks after graduating high school. In the Marines you don't get your actual Military Occupational Specialty (MOS) just a job field you would go into. I turned 18 at boot camp and on the last week of boot camp I was given the MOS of air traffic control. So clearly everything was lining up. I went to Pensacola for my training and passed that, then arrived at my first duty station at the Marine Corps Air Station, Miramar, CA. I worked in the Top Gun tower for 1 week before that tower was closed and we moved in the new tower right next to it.

I was in the Marines for 5 years before becoming aware that the pay on the outside was substantially higher. I got out of the Marine Corps and applied for a controller position with the FAA. The agency was accepting applications but not actively hiring at the time, so I went to the 2-year Mt. San Antonio College in Walnut, CA while waiting for a hiring date. I completed college and in the short time after receiving my Associates Degree in Aviation Science and still waiting to hear from the FAA I worked as a Correctional Officer at an all-male federal prison in Toledo, OH. My daughter, Qiana, was born in December 2007. I started working for the FAA as an air traffic controller in February 2008. I worked as a controller at Toledo Express Airport (TOL), an up/down facility*, for 2 years. The following 2 years I worked at Montgomery Field (MYF) in San Diego, which was a tower-only facility, then for another 2 years at Milwaukee's Mitchell airport (MIL), also an up/down facility. After MIL, I worked in the tower-only facility at Santa Monica airport (SMO) for 1 year. Realizing that I couldn't raise my daughter alone anymore at SMO I put in for a position with SERCO as an air traffic controller at MSO.

It must have been my destiny to wind up back home with my family in the beautiful state of Montana doing the job I love. I have taken up a couple of per diem jobs at other airports while at MSO and have filled in for other managers as Acting Air Traffic Manager (ATM) within SERCO. This is my first permanent ATM position and there is a little learning curve. As a controller I am used to having an immediate response and having a backup response. However, as ATM I'm learning to not respond immediately, instead researching and giving a more in depth and complete response. Please be patient with me as I navigate into this new role. I'll try to be interactive with the flying public and possibly add social gatherings either at a hanger or at the tower to bring a closer connection and working relationship. I'll strive to keep communications open and to provide a safe flying environment/experience.

I enjoy my career even after 24 years in the same line of work. I hope that I have many more years of working here in my future, and that I continue to love coming to work. My main goal is to have a safe airspace, and for the relationship between the tower and the rest of the flying public to be outstanding.

*An "up/down" facility has both an air traffic control tower and a TRACON. From "Skybrary:" TRACONs are U.S. Federal Aviation Administration (FAA) facilities that house air traffic controllers who guide aircraft approaching and departing airports. TRACON controllers generally handle within a 30- to 50-mile radius of an airport and up to 10 000 feet, as well as aircraft flying over that airspace. They are responsible for the safe separation of aircraft flying in the busy areas surrounding airports. ed

Farewell and best of luck to retired MSO Air Traffic Manager Keith Eberhard

Keith Eberhard's 7-year tenure as ATC Manager and 17 year career at MSO tower ended in February of this year. (Continued on page 6)

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The Museum of Mountain Flying creates a Stevensville chapter

A note from Museum President Eric Komberec

In addition to the Museum news of a busy summer schedule we are proud to announce our expansion to the first new Chapter in Museum history. Sunday, May 15th we held a meet and greet with the city Airport manager and Stevensville City Council to introduce our upcoming fly-in and first community event in the new Museum Bitterroot Chapter, Saturday June 4th. The Council members talked with Museum Management, Department Heads and Volunteers about how the of the new Chapter will help recruit new Museum members and how the Chapter can benefit and help grow the aviation community South of Missoula.

Highlights of the May 15th meeting included a 2023 photo calendar shoot of our recently donated 1937 Howard DGA 11 that will be our first restoration project for the new chapter. We hope to raise money to restore it back to flying condition.

June 4^{th} , 10am - 2 pm will be BBQ fly in or drive in at the Stevensville airport (32S for you pilot types). All are invited and especially young aviators. The Stevensville

Fire department will be on scene to provide the grilling. Should be a great time and first of many future events. Rumors are circulating of a Miss Montana appearance. We look forward to seeing everyone. Hangar B10.



Two Crystals sparkle in front of the 1937 Howard DG11 at the Museum of Mountain Flying's new Stevensville Chapter. Left, Crystal Schoneman; right, Crystal Koeneman. Both Crystals are remarkable contributors to aviation. Erik Komberec photo



Fly the Big Sky license plates are now available through regular county motor vehicle licensing departments. For each license purchased, EAA Chapter 517 receives \$20 to further its activities promoting aviation. The additional cost for the specialty plate with standard numbers is about \$30, and for the personalized plate about \$60. Plates can be ordered at any time without affecting the renewal cycle. Standard renewal rates apply, with the specialty plate cost being added.

