SAFETY BULLETIN

November 2021

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Notre Safety Bulletin n'est pas une institution pour les professionnels de l'aéronautique, ni une analyse de chacun des règlements. Il n'a pour vocation que d'informer les utilisateurs de moyens aériens sur les diverses activités de l'aéronautique.

Il appartient à chacun d'utiliser ces informations dans le cadre de ses activités.

Soyez professionnel, préparez vos voyages par une petite analyse des conséquences d'un déplacement.

Our Safety Bulletin is not an institution for aviation professionals, nor is it an analysis of each of the regulations. Its purpose is only to inform users of air assets about the various activities of aeronautics.

It is up to everyone to use this information in the course of their activities.

Be professional, prepare your travels with a little analysis of the consequences of a trip.

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Subjects of the Month: Prepare winter

FAA and Airports Get Ready for Winter Weather

As winter weather approaches, the FAA is working with airports to make sure airport operations remain safe. These winter preparations are the subject of the Preparing for Airport Winter Operations video and CertAlert No. 21-06, both of which help airports and aviation stakeholders get ready for winter weather.

Snow and ice control are often a complex, dynamic, and demanding endeavor. It requires vigilance and a heightened sense of awareness by all stakeholders. The video and the CertAlert highlight the importance of communication and operational best practices. They also provide airport operators and stakeholders key points of awareness during winter operations. This includes essential training to deal with deteriorating or changing conditions, reduced visibility and overall situational awareness, such as receiving runway clearance before removing snow and ice.

Airport operators should share the CertAlert and video to help airport employees and others better prepare for winter operations and its associated challenges.

In addition to safety resources, the FAA provides funding to support winter operations at the nation's airports through the Airport Improvement Program. These grants pay for snow removal vehicles, plows, snow blowers, deicing equipment and snow melters. Grant funding also may be used to construct, modify, or expand snow removal buildings to house the equipment. In 2021, 100 airports received a total of $64.8 million for snow removal equipment.

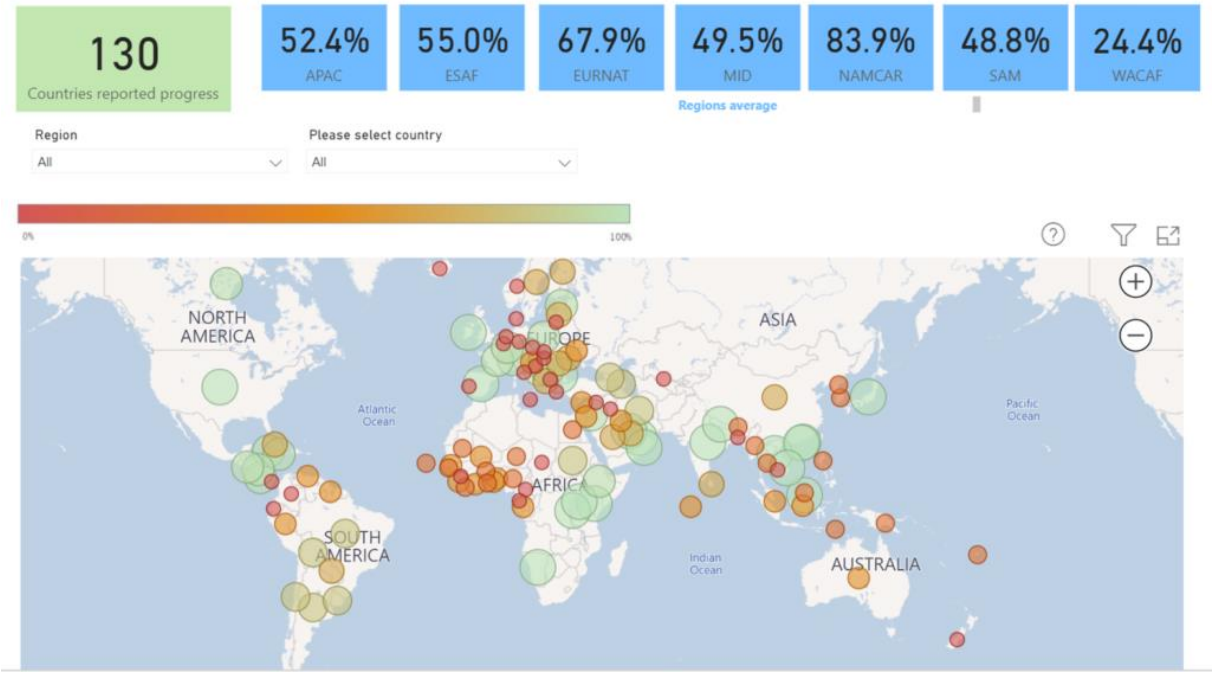
ICAO's Global Reporting Format is now applicable!

After more than a decade of development, review and preparation, the applicability date for the Global Reporting Format (GRF) for runway surface conditions (the 'GRF') is here. As of today, 4 November 2021, this important set of runway safety-related ICAO provisions should be in use by all Member States. As a reminder, the GRF is intended to mitigate the risk of runway excursions, which continues to be the most common form of aviation accidents, through the harmonized assessment and reporting of runway surface conditions. It comprises a number of elements:

- A harmonized matrix through which a trained observer allocates per runway third:
  - A Runway Condition Code (RWYCC);
  - A complementary contaminant descriptor, including type, depth and amount of coverage.
- A Runway Condition Report (RCR), incorporating the RWYCCs and descriptors, which is transmitted to the flight crew by SNOWTAM, ATIS and if necessary ATC radio broadcast;

- The flight crew's correlation of the RCR with aircraft performance data, enabling them to calculate their takeoff or landing performance;
- A facility for the flight crew to provide observations of runway surface conditions, confirming the RWYCC or alerting to changing conditions.

During the run-up to the applicability date ICAO has worked closely with its Member States, regional offices, and industry bodies to ensure that the necessary capacity-building resources have been made available. Awareness has been built through some 35 seminars and webinars, computer and instructor-led training courses have been delivered, additional guidance and clarifications have been provided, and tools to help with implementation developed. Finally, a reporting and monitoring process is in place, through which States are being encouraged to report progress against agreed milestones. All of this is accessible on the ICAO GRF web page.



Early implementation by a number of pioneer States has confirmed that the GRF is fit for purpose, with only a few minor issues requiring clarification noted. Over the next few months, the operational experience will be gained during the Northern winter as well as the rainy or monsoon seasons in other parts of the globe. This operational experience will provide us with the opportunity to learn and if necessary provide additional clarifications through a post-implementation activity. It is also anticipated that the use of industry tools to augment human observations and improve transmission of the RCR will be integrated into the GRF concept.

The benefits of the GRF are not only related to runway safety but also efficiency through better planning of contaminant removal and environmental through the more effective use of de-icing and other treatments.

Current reporting indicated that implementation is still on-going in many States. However, it is anticipated that the roll-out will accelerate in the coming weeks and months, leading to the truly harmonized reporting of runway surface conditions in the interest of maintaining aviation safety, improving flight efficiency, and helping minimize aviation's environmental impact.

The New Global Reporting Format for Runway Surface Conditions

The ICAO Global Reporting Format for runway surface conditions (GRF) mitigates the risk of runway excursions by enabling a harmonized assessment and reporting of runway surface conditions and an improved flight crew assessment of take-off and landing performance.

ICAO, in partnership with key international organisations, is providing support to Member States and industry as they progress their planning and implementation. In particular, training resources have been developed, awareness activities have taken place and additional guidance has been developed.

The applicability date for the GRF is 4 November 2021 (see State Letter 073e.pdf.), though, as we approach this date, some States and Regions have already implemented.

A complete set of ICAO SARPS and guidance is available through the respective content of:

- Annex 14: Aerodromes, Volume I, Aerodrome Design and Operations
- Annex 3: Meteorological Service for International Air Navigation
- Annex 6: Operation of Aircraft (Parts 1 and 2)
- Annex 8: Airworthiness of Aircraft
- Annex 15: Aeronautical Information Services
- PANS Aerodromes (Doc 9981)
- PANS-AIM (Doc 10066)
- PANS-ATM (Doc 4444).

In addition, supporting material is available in:

- Circular 355: Assessment, Measurement and Reporting of Runway Surface Conditions
- Doc 10064: Aeroplane Performance Manual

All of the above reference documents are available through the ICAO publications portal.

Awareness Symposium and Seminars

In 2019 and 2020 ICAO and its partners hosted a global GRF symposium, followed by a series of regional seminars, links to which are provided under the events link below. Due to the COVID crisis, this programme of physical events has been substituted by an on-going series of webinars, links to which are provided under webinar tab below.

GRF Webinars

Links to recent webinars:

2020 Webinars:

- APAC Webinar 21 May presentations
- APAC Webinar 21 May recording
- APAC COSCAP-SEA 30 April 2020
- ICAO GRF Webinar 26 May 2020 recording
- ICAO GRF Webinar 26 May 2020 Questions and Answers.pdf
- SNOWTAM 28 May 2020 recording
- SNOWTAM 28 May 2020 Questions and Answers.pdf
- ICAO CAR/SAM GRF Webinar 18 June 2020 presentations, recording, Q&A here
- ICAO MID Region Webinar 27 October 2020

2021 Webinars

- ICAO NAM_CAR GRF and Runway Safety 11 March 2021
- EASA 10 March 2021
- ICAO ESAF 1 April
- ICAO WACAF 4-6 May
- ACI 15 May
- ICAO EUR 18-20 May
- UK CAA 25 May
- ACI 27 May
- ICAO APAC/IFATCA 30 August
- ICAO APAC/JCAB 24 September
- ICAO SAM/CANSO 28 September

See attached GRF Implementation_Milestones_March 2021

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What about this month:

The Air Transport Monthly Monitor for October 2021

The air transport industry is not only a vital engine of global socio-economic growth, but it is also of vital importance as a catalyst for economic development. Not only does the industry create direct and indirect employment and support tourism and local businesses, but it also stimulates foreign investment and international trade.

Informed decision-making is the foundation upon which successful businesses are built. In a fast-growing industry like aviation, planners and investors require the most comprehensive, up-to-date, and reliable data. ICAO's aviation data/statistics programme provides accurate, reliable and consistent aviation data so that States, international organizations, the aviation industry, tourism and other stakeholders can:

- make better projections;
- control costs and risks;
- improve business valuations; and
- benchmark performance.

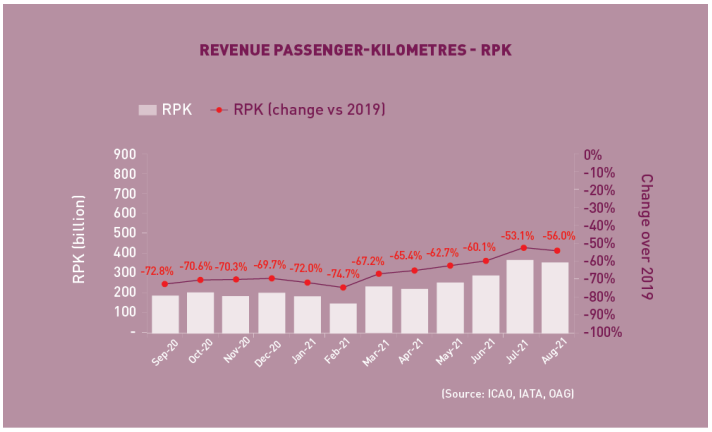
The UN recognized ICAO as the central agency responsible for the collection, analysis, publication, standardization, improvement and dissemination of statistics pertaining to civil aviation. Because of its status as a UN specialized agency, ICAO remains independent from outside influences and is committed to consistently offering comprehensive and objective data. Every month ICAO produces this Air Transport Monitor, a monthly snapshot and analysis of the economic and aviation indicators.

ECONOMIC DEVELOPMENT – October 2021

World Results and Analyses for August 2021

Total Scheduled Services (Domestic and International)

Passenger traffic



Revenue Passenger-Kilometres – RPK

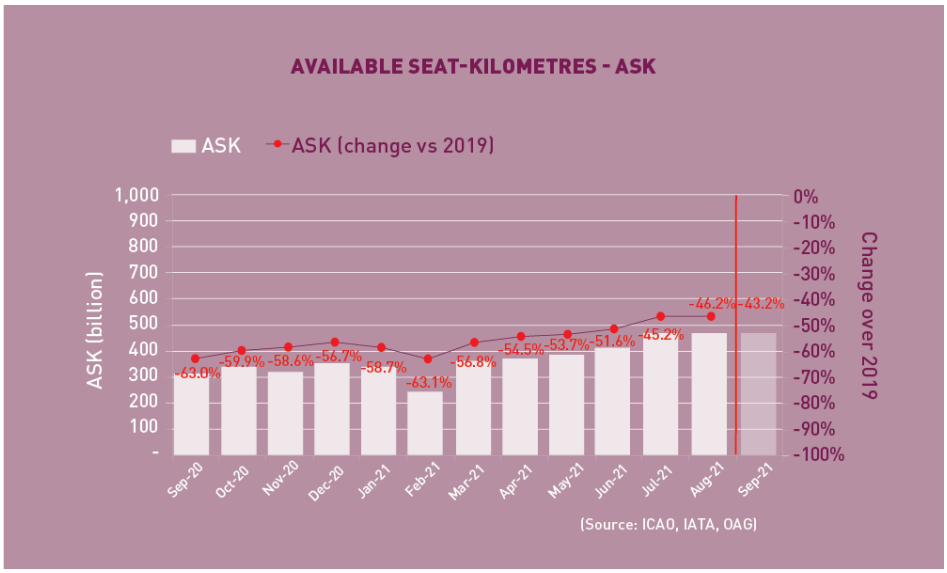
World passenger traffic fell by -56.0% in August 2021 (compared to 2019), -2.9 percentage points down from the decline in the previous month. This deterioration was mainly attributed to the weakening in domestic markets, and particularly Chinese domestic travel, which plunged dramatically due to the new outbreaks and the more stringent travel restrictions. Some other major domestic markets also worsened. International travel, however, continued to improve in most of the regions, except for Asia/Pacific, where restrictions remain stricter than others.

International Traffic vs. Tourist Arrivals

International passenger numbers fell by -63.6% in August 2021 (compared to 2019), +4.2 percentage points up from the decline in the previous month. Easing travel restrictions and progress with vaccinations has supported the continued improvements in international travel. The significant rebound was recorded by intra-European travel.

The international tourist arrivals also picked up and followed a similar trend as international passenger traffic.