(Continued from page 5)

Without fanfare he passed the baton to his successor, Christel Terrell, and will move on to other things. Keith was raised in Missoula and graduated from Sentinel High School. He was introduced to ATC in 1980 when his dad arranged for a visit to the MSO tower because he thought Keith might be interested. He was, and in 1981 joined the Air Force to pursue ATC. After a 20 yr career Keith retired from the Air Force with the hope of getting back to western MT. In 2001 he was hired by ATC private contractor Serco to work as a controller at the Bozeman airport and 2 years later moved to MSO. This fulfilled a desire to become the manager of his hometown tower. Keith enjoyed his coworkers and all of the pilots but grew tired of the summers that were constantly work oriented and offered little time off. In retirement he plans on spending time fishing, golfing, and enjoying time with family and friends. He does plan on finding something to do that will keep him involved and working. He thanks all who have made MSO safe and knows that you are in good hands.



Retired MSO Air Traffic Manager, Keith Eberhard, contributed many years of safe aviation at our airport.

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Keith Eberhard photo

From Dan's Desk

By Dan Neuman, MSO Business Development Manager

Well, several things are quite shocking to me at this particular point in time. It is shocking that we a have almost completed the first phase of our new terminal building (I'm writing this from my still pristine and completely un-coffee stained new desk!). I am amped-up that that Gary continues to ask me to write this column even though I seem to have a prolific ability to produce run -on sentences... and it is absolutely electrifying that we are getting 3 new belt loaders and a new push back tractor. What??? or should I say Watt?? If you haven't guessed, this column is about electricity, specifically electric ground service equipment (E-GSE). Do you remember when those folks at Volkswagen got caught manipulating their emissions controls? They ended up paying a hefty fine (about \$18 Billion) and the Federal government, in a fleeting moment of sanity, decided to use that money to help people take old diesel equipment out of service and purchase new electric powered equipment. Subsequently, MSO applied for and received some \$236,096.00 to help us achieve this high voltage goal. If there was ever any equipment that deserved to be retired, it was ours. Most of the diesel-powered vehicles we placed into the program were built in the early 1990's or before. Needless to say, they are not the epitome of fuel efficiency. The first new belt loaders will arrive in early June and the Pushback will arrive closer to October. It is totally a win-win situation for everyone in this charged up scenario, but especially is a win for our local air quality. So, the next time you are on a plane and look out the window at those hardworking folks moving your luggage around I hope it sparks your memory. I hope it helps your mind flow towards the positives and negatives of using E-GSE instead of conventional diesel-powered equipment! Is that too many electric references? I could juice a few more in but I don't want to get charged with um.... an abuse of power!

The new belt loaders and the Pushback [are] totally a win-win situation for everyone in this charged up scenario, but especially a win for our local air quality.



New electric belt loaders will arrive at MSO in June. Dan Neuman photo

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fet out and Fb

Page 8 MSO NEWS AVIATION TOPICS

Read on for more aviation topics:

GABBQ, updates from Neptune and Minuteman, aviation maintenance resources, aviation license plates, EAA Chapter 517, Runway Safety Action Team (RSAT), new Hot Spot symbology, Every Reason to Fail, live weather cam, advisories from Spokane Approach, MSO weather information, airport access badges, and last but not least, aviating squirrels!

GABBQ coming this fall!



MSO Public Safety Officer Kelly Miller gave rides in the ARFF vehicle to Hadley, Kinsley, and Kynan Spethman. MSO GA News photo

Neptune update



Neptune never rests. Maintenance fills all the time outside the fire seasons. Photo courtesy of Kevin Condit



Photo courtesy of Josh Johnson

Minuteman Aviation Update

A note from Josh Johnson, Director of Ground Operations

Fire Season is fast approaching and in some cases it's already here. Every year we have Helicopters and crew that start working as early as February in places like Kentucky and Virginia. Recently we sent an additional helicopter and crew to Arizona to help get control of fires down south. Nationwide, fire season has started about a month sooner than normal. Shaping up to be an interesting year!

Minuteman's FBO is starting to see an increase in private Jet and small GA travel which is always the indication that spring is here.....and a more reliable source then Mr. Phil the groundhog.