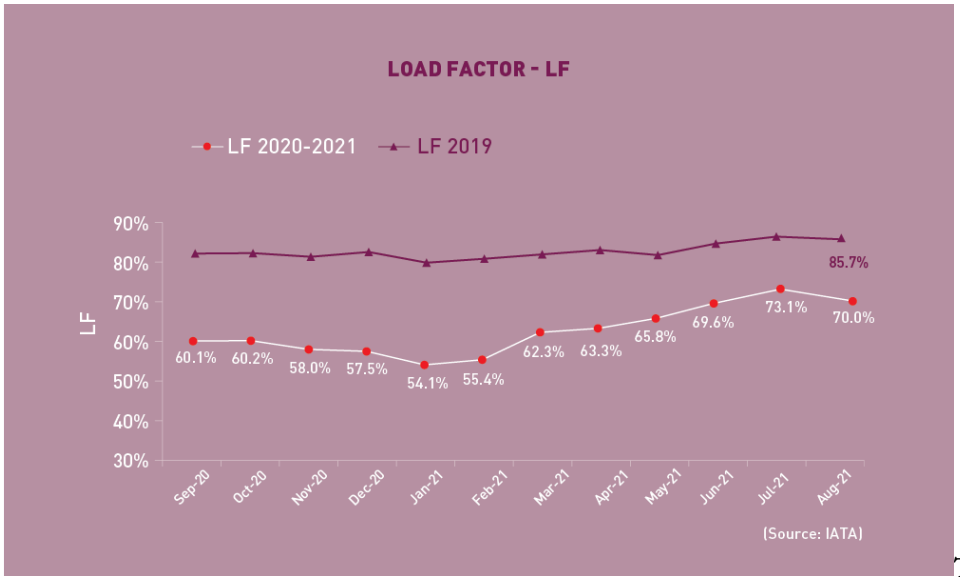
Capacity



Available Seat-Kilometres – ASK

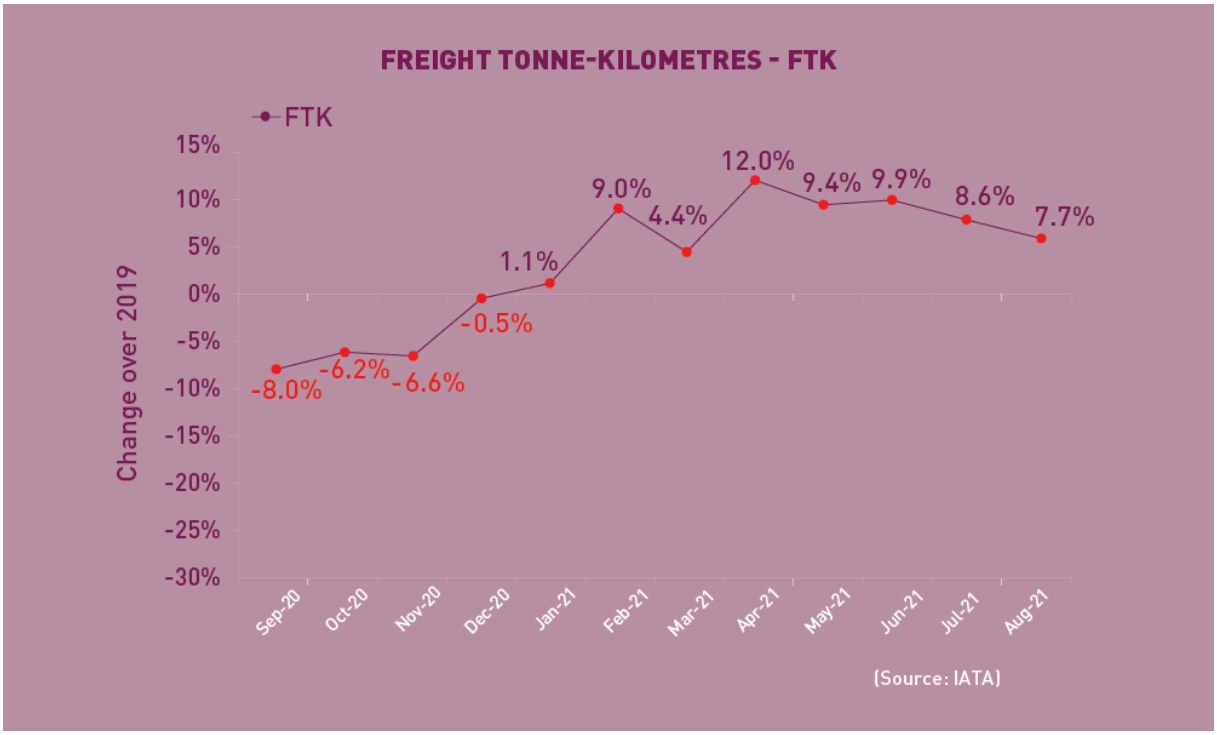
Capacity worldwide fell by -46.2% in August 2021 (compared to 2019), down -1.0 percentage points from the decline in the previous month (-45.2%). With signs of travel rebound towards the end of August, capacity is expected to increase moderately in September 2021 to -43.2% down from the 2019 levels.

Load Factor



The passenger load factor reached 70.0% in August 2021, -3.1 percentage points lower than the previous month. Worsened domestic travel also resulted in a lower domestic load factor. As the recovery of capacity was faster than travel demand recovery, the August LF remained significantly below 2019 levels at -15.7 percentage points lower.

Freight Traffic



Freight Tonne-Kilometres – FTK

World freight traffic reported a growth of +7.7% in August 2021 (compared to 2019), -0.9 percentage points lower than the growth in the previous month. The softening in air cargo growth reflected the slower expansion in export and manufacturing production. Nevertheless, the global demand for goods is expected to be supportive for air cargo growth in the coming months. Africa continued to outperform other regions, surpassing the 2019 levels at over +30%, albeit with the smallest share of world cargo traffic. North America and Middle East also rose double-digitally, while growth for Europe and Asia/Pacific airlines remained moderate. Latin America/Caribbean, the region with the second smallest share of world air cargo traffic, continued to be the only region posting contraction from 2019 levels.

Top 15 Airports (Ranked by aircraft departures, passengers, and volume of freight)

Note: Figures include total scheduled and non-scheduled services

July 2021: -11.9%, -28.0%, and +12.4% (vs. 2019) in terms of aircraft departures, passengers and freight for the Top 15

AIRPORTS RANKING BY NUMBER OF DEPARTURES

Airports	Departures	vs. 2019
Chicago IL, US (ORD)	34,518	↓ -16.8%
Atlanta GA, US (ATL)	33,664	↓ -16.9%
Dallas/Fort Worth TX, US (DFW)	29,346	↓ -11.1%
Denver CO, US (DEN)	27,614	↓ -5.3%
Los Angeles CA, US (LAX)	24,855	↓ -19.6%
Charlotte NC, US (CLT)	23,172	↓ -6.2%
Houston TX, US (IAH)	19,429	↓ -4.7%
Seattle WA, US (SEA)	18,550	↓ -14.2%
Phoenix AZ, US (PHX)	18,166	↑ 2.9%
Las Vegas NV, US (LAS)	17,531	↓ -14.1%
Anchorage AK, US (ANC)	17,191	↑ 2.3%
Amsterdam, NL (AMS)	16,776	↓ -28.1%
Miami FL, US (MIA)	16,097	↓ -5.1%
Istanbul, TR (IST)	15,749	↓ -22.5%
Salt Lake City UT, US (SLC)	15,730	↑ 1.5%

In terms of aircraft departures, the Top 15 airports reported a combined fall of -11.9%, compared to 2019. The Top 15 list remained dominated by US airports. Three airports, Phoenix, Anchorage and Salt Lake city, posted increases compared to 2019, albeit at a modest rate. Chicago remained 1st with a decline of -16.8%. Amsterdam and Istanbul also ranked within the Top 15.