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This much-enjoyed annual tradition will resume this fall! Mark your calendars -Saturday, October 1, 11am to 1pm at the EAA Chapter 517 Hangar in the East LZs. There's no Grizzly game on this Saturday. The airport generously hosts the BBQ in recognition of the general aviation's role at MSO. Airport staff are chefs – as shown in this newsletter's cover photo of current Airport Director Brian Ellestad and past Director Cris Jensen, chefs at the fall, 2018 BBQ. Participants enjoy a chance to share a good time with friends and make new ones. You can expect a special attraction, like the ARFF vehicle that visited in the fall of 2018. Don't miss out!

Neptune Aviation's fleet of aerial firefighting aircraft are being deployed around the country. Currently Neptune has 5 aircraft deployed (T40, T03, T02, T16 & T10). While things seem wet and a bit cool in Montana, the fleet has been very busy working on fires in Texas, Arizona, New Mexico, and Colorado. The remaining tankers will be deployed as we move into the warmer months of summer.

Thanks to Kevin Condit, Neptune's Director of Marketing, for the report.

Aviation maintenance resources at MSO

MSO has long enjoyed the maintenance expertise of our two long-time FBOs, Northstar and Minuteman. Ace Aviation now has an A&P with IA and is available for annuals and other aircraft maintenance. Call owner Joe Featherly for an appointment 406-541-2665.

Aviation license plates



Montanans are greatly blessed to have two special license plates that boost general aviation. The Montana Pilot Association plate raises funds to establish an effective "endowment" which will fund at least two flight training or mechanic scholarships of \$4000 each every year. MPA President Mike Vivion notes just how important scholarships are given the increasing need for pilots and aviation mechanics. Mike says "we have a LOT of very generous folks in Montana. This is just a very painless way for someone to make a difference, without even having to think about it, year after

year. The target is a minimum of 400 active plates. We'd really like to get a few more of them out there, to ensure we don't miss the mark by one or two if a car is wrecked, sold, etc." The 400-plate minimum must be reached by January 1, 2023 to ensure the MPA specialty plate remains active.

Missoula's EAA Chapter 517 also has a specialty plate. Funds provide aviation scholarships and also pay the expenses needed to keep the Chapter's hangar viable as a place to promote general aviation. The Chapter sponsors Young Eagles events at its monthly breakfast. Young people interested in aviation can go for a ride with one of the Chapter's pilots and also can sharpen their piloting skills in the hangar's flight simulator.

Missoula's Experimental Aircraft Association (EAA) Chapter 517



An update by Chapter President Ed Lovrien

EAA Chapter 517 would like to invite you to come have breakfast at the hangar with us every first Saturday of the the month from 8:30 to 10:00. The chapter asks for a \$5 donation for breakfast and generally serves Pancakes, eggs and sausage. Our first this spring was a huge success. Come join us and talk airplanes.

I would also like to let you know about our Raffle to help the group pay down the hangar so we can introduce some new projects in the future. We would like to retire the debt so we can afford to bring in a project plane and have the students in Missoula help with the build. They would gain experience and knowledge and build memories that will last forever. We

have lots of great prizes which you can see on the website https://chapters.eaa.org/eaa517 and if you would like to buy either one ticket for \$10 or a book of 10 for \$75 (a steal) you can contact any member and get yours. There will be a monthly prize starting in July and the final drawing for the list of prizes will be the first week of December.

I would also like to direct you to a group on Facebook called Missoula EAA Ch 517 and fly out Missoula. If you join it, you will see notices when we do fly outs, reminders of breakfasts and much more. You can also post your pictures of your flights and talk fun aviation things with aviation enthusiasts. Join us and hopefully we can do some great fly outs this summer and meet at cool places for lunch.

We also have a program where people have donated sellable stuff to us and we sell it and the money goes entirely to

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AVIATION TOPICS (Continued from page 9)

EAA Ch 517 programs. You can specify whether it goes to the "pay off the hangar fund" or the "loft fund" which is a future project or to help with breakfast costs or Young Eagles. We have sold things from rims off of a car to ladders to airplane instruments removed for upgrade to tools. We even sold parts for an old railroad luggage cart. Lots of things have been sold and everything helps.

The EAA monthly meeting is the third Monday of the month at the EAA hangar under the tower in the East LZ hangars. Come join us at 7 for a good time. There is a lot going on with the chapter and we would love to see you all there.

Every Reason to Fail

Bryan Douglass' book about the epic adventure of Miss Montana to Normandy is absolutely a "must read" for aviators, especially those of us sharing a base with the historic DC-3. Bryan's story creates in the reader a deep appreciation for a number of things: The success of a near-impossible effort to make the aircraft flyable in less than a year's time and starting with zero resources; the rarely seen volunteer energy that showed up again and again to do the work; the rich relationships among the Miss Montana crew that flourished because of their sharing of an epic adventure; the physical and performance challenges involved in participating with many DC-3s never before together as a group and called upon to skillfully execute a "one-shot-only" D-Day Seventy Fifth Anniversary performance. The historical accounts included in the book, Mann Gulch, WWII, the Berlin Airlift, give added value. Every Reason to Fail can be purchased on Amazon. Bryan will sell an autographed copy for \$20. Contact him at bryan@everyreasontofail.com

Live weather cam!

MSO staff collaborated with Montana Aeronautics to install live weather cameras. It's the first commercial airport in the state to have them. Comments from appreciative pilots note how helpful they are in getting a complete picture of MSO weather. Click on METAR and get both the raw and plain text. The cameras give four different, current views from the airport. Clicking on any one of them gives an enlarged view along with the comparable view on a clear day. https://weathercams.faa.gov/

Advisories from Spokane Approach

VFR pilots inbound to MSO from the west may find it helpful to request traffic advisories from Spokane Approach, 124.9. IFR and VFR approaches from the west to Runway 12 and departures to the west from Runway 30 are restricted by terrain that concentrates traffic in narrow corridors. Your *News* Editor has found approach controllers responsive and helpful and has on some occasions been alerted to potential traffic conflicts that may not have been seen. Getting ATIS when about 30 miles out and then contacting Spokane Approach seems to work well. Approach will typically advise the switch to Missoula Tower when about 10 miles out.

Airport weather and conditions

- ATIS phone line. 406-549-2989. Call in to get ATIS when you're away from a radio.
- ASOS (Automated Surface Observing System). 406-728-3743. MSO weather 24/7.
- After the tower closes, ASOS weather is available by radio at 126.65.

Talk to a real person. 406-329-4840. The staff at our local National Weather Service office is always glad to visit with pilots about weather and can often clarify uncertainties in a forecast.



Airport access badges

Check your badge renewal date. It expires every two years, on your birthday.

It can be renewed anytime within the 30 days before your birthday. There is no "grace period" after the renewal date. (If you use an electronic calendar, I recommend adding the date as a reminder tool)

- - Badge renewals are \$20; new badges \$25

Compliance Officer Jesse Johnson handles badging procedures and is available for badging 10am (AVIATION TOPICS Continued on page 11)

Squirrely flying! MSO GA News

The entire MSO GA News staff (Judy and Gary) attended a class provided this winter by UM's MOLLI (Osher Lifelong Learning Institute). The class was led by Dr. Kerry Foresman, Professor Emeritus, retired after 35 years as a biology and wildlife biology professor. The topic was Montana mammals.

We learned that the Wright brothers' aircraft might

have looked a little different had they watched flying squirrels instead of birds. For biology geeks, Montana's flying squirrel is *Glaucomys sabrinus*. As shown in the figures, winglets and control surfaces aren't unique to our airplanes!

Graphics used with permission of Dr. Kerry Foresman



(TOPICS Continued from page 10)

-3pm Mon, Tues, Thurs, and Fri. These are the days where appointments can be made online at http://flymissoula.com/badging. Jesse says:

- *Please do not assume we are able to attend to walk-ins. Other duties are taken care of outside of the badging office when appointments are not made.
- *Please keep in mind that it is a lot easier to accommodate requests if you call or email ahead of time. This way I can adjust my schedule. Admin. Office phone: 728-4381 jjohnson@flymissoula.com
- *The appointment scheduler for badging allows us to make sure we get all the information out to each applicant, so they have the proper forms, knows about the ID requirements, and makes sure their signatory OK's the paperwork prior to coming in for badging.

Moving?! PLEASE let your sponsoring FBO or hangar association managers know! They are required to report changes in hangar occupancy within 24 hours of the change. It is now the sponsor's (signatory's) responsibility to: a) Let the Airport Public Safety Office know within 24 hours of any move; b) Ensure that the AOA badge is turned in to the Airport within 30 days. The sponsor (not the badge holder, though the sponsor may attempt to collect from the badge holder) may receive a monetary fine if either the 24-hour notification or the badge return is not done.

Page 12 **FAA changes hot spot symbology** MSO GA News

The FAA has standardized hot spot symbology and verbiage. Hot spots are generally a complex or confusing taxiway or taxiway and runway intersection. Hot spots have a history or potential risk of collision or runway incursion and require heightened attention by pilots and drivers.

Before the FAA standardized hot spot symbology on May 19, 2022, there was no standard shape to designate a hot spot on airport diagrams within chart supplements and the Terminal Procedures Publication; they were charted with a variety of squares, rectangles, circles, ovals, and ellipses with no pattern or consistency. Now, the standardized symbols have three shapes with two distinct meanings: a circle or ellipse for ground movement hot spots and a cylinder for wrong surface hot spots.