AIRPORTS BY NUMBER OF PASSENGERS

Airports	Passengers	vs. 2019
Atlanta GA, US (ATL)	3,780,962	↓ -23.5%
Denver CO, US (DEN)	2,971,337	↓ -7.9%
Chicago IL, US (ORD)	2,946,368	↓ -26.2%
Dallas/Fort Worth TX, US (DFW)	2,885,071	↓ -16.0%
Los Angeles CA, US (LAX)	2,567,605	↓ -36.9%
Istanbul, TR (IST)	2,272,413	↓ -32.6%
Antalya, TR (AYT)	2,154,734	↓ -23.3%
Seattle WA, US (SEA)	2,059,163	↓ -22.0%
Moscow, RU (SVO)	2,006,595	↓ -23.9%
Charlotte NC, US (CLT)	1,967,621	↓ -8.7%
Las Vegas NV, US (LAS)	1,905,106	↓ -14.2%
Amsterdam, NL (AMS)	1,893,608	↓ -44.4%
Paris, FR (CDG)	1,775,519	↓ -52.5%
Miami FL, US (MIA)	1,690,513	↓ -11.7%
Frankfurt, DE (FRA)	1,684,194	↓ -51.3%

In terms of passengers, the Top 15 airports posted a total fall of -28.0%, compared to 2019. Unlike the previous months, the list is dominated by US and European airports. For the first time, both Istanbul and Antalya in Turkey ranked within Top 15.

Amsterdam, Paris and Frankfurt, also re-appeared in Top 15 after over a year. Atlanta remained at 1st with a decline of -23.5%.

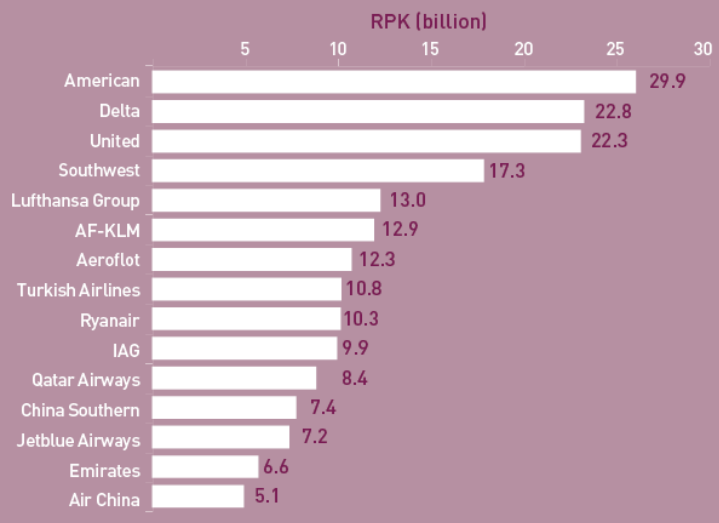
AIRPORTS RANKING BY NUMBER OF FREIGHT

Airports	Freights	vs. 2019
Hong Kong SAR, CN (HKG)	426,000	↑ 12.6%
Memphis TN, US (MEM)	366,964	↑ 0.8%
Anchorage AK, US (ANC)	321,543	↑ 41.8%
Shanghai, CN (PVG)	293,363	↑ 0.4%
Incheon, KR (ICN)	268,438	↑ 22.2%
Taipei, CN (TPE)	239,737	↑ 31.1%
Louisville KY, US (SDF)	227,469	↓ -2.6%
Los Angeles CA, US (LAX)	214,618	↑ 26.9%
Doha, QA (DOH)	206,265	↑ 18.5%
Miami FL, US (MIA)	200,803	↑ 22.4%
Dubai, AE (DXB)	189,981	↓ -6.4%
Chicago IL, US (ORD)	184,549	↑ 26.3%
Frankfurt, DE (FRA)	174,728	↑ 7.1%
Singapore, SG (SIN)	165,500	↓ -2.1%
Guangzhou, CN (CAN)	161,189	↑ 4.7%

In terms of freight, the Top 15 airports reported an increase of +12.4%, compared to 2019. Hong Kong retained the 1st position with a solid growth of +12.6%. Several airports grew double-digitally, with Anchorage and Taipei recording the strongest increase by +41.8% and +31.1%, respectively. Dubai continued to post the largest contraction at -6.4%.

Top 15 Airline Groups (Ranked by RPK)

TOP 15 AIRLINE GROUPS (RANKED BY RPK)



	Change over 2019	% Share of World Total	Cumulative % Share
American	↓ -25.6%	7.4%	7.4%
Delta	↓ -39.8%	6.3%	13.7%
United	↓ -38.0%	6.2%	19.9%
Southwest	↓ -3.0%	4.8%	24.7%
Lufthansa Group	↓ -55.7%	3.6%	28.3%
AF-KLM	↓ -54.1%	3.6%	31.8%
Aeroflot	↓ -24.6%	3.4%	35.2%
Turkish Airlines	↓ -28.8%	3.0%	38.2%
Ryanair	↓ -42.5%	2.8%	41.1%
IAG	↓ -65.0%	2.7%	43.8%
Qatar Airways	↓ -50.3%	2.3%	46.1%
China Southern	↓ -72.7%	2.0%	48.2%
Jetblue Airways	↓ -8.6%	2.0%	50.2%
Emirates	↓ -76.8%	1.8%	52.0%
Air China	↓ -76.3%	1.4%	53.4%

Top 15 Total RPKs	193 billion	↓ -47.0%	53.4%
World Total RPKs	362billion	↓ -53.1%	100%

(Source: ICAO, airline's webistes)

Note: Total scheduled and non-scheduled services

August 2021: –47.0% (vs. 2019) in terms of RPK for the Top 15

In terms of RPK, the Top 15 airline groups accounted for 53.4% of the world's total RPK in August 2021 and declined by –47.0% compared to 2019. This decline was 6.1 percentage points smaller than the fall in world's average RPK.

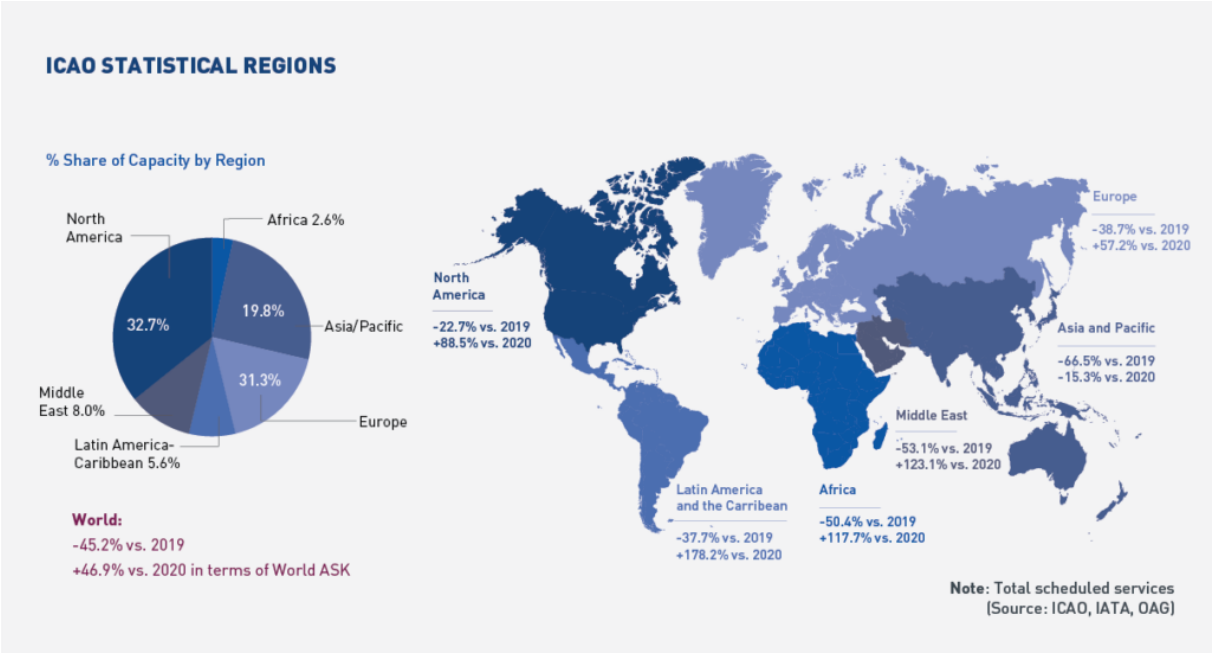
Two major factors affected significantly the August rankings. On one side, the Chinese domestic travel fell drastically impacted by the renewed outbreaks; on the other side, international travel in Europe picked up rapidly.