What are the different types of hot spots?

Ground movement hot spots are defined as airport movement areas with a history or potential risk of collision or runway incursion, and where heightened attention by pilots, drivers and controllers is necessary.

A circle or ellipse (HS 1, HS 2 in Fig. 1) will depict these hot spots, which include issues such as:

• hold short line infractions

- approach hold issues
- complex taxiway configurations
- movement-non movement boundary area issues
- tower line of sight problems
- marking and signage issues.

Wrong surface hot spots depict locations where an aircraft has inadvertently attempted to or actually departed or landed on the wrong surface. A cylinder will depict these hot spots (HS 3 in Fig.1).

The FAA is also introducing <u>Arrival Alert Notices</u> (<u>AAN</u>) at several airports with a history of misalignment risk. AANs provide a graphic visually depicting the approach to a particular airport with a history of misalignment risk. AANs will incorporate the new standardized hot spot symbology.

Reference: <u>Hot Spot Standardized Symbology</u> | Federal Aviation Administration (faa.gov)

The new hot spot symbology and AANs are found in the FAA Chart Supplement. Foreflight Mobile users, for the airport diagram showing hot spots select Airports – Taxiways. For the hot spot description and for the AAN display select Airports – Procedure. -ed



Left: Fig. 1. As of May 19, 2022, Hot Spot symbols have three shapes and two meanings. Center: Fig. 2. Before the symbology change, there were a myriad of shapes for Hot Spots. Right: Fig. 3. The AAN for Lincoln, Nebraska (LNK).

Runway Safety Action Team

MSO News

MSO's new Air Traffic Control Manager, Christel Terrell, conducted her first RSAT meeting (a virtual one) on April 22nd. The focus of this annual meeting is to review the safety of operations at MSO, the primary risks being Runway Incursions and Surface Incidents. The FAA defines a Runway Incursion: Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft. A Surface Incident is an unauthorized or unapproved movement within the designated movement area (excluding runway incursions) or an occurrence in that same area

associated with the operation of an aircraft that affects or could affect the safety of flight.

The best takeaway from the meeting was that there were no Runway Incursions at MSO during the year since the last RSAT meeting in the spring of 2021. There was only a single Surface Incident, involving ground personnel towing an aircraft across Runway 26 at Charlie. MSO aviators and controllers can have justifiable pride at this remarkably good record!

Also noted at the meeting was the recognition that a pilot's chief safety enemies are confusion, complacency, and expectation bias (a pilot, having received the same clearance many times at the same point of a flight operation, misses a change in the clearance). All of us who fly recognize our vulnerability to these risks and the importance of maintaining our pilot proficiency.



The four levels of Runway Incursions, from the most serious (A) to the not quite as serious (D).

National Museum of Forest Service History Conservation Legacy Center – Fundraising and Design Move Forward

An update by Lisa Tate, Executive Director

Our highest priority is to complete the Capital Campaign for the Conservation Legacy Center (CLC), the flagship building on our Missoula campus located at 6305 Hwy 10 West. Increases in construction costs have the Museum working hard to raise the additional funds needed to complete the Capital Campaign. They have received significant cash donations in the past year from several new donors and their Forest Product Partners have been very generous with cash and in-kind donations (e.g., lumber.) As of this update the Museum has firm commitments for about 80% of the lumber needed and hopes to be close to 100% soon. The CLC requires a lot of wood because the building design is based on mass timber technology. The Museum is also pleased to announce the completion of the CLC exhibition conceptual design by Art Processors, an exhibit design company which specializes in designing immersive, participatory exhibits and visitor experiences.

Montana Aviation Conference 2022 held in Missoula

MSO GA News

The hosts for this annual conference rotate among the Montana cities with adequate facilities. This year was Missoula's turn and the conference was held March 3rd-5th at the Holiday Inn Downtown. The last conference here was in 2018 and was also at the Holiday Inn. These conferences are a highlight for Montana pilots. The three days include luncheons and dinners featuring notable speakers with outstanding achievements in aviation. There are a great number of exhibitors, giving aviators a chance to personally identify sources for specific aviation equipment and services. One anticipated highlight is the static display of uncommonly beautiful or capable aircraft. It's sponsored by the Montana Pilots Association. This year's static display and MPA hospitality hour was generously hosted by Neptune/Northstar Jet in one of their hangars.

A much-anticipated feature of the conference is the three days of concurrent sessions, hour-long presentations on a wide variety of aviation topics of great interest to Montana aviators. One example follows, a summary of the Air National Guard concurrent session presentation.

ANG 120th Air Wing based at Great Falls International Airport

The conference featured a wide variety of aviation topics over the three days of concurrent sessions. Montana



Upper left: Aviation Conference attendees admired Miss Montana at the static display event held at the Northstar hangar.

Photos left: The Aviation Conference static display offered dramatic views. Kynan Spethman photos.

Air National Guard personnel presented one among the highly interesting sessions. The Wing, based in Great Falls, flies C-130H Hercules aircraft. Max speed: 318 KIAS; Max takeoff weight: 155,000 pounds; Service ceiling: 25,000 ft. The Montana ANG C-130s use the call sign "Bison."

The role of the Wing includes three missions. The Air Mobility Mission is to rapidly move personnel and equipment anywhere in the world and sustain the force for as long as needed. Missions include the strategic airlift of personnel and cargo, tactical airdrop of personnel, equipment, supplies, and the transport of litters and ambulatory patients during aeromedical evacuations. The Disaster Relief Mission is to provide relief supplies and equipment to areas hit by natural disasters.

The Red Horse Mission involves the Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) unit. It is currently evaluating Montana airports for their ability to handle C-130 aircraft in the event of a disaster or other urgent supply need. Not all airports can handle the 155,000 pound aircraft even if the runways are wide and long enough. Turf runways such as that at the Augusta, Montana airport (3650 X 75 ft) can be utilized by the C-130. The aircraft saw extensive service on unimproved runways in Afghanistan. E.





Upper right: A Montana Air National Guard C-130H Hercules flew in for the static display event at the Montana Aviation Conference.

Lower right: Symbols of pride adorn the tail of the ANG C130-H Hercules. Matt Amble photos



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Predicting Turbulence

By Kurt Kleiner – CFII



New pilots are trained to check weather reports and forecasts, including AIRMETS, PIREPs, and other products that give us a broad overview or single-point snapshot of when and where to expect a turbulent ride. With experience, we learn to give wide berth to thunderstorms and to avoid low-

level flight in canyons and over mountainous terrain when strong winds exist. We quickly develop our perception of other visual indications that a bumpy ride is likely, such as stacks of lenticular clouds and rotor clouds just downwind of tall mountains, or puffy cumulus clouds with vertical development and dark flat bases created by convective (thermal) activity.

Wouldn't it be nice to know just how bad the turbulence will be, at what altitudes and locations throughout North America, and during which hours throughout the day and into tomorrow? The Aviation Weather Center or AWC website, (www.aviationweather.gov), and the Imagery files in Foreflight offer a solution in the form of Graphical Turbulence Guidance or GTG. The third generation of this product called GTG-3 has been available since 2015, and a fourth generation is in development. Here's an overview of the information currently available.



Clear Air Turbulence (CAT) and Mountain Wave forecasts (MTW) can be graphically viewed, either separately or combined, on color-coded map displays. In the GTG section of the AWC webpage, you must first select whether you are flying a light, medium, or heavy aircraft from a drop-down tab since the effects of encountering turbulence varies with the size and speed of the aircraft. Forecast maps are updated hourly which display what you can expect in the next 1, 2, or 3 hours with additional graphic depictions in three-hour increments up to 18 hours in the future. GA pilots can select any MSL altitude which are displayed in 2,000 ft. increments beginning at 1,000 MSL extending up to 13,000 ft. In Foreflight, there are 72 maps available just for this lower altitude range, broken out by the time ranges described above, for the next 18 hours. For example, if you plan to fly at 5,000 MSL two hours from now, there is a specific map for that exact time and altitude. If you're planning a VFR cruise flight at 8,500 or 9,500 MSL six hours from now, there is a specific 6-hour forecast map for 9,000 MSL that would work well for you. For larger pressurized aircraft flying at higher altitudes, there are GTG forecast map products for operations all the way up to FL450.



The color-coded map displays are intuitive to interpret, and are similar to weather radar color presentations. On radar maps, light blue or green shaded areas