US airlines retained the Top 4 positions wit American ranked 1st followed by Delta, United and Southwest. Jetblue Airways also ranked in the Top 15 supported by solid domestic demand. Among all Top 15 airlines, Southwest posted the smallest decline compared to 2019 levels.

Chinese domestic travel demand worsened again with far worse deterioration than the previous ones, and all Chinese airlines experienced a drastic fall in traffic. As a result, only China Southern and Air China ranked within Top15, at merely 12th and 15th.

Supported by the pick up of intra-European travel, airlines in Europe moved up their rankings after the US airlines from 5th to 10th. Lufthansa and AF-KLM improved 4 and 2 positions to 5th and 6th, respectively.

Qatar Airways and **Emirates** ranked **11th** and **14th**, with the latter recording the largest contraction from 2019 levels.



Worldwide capacity contracted by -46.2% in August 2021, compared to 2019. This indicated a slight deterioration from July, due to the capacity cut in Asia/Pacific, mainly in the Chinese domestic market. All

other regions posted a smaller fall in capacity, with the strongest improvements in Europe the Middle East, mostly owing to the expansion in international capacity.

Click here to download the Monthly Monitor in a PDF version.

For any queries for further information, please contact the ICAO Economic Development (ECD), Air Transport Bureau ecd@icao.int

Acronyms: ACI: Airports Council International; ASK: Available Seat-Kilometres; IATA: International Air Transport Association; FTK: Freight Tonne-Kilometres; LF: Passenger Load Factor; OAG: Official Airline Guide; RPK: Revenue Passenger-Kilometres; UNWTO: World Tourism Organization; YoY: Year-on-year; YTD: Year-to-date.

ICAO Council approves CORSIA Sustainability Criteria for sustainable aviation fuels

Montréal, 12 November 2021 - At a meeting of its 224th Session this week, the ICAO Council approved new Sustainability Criteria for sustainable aviation fuels (SAF) eligible under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), together with the compliance assessment guidance.

By making use of aviation fuels which meet the new Sustainability Criteria for SAF life-cycle CO2 reduction benefits and other environmental and socio-economic themes, aircraft operators engaged in international flights can claim associated reductions in their CORSIA CO2 offsetting requirements.

"This approval should incentivize the production of SAF so that they can fulfil their important role in aviation's green transition, and it also emphasizes the continuing importance of pursuing a globally harmonized approach to mitigating emissions from international aviation operations," commented ICAO Council President Salvatore Sciacchitano.

The approval of the SAF Sustainability Criteria was complemented by additional CORSIA decisions and progress by the Council regarding its pandemic impact analysis for 2022 CORSIA periodic review, and updates to the CORSIA eligible emissions units, as well as the 2022 process for the Organization's work on the feasibility of a long-term aspirational goal (LTAG) for international aviation toward the next ICAO Assembly.

The CORSIA offsetting framework has been adopted by countries through ICAO to complement their long standing commitments to pursue continuous air transport emissions reduction through aircraft technologies and operational innovations, and the wider, more affordable deployment of SAF.

The importance of English language proficiency in aviation

For pilots and air traffic controllers to communicate clearly and efficiently around the world, a universal aviation language had to be established. Both parties work closely together to exchange crucial information about the aircraft, flight, crew members, and passengers as well as other external factors and situational awareness that help ensure safe and efficient operations.

Since miscommunication and language barriers are human errors that could gravely impact flight safety and put those on board at risk, ICAO established English language proficiency requirements for pilots and air traffic controllers serving and operating international flights. Though English was chosen as the language of the skies at the Chicago Convention in 1944, ICAO first began addressing language proficiency for pilots and air traffic controllers in September 1998. In 2008, an English language proficiency test was established as part of the requirements for pilots and air traffic controllers to be fully qualified.

Aviation English is known globally for the phonetic alphabet, specific terminology and phraseology, and the universal jargon that we've likely heard in films or onboard a flight. It is actually a lot more complex. While much of the language is technical, functional command of English is necessary to pass along essential messages as clearly, fast, precisely and as naturally as possible, particularly when there is an emergency. Another advantage of having a standard language for pilots and air traffic controllers to communicate in that is that pilots flying in the same airspace can monitor air traffic.

There are different language levels used to assess English language proficiency. Although the ICAO language rating scale ranges from 1-6, level 4 is the minimum level requirement for operations, with level 5 (extended level) and level 6 (expert level). Regardless of the proficiency level, testing assesses listening, comprehension, and speaking skills in addition to pronunciation, sentence structure, vocabulary, and fluency.

The validity of the test depends on the proficiency level acquired. Native English speakers and those who dominate the language at the expert level (6) do not need to be reevaluated. Those at level 4 have to test every three years, while those at level 5 every five years.

Safety is a number one priority in aviation, and effective communications are a contributing factor. Slight misunderstandings in language between pilots and air traffic controllers could affect the meaning of a message and become an obstacle that could lead to severe consequences. Introducing language proficiency requirements to demonstrate adequate knowledge of English are an extra layer of safety since there is less room for error or misinterpretation. Pilots and air traffic controllers require intensive training and a series of requirements pre, during, and throughout their careers. Demonstrating language proficiency is mandatory. We know that the key to a successful relationship is effective communication, and it couldn't be more applicable in this field.

ICAO Language Proficiency Rating Scale

1.1 Expert, Extended and Operational Levels

LEVEL	PRONUNCIATION *Assumes a dialect and/or accent intelligible to the aeronautical community.*	STRUCTURE *Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.*	VOCABULARY	FLUENCY	COMPREHENSION	INTERACTIONS
Expert 6	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced, and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues and responds to them appropriately.
Extended 5	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/ listener relationship effectively.
Operational 4	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.	Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.	Comprehension is mostly accurate on common, concrete, and work- related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.

Levels 1, 2 and 3 are on subsequent page.

There are several language training and testing services available to assist in preparing for the exam: ICAO's Aviation English Language Test Service (AELTS), English Language Proficiency for Aeronautical Communication (ELPAC), and ICAO Rated Speech Samples Training Aid (RSSTA), are amongst many.

Conversation Aviation Live - What Does Stay Safe Mean

Date & time

26/11/2021, 14:00 – 15:00 CET (UTC +1)

Description

In this Conversation Aviation Live Webinar our panel of experts will discuss what the concept of staying safe means when it comes to the Ramp-up. The 3 key areas for discussion are:

- Encouraging people to follow recognised processes, procedures and practices.
- Knowing your risks and mitigating them effectively as part of a resilient management system.
- Setting a culture of trust that encourages reporting and for people to talk openly about safety and wellbeing.