indicate lighter precipitation, and the yellow-orange-red areas indicate areas of moderate to heavy rain. The same colors on the GTG forecast maps are used to display areas of light, moderate, severe, or extreme turbulence. A brown color indicates MSL altitudes that are lower than the surface elevation of a given area. In the legend at the bottom of the map, the colors depict the turbulent state of the atmosphere expressed as the "Eddy Dissipation Rate" or EDR. This universal measure of turbulence is based on the rate at which energy dissipates in the atmosphere as it moves across irregular terrain, and non-uniform areas of high and low pressure. Perhaps EDR is best explained by the commonly used analogy that the wind moving through the lower atmosphere displays many of the same physical characteristics as flowing liquids. In a fast-moving river with a large volume of water, the turbulent waves and eddies created by water pouring up, over and around a large rock will be much more significant and extend farther downstream as compared to a slow-moving river with a smaller volume of moving water. In like manner, when high winds aloft pour over and around a major obstacle such as the Rocky Mountains, the resulting large mass of turbulent energy requires considerable time and space (both vertical and horizontal) to gradually dissipate. The GTG-3 model that serves as the basis for our current turbulence map displays factors in atmospheric stability, topography, and the wind speed and direction at all altitudes. The GTG-4 model that will be released within the next couple years will also incorporate adiabatic lapse rates that will add convective turbulence into the existing EDR equation with even better refined resolution. Taking the time to study the fine details of our GTG forecast products will help us to better understand and predict the conditions we can expect each time we fly, and allow us to apply and correlate that knowledge into our decisionmaking processes. A.D.

Missoula pilot receives award for exceptional aviation achievement MSO GA News

In recognition of his outstanding accomplishments in aviation Missoula pilot Pete Graf received the Wright Brothers Master Pilot Award. Recipients of the award have for 50 years demonstrated professionalism, skill, and aviation expertise. The FAA's Jeff Vercoe presented the award in Missoula on December 27, 2021. The celebration was shared by friends and family.

Pete's Private Pilot training took place at Missoula's Johnson-Bell Field during September through December of 1970. He was a UM Grizzly, and shortly after completing his pilot training graduated with his BA in Biology. As of September 25, 2020 he had accumulated 17,923 hours of total flight time in a variety of aircraft.

Pete served as an Air Force pilot and instructor from June 1971 until June of 1999. From September of 1999 until December 2001 he was a charter pilot and flight instructor at Sunbird Aviation & Yellowstone Jet Center in Bozeman. From January 2002 until March of 2014 he was a Captain for SkyWest Airlines, flying three models of CRJs and the EMB-120. From August of 1999 and currently he serves as a Civil Air Patrol CFI/CFII and Check Pilot Evaluator. He is also a General Aviation Flight Instructor.

Congratulations, Pete, for your outstanding service and accomplishments. May you have many more blue skies and happy landings!

CAP news - Farewell to Uncle Wiggly Wings; Aerospace Education Membership Program Major Steven C. Heffel, CAP, Billings

The Berlin Airlift started on June 24, 1948, marking a sharp escalation of the Cold War between the Soviet Union and the United States and its Allies following World War II. The Soviet Union was attempting to starve the 2-million residents of West Berlin into submission by blockading their supply lines from West Germany. So, France, Great Britain, and the United States spent the next 11 months flying in 2,334,374 tons of supplies in what was called "Operation Vittles."



1Lt Gail Halvorsen at the Tempelhof Air Base fence in July 1948 meeting a group of about 30 West Berlin children. This chance encounter lead 1Lt Halvorsen to start making the candy drops to the West Berlin children during the Berlin Airlift. Photo courtesy of Major Steven Heffel.

Then in July 1948, one of the Douglas C-54 Skymaster cargo pilots, 27-year-old 1Lt. Gail S. Halvorsen, met a group of about 30 West Berlin children at the fence of Tempelhof Air Base while waiting for the supplies to be off-loaded from his aircraft. After speaking with the group of children, 1Lt Halvorsen gave the children his last two sticks of Wrigley's Double Mint chewing gum and promised to bring them more candy on his next cargo flight if they promised to share the candy. When one of the children asked 1Lt Halvorsen how they would know which cargo aircraft was his, he told them that he would "wiggle my wings" to identify his aircraft. As a result, 1Lt Halvorsen became known to the children of West Berlin as "Uncle Wiggly Wings."

He was also called "The Berlin Candy Bomber" in the United States and also by West Berliners for his practice of dropping candy for the children from his C-54 on make -shift parachutes made from handkerchiefs. Initially controversial, the commander of the Combined Airlift Task Force, Lt General William H. Tunner, gave his permission for the candy drops to continue and 1Lt Halvorsen and his fellow pilots and aircrew fashioned an estimated 250,000 handmade candy parachutes during the entirety of the Berlin Airlift. The mission to bring candy to the children of West Berlin was named "Operation Little Vittles."