Registration via Webex

Virtual Inclusive Language Summit

November 10, 2021 10:00 a.m. – 12:30 p.m. ET

The FAA is hosting a virtual Inclusive Language Summit to inform its agency-wide initiative to adopt language that is both gender-neutral and inclusive. FAA representatives will share recommendations it received that support the use of inclusive language at the agency and across the aerospace community. Summit attendees will have an opportunity to comment on these recommendations and provide additional input to the FAA.

Who should attend? Members of the public; stakeholders in public agencies; academia; not-for profit institutions; individuals working in the area of diversity, equity, inclusion, and accessibility; and the aerospace community.

Summit Format:

- The meeting will be live streamed on FAA Facebook, FAA Twitter and FAA YouTube, no registration required.
- Attendees may submit questions via this Google doc during the event.
- Requests for accommodations to a disability must be emailed to Thomas Cuddy at DEIA@faa.gov before November 1, 2021.

EASA Design Organisation Approval (DOA) & Certification Workshop 2021 webpage launched

EASA has launched a comprehensive website for the DOA & Certification Workshop 2021, which will take place as an online event on November 30, 2021.

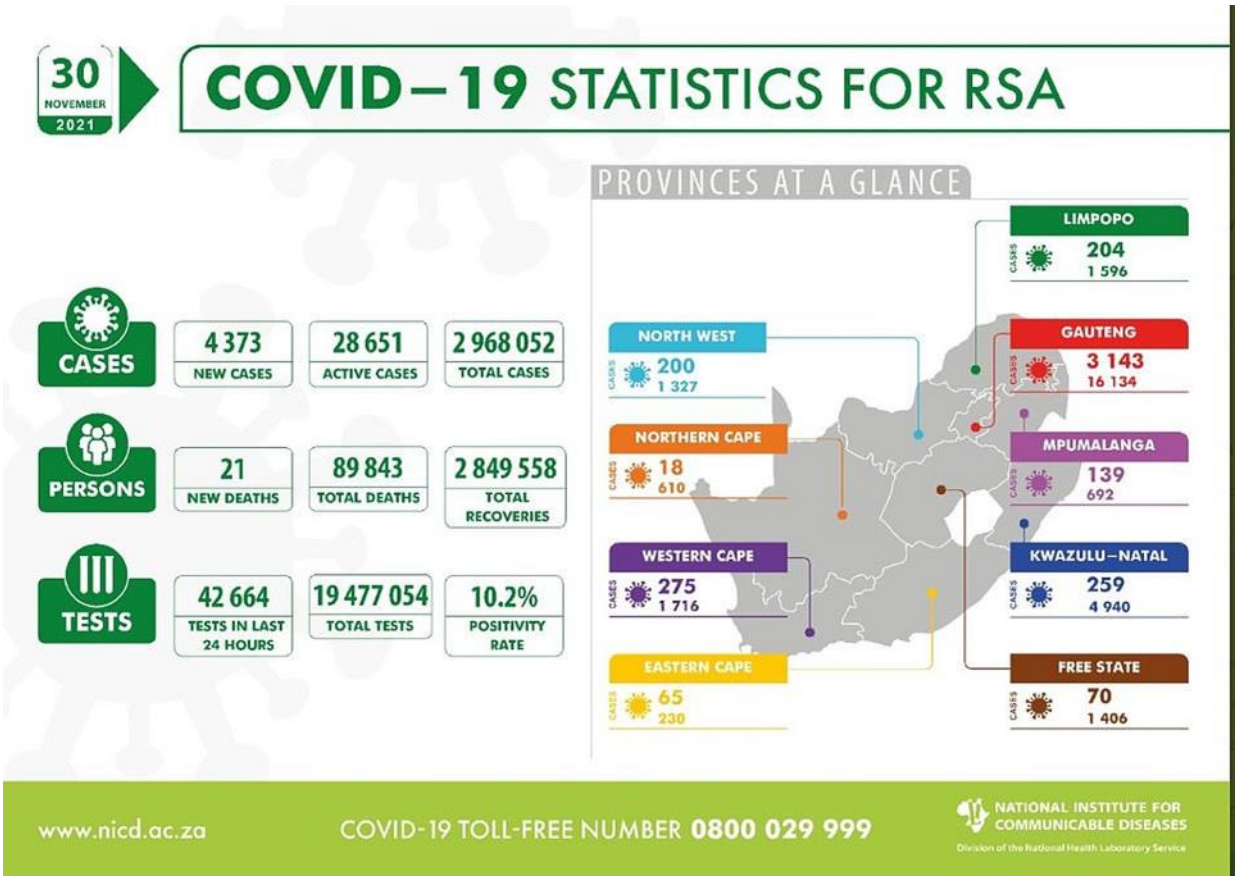
Please visit the 'DOA & Certification Workshop 2021' website.

As well as outlining the agenda for the event, 12 technical presentations have been made available. We invite participants to watch them and to submit any related questions using the "Ask questions" function on the website.

In addition, event participants will have the chance to ask questions via Slido. The link for this will be made available one week before the event. Questions will be answered by the EASA experts during a dedicated session of the livestream event, that will take place from 10:00 to 13:00 CET (UTC+1) on November 30, 2021.

Travelcare for travelers and crewmembers

Borders closed IAW new virus coming from RSA – check countries



ICAO or FAA

European Advice

French Advice (in French)

Other purposes

Covid cases in South Africa SOAR 403% in a week after scientists raised alarm about Omicron variant as top doctor calls the TEN PERCENT positivity rate 'scary' - but 87% of those hospitalised are unvaccinated

- Leading virologist Tulio de Oliveira urged public to get vaccinated amid the 'scary' surge in infections
- The Omicron variant has sent South Africa from a period of low transmission to a rapid growth of new confirmed cases
- South Africa recorded 4,473 new cases on Tuesday, a 92 per cent increase from the day earlier and a massive 403 per cent increase compared to the 868 cases recorded last Tuesday

Coronavirus cases in South Africa have soared by 403 per cent in a week, after the country's scientists sounded the alarm about the Omicron variant.

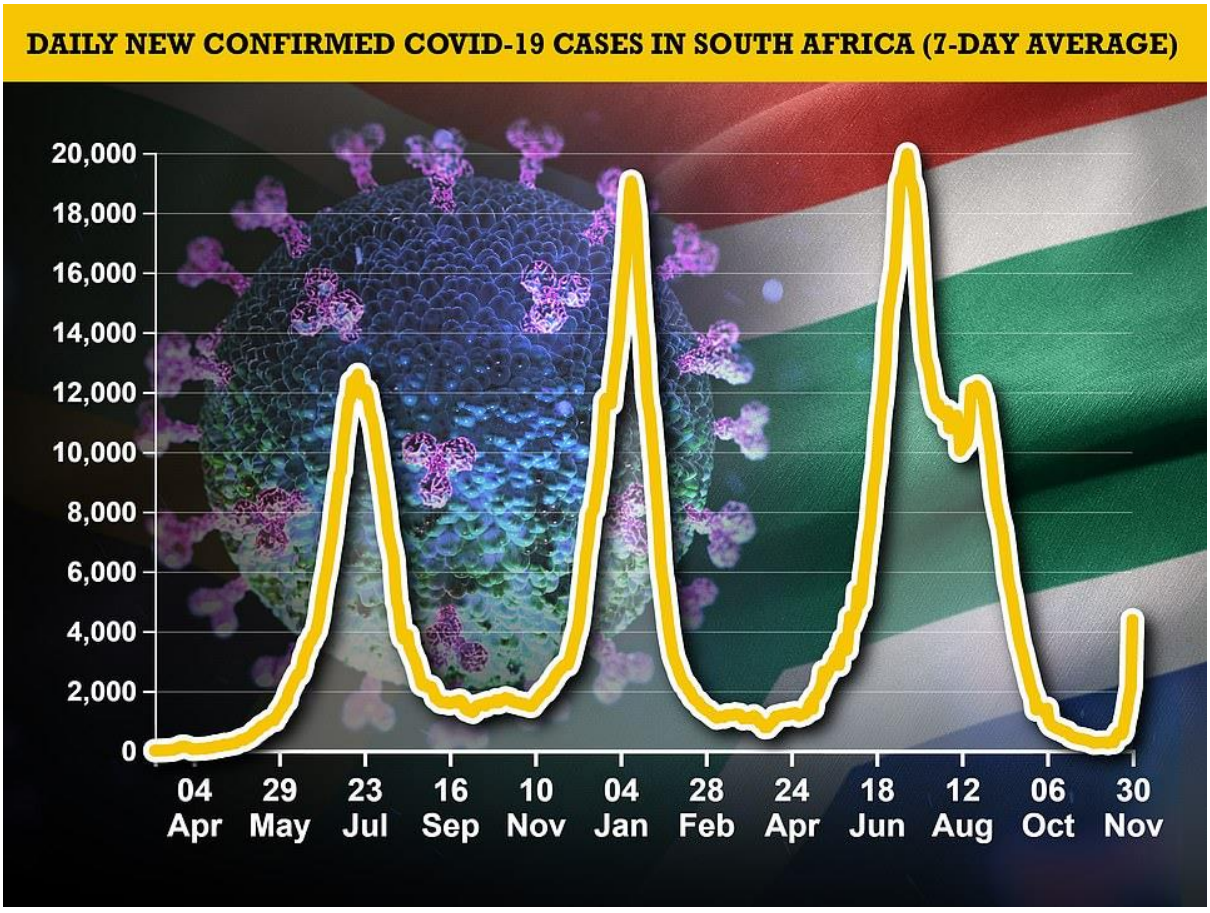
Leading virologist Tulio de Oliveira described the surge in infections as 'scary' as he urged the public to get vaccinated and use face masks.

In the space of two weeks, the Omicron variant has sent South Africa from a period of low transmission to rapid growth of new confirmed cases.

More than ten per cent of those tested for Covid across South Africa have tested positive, official data showed, as 4,473 cases were recorded on Tuesday - an increase of 92 per cent compared to the day before.

But scientists in the country have warned that the vast majority of people who end up being hospitalised with the Omicron variant are unvaccinated.

De Oliveira said on Twitter: 'Goodness me! Scary increase of cases and positivity rate in South Africa. Please keep safe, use a mask and go for vaccination as 1000s of scientists in the world try to understand better.'



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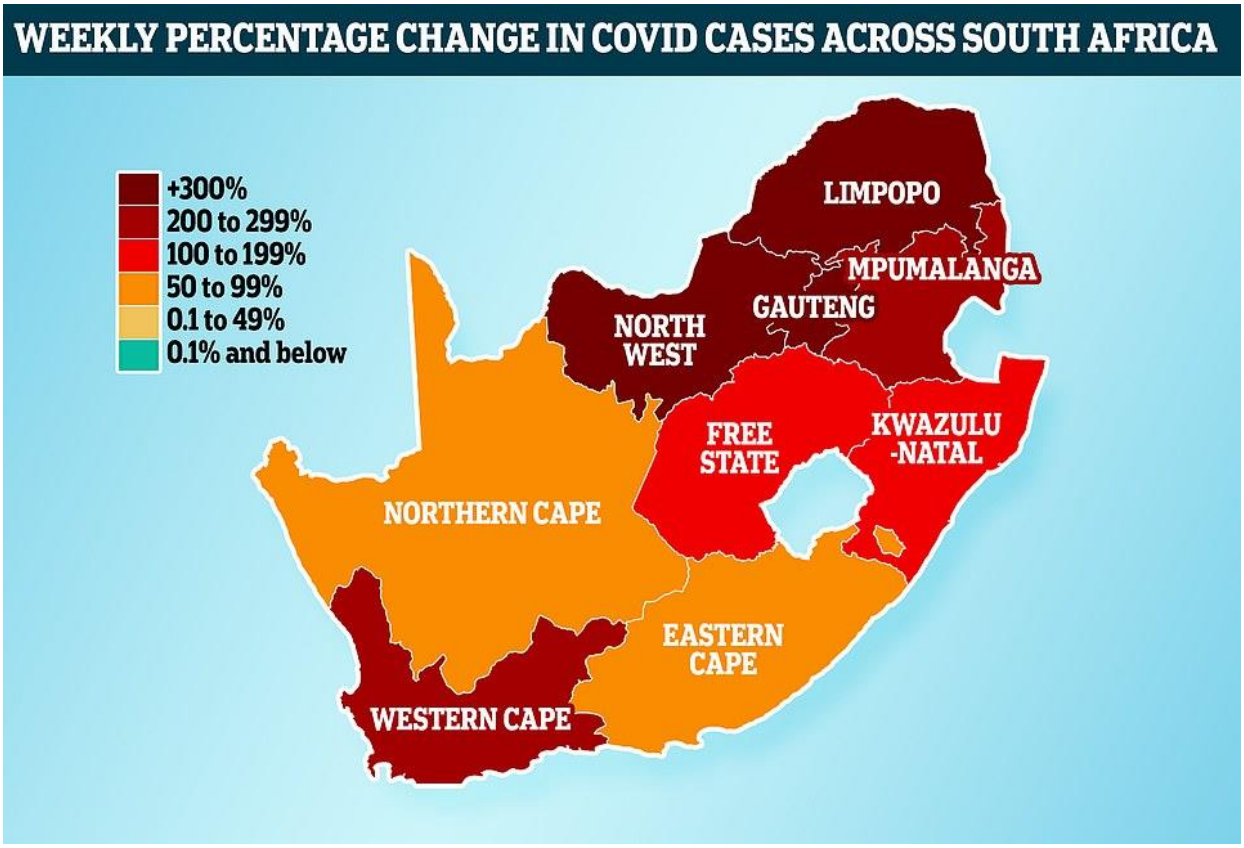

Environment

No more news this months

Français

English

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FAA regulations

Draft ACs

Advisory Circular

Forms - Orders & Notices

JO 7350.9Z - Location Identifiers

JO 7340.2L - Contractions

JO 3100.15 - Joint Air Traffic Operations Command ATO Watch Officer Training

JO 7340.671 - ICAO THREE LETTER DESIGNATOR (3LD) "WSP" AND ASSOCIATED CALL SIGN "WHISPER JET"

JO 7340.673 - LD AND CALL SIGN DELETION: PPJ / PREMIER JETS

JO 7340.672 - COMPANY NAME CHANGE: CORPORATE AIR TRAVEL, LLC

Form FAA 1320-73 - Advisory Circular Feedback

Form FAA 1320-19 - Directives Feedback Information

JO 7340.670 - Foreign ICAO 3LD Additions, Modifications, and Deletions (excluding U.S.)