1Lt Halvorsen got his start in aviation by earning his pilot wings in the Summer of 1941 through winning one of 10 competitive non-college scholarships offered in Utah through the Civilian Pilot Training Program. He joined Civil Air Patrol (CAP) in mid-December 1941, only a couple of weeks after the founding of CAP. 1Lt Halvorsen honed his skill as a pilot flying emergency

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service missions for CAP in Utah before joining the Army Air Corps in 1943, flying cargo aircraft in the Atlantic Theater of the war. He served in the Air Force until his retirement as a colonel in 1974 and rejoined CAP soon after. A man of deep religious faith with the Church of Jesus Christ of Latter-day Saints, Uncle Wiggly Wings passed away on Wednesday, February 16, in Provo, Utah, at the age of 101.

To honor his lifetime of service, CAP created the Uncle Wiggly Wings Activity Book and Teacher's Guide which features aviation education curriculum for grades K -5. The curriculum is based on his Candy Bomber days and teaches social studies, history, and parachutes, and is available from CAP's National HQ/AE at Maxwell AFB, Alabama.

In 2016 volunteers from the Utah Wing of CAP established the Gail S. Halvorsen Aviation Education Foundation and will be breaking ground on the Halvorsen Heritage Center in May of 2022 at the Spanish Fork Airport in Utah. And because of 1Lt Halvorsen's heartfelt belief in the value of education, The Foundation is also building "The Candy Bomber" website (https://www.thecandybomber.org), which will offer aviation education curriculum for K-12 educators.

Educators Invited to Join CAP's Aerospace Education Membership Program

Civil Air Patrol (CAP) is well known for its cadet program, which is the aerospace education oriented afterschool equivalent of high school Air Force Junior ROTC and is officially recognized by the USAF. However, most people do not know about CAP's Aerospace Education Membership (AEM) Program, which has about 4,300 professional educators, informal educators, and homeschoolers enrolled, nationwide. The AEM Program is part of CAP's *external* aerospace education program, which is directed at the general public.

CAP has been promoting aerospace education in public and private K-12 schools nationwide since 1953 and created the AEM Program in 1969. The AEM Program is a special category of CAP membership originally created exclusively for professional educators, but later allowed informal educators (e.g., museum docents, youth program leaders, etc.) and homeschoolers to join and take full advantage of the benefits of CAP's AEM Program. AEM Program benefits currently include CAP's AEX I Program for grades K-6 and AEX II Program for grades 7-12; the "grade specific" ACE Program for grades K-6; FREE Aerospace Education STEM Kit Program; CAP's new Adopt-A-Classroom Program for grades 5-8; aerospace education teacher workshops (many of which qualify for continuing education credit), and Teacher Orientation Program Flights, called "TOP Flights." There are currently only 18 AEMs teaching aerospace education subjects in the State of Montana.

Any classroom, after-school youth program, or homeschool in Montana can be enrolled in CAP's ACE Program or AEX Program(s), provided that the teacher or youth program leader is enrolled in CAP's AEM Program. ACE and AEX Program(s) curriculum cover the subjects of aviation, astronautics, astronomy, and cybertechnology is being added to the mix in 2022. There is a one-time registration fee of \$35 to join CAP's AEM Program and annual renewals are *FREE*. To find out more about CAP's AEM Program e-mail Susan Mallett at *ae@capnhq.gov* or visit

https://www.GoCivilAirPatrol.com/ae for more program information.

An update from Major Heffel, 5/17/22: I have some good news to share with you. Montana Wing now has 12 teachers, 10 homeschoolers, and 1 Boy Scout leader enrolled in the AEM Program, as of February 2022. So, Montana Wing now has a total of 23 AEMs teaching aerospace education subjects across the State of Montana, instead of only 18. - ed





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MSO GA News thanks Matt Amble, Aviation Program and Project Manager, Montana Aeronautics Division; Kevin Condit, Neptune Marketing Manager; Art Dykstra, CFII; Keith Eberhard, MSO Air Traffic Manager, retired; Joe Featherly, Ace Aviation; Keely Flatow, Museum of Mountain Flying volunteer; Kerry Foresman, Professor Emeritus, University of Montana; Aaron Foster, CFI; Major Steven Heffel, Montana Wing CAP; Josh Johnson, Minuteman Director of Ground Operations; Kurt Kleiner, CFII; Eric Komberec, President, Museum of Mountain Flying; Ed Lovrien, President, EAA Chapter 517; Dan Neuman, MSO Business Development Manager; Kynan Spethman, General Manager, Northstar Jet; Lisa Tate, Executive Director, National Museum of Forest Service History; Christel Terrell, MSO Air Traffic Manager; Mike Vivion, President, Montana Pilots Association for their contributions to this "newsletter" (news magazine!).

If you have something interesting to write about we'd like to put it in the newsletter and share it with the Missoula aviation community! Long (about 500 words), short, funny, serious, whatever. The News is published intermittently. Interested in contributing? Contact the editor (see below).

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