JO 7210.935 - Sector Definitions

JO 8020.16D - Air Traffic Organization Aircraft Accident and Aircraft Incident Notification, Investigation, and Reporting

7930.2S - Notices to Airmen (NOTAM)

JO 7110.126B - Consolidated Wake Turbulence (CWT)

Order 8260.58B (CHG 1), U.S. Standard for Performance Based Navigation (PBN) Instrument Procedure Design

1250.2B - FAA Science, Technology, Engineering and Math Aviation and Space Education Program (STEM AVSED)

1375.1F - Data and Information Management Policy

1600.1F - Personnel Security Program

JO 7610.4W - Special Operations

JO 7400.2N - Procedures for Handling Airspace Matters

JO 7110.10BB - Flight Services

JO 7210.3CC - Facility Operation and Administration

JO 7110.65Z - Air Traffic Control

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EASA regulations

Approval Data Library | EASA (europa.eu)

Rules

Regulations | EASA (europa.eu)

Commission Implementing Regulation (EU) 2021/1963 - of 8 November 2021 amending Regulation (EU) No 1321/2014 as regards safety management systems in maintenance organisations and correcting that Regulation

Easy access Rules

Agency Decisions

Overview | EASA (europa.eu)

Notices of Proposed Amendment

Notices of Proposed Amendment (NPAs) | EASA (europa.eu)

NPA 2021-13

Regular update of CS-E

The objective of this Notice of Proposed Amendment (NPA) is to address a safety recommendation involving the failure of engine fan blades, thus improving the certification of turbofan engines to better assess and mitigate the potential hazards from such failures, especially by better integrating the analysis and identification of the potential threats to the aircraft on which the engine is to be installed. The proposed amendments will therefore ensure a more robust certification process and will decrease the risk of substantial aircraft damage and fatalities.

In addition, the amendments proposed will reflect the state of the art of engine certification and improve the harmonisation of CS-E with the Federal Aviation Administration (FAA) regulations. To that end, this NPA proposes amendments to CS-E following the selection of non-complex, non-controversial, and mature subjects.

In particular, this NPA proposes amendments in the following areas:

Item 1: Compressor and turbine blade failure,

Item 2: Assumptions — oil consumption,

Item 3: Instrument provisions,

Item 4: Piston engine failure analysis,

Item 5: Approval of engine use with a thrust reverser,

Item 6: Fuel specifications for compression-ignition piston engine,

Item 7: Ice protection,

Item 8: Damage tolerance of critical parts,

Item 9: Engine critical parts — Static pressure loaded parts,

Item 10: Various corrections.

The proposed amendments are expected to improve safety, would have no social or environmental impacts, and would provide economic benefits by streamlining the certification process.

NPA 2021-12

New air mobility | Subtask 2 — Gyroplanes: Flight crew licensing for private pilot licences and non-commercial operations conducted in visual flight rules by day and by night

The objective of this rulemaking task (RMT) is to support the development of new technologies and non-traditional aircraft, as well as the competitiveness of the EU industry in this regard. Subtask 2 of this RMT addresses gyroplanes.

According to Article 2(1)(a) and (b) and Annex I point 1(f) of Regulation (EU) 2018/1139, gyroplanes with a maximum take-off mass (MTOM) of more than 600 kg or with more than 2 seats fall within the scope of the common European rules in the field of civil aviation.

EASA has identified a lack of suitable European rules for the operation of such gyroplanes. This hinders both their introduction and operation, thus putting the competitiveness of the EU industry that is willing to develop such gyroplanes at a major disadvantage.

Therefore, this Notice of Proposed Amendment (NPA) proposes new rules with regard to flight crew licensing and the operation of gyroplanes, thereby ensuring a uniform application of the essential requirements of Regulation (EU) 2018/1139 to such aircraft. The proposed amendments to existing rules, as well as the proposed new rules, concern the following domains:

- flight crew licensing for private pilot licences (PPL), and
- operational rules for non-commercial operations (NCO) conducted in visual flight rules (VFR) by day and by night.

ASECNA

AIP ASECNA

Regulations

Notam

Consultation NOTAM (asecna.aero)

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French regulations

JORF

joe_20211130_0278_0023 - Arrêté du 19 novembre 2021 modifiant l'arrêté du 19 décembre 2017 relatif aux modalités de sélection et de formation des élèves pilotes de ligne

joe_20211130_0278_0021 - Arrêté du 18 novembre 2021 relatif à l'agrément du matériel et des sociétés installatrices de feux de signalisation, d'appareils radar, d'indicateurs de vitesse de giration et d'appareils AIS intérieur

joe_20211127_0276_0001 - Décret n° 2021-1522 du 25 novembre 2021 fixant la liste des zones dans lesquelles les aéronefs sans personne à bord, d'une masse supérieure à un seuil fixé par voie réglementaire, qui ne peut être supérieur à 800 grammes, sont exemptés de l'obligation d'être équipés d'un dispositif de signalement lumineux et d'un dispositif de signalement électronique ou numérique

joe_20211121_0271_0018 - Arrêté du 18 novembre 2021 modifiant l'arrêté du 9 juillet 2007 relatif à l'exploitation de services de transport aérien par la société Transavia France

joe_20211119_0269_0036 - Arrêté du 10 novembre 2021 modifiant l'arrêté du 24 janvier 1956 relatif aux conditions d'établissement et de perception des redevances d'atterrissage et d'usage des dispositifs d'éclairage sur les aérodromes publics

joe_20211117_0267_0014 - Arrêté du 28 octobre 2021 approuvant le plan de servitudes aéronautiques de dégagement de l'aérodrome du Puy-Loudes (Haute-Loire)

joe_20211116_0266_0004 - Arrêté du 10 novembre 2021 relatif aux manifestations aériennes

joe_20211114_0265_0001 - Arrêté du 28 octobre 2021 modifiant l'arrêté du 31 juillet 1981 relatif aux brevets, licences et qualifications des navigants non professionnels de l'aéronautique civile (personnel de conduite des aéronefs)

joe_20211107_0260_0050 - Décret n° 2021-1455 du 5 novembre 2021 approuvant l'avenant n° 2 à la convention de concession de l'aérodrome de Nouméa-La Tontouta accordée à la chambre de commerce et d'industrie de Nouvelle-Calédonie

joe_20211106_0259_0005 - Décret du 4 novembre 2021 portant reconnaissance de l'association « Fédération RSA - Fédération française des constructeurs, restaurateurs, pilotes et collectionneurs d'aéronefs » comme établissement d'utilité publique

joe_20211105_0258_0046 - Arrêté du 20 octobre 2021 pris en application du I de l'article R. 3120-40 du code des transports

joe_20211105_0258_0045 - Arrêté du 20 octobre 2021 portant création d'un traitement de données à caractère personnel relatif à la transmission des données des personnes intervenant dans le secteur du transport public particulier de personnes dénommé « Données du transport public particulier de personnes »

joe_20211105_0258_0044 - Arrêté du 20 octobre 2021 pris en application de l'article R. 3120-41 du code des transports

joe_20211104_0257_0020 - Arrêté du 29 octobre 2021 modifiant l'arrêté du 24 octobre 2012 relatif à l'exploitation de services de transport aérien par la société Air France

joe_20211104_0257_0019 - Arrêté du 28 octobre 2021 modifiant l'arrêté du 1er juillet 2016 relatif à l'exploitation de services de transport aérien par la société Vueling Airlines SA

joe_20211104_0257_0018 - Arrêté du 28 octobre 2021 modifiant l'arrêté du 3 août 2007 relatif à l'exploitation de services de transport aérien par la société Corsair

joe_20211104_0257_0017 - Arrêté du 27 octobre 2021 modifiant l'arrêté du 20 février 2020 relatif à l'exploitation de services de transport aérien de la société Compagnie Aérienne Inter Régionale Express

joe_20211103_0256_0035 - Arrêté du 26 octobre 2021 modifiant l'arrêté du 12 juillet 2010 relatif à l'exploitation de services de transport aérien par la société Air Austral

OSAC-DSAC

NPA 2021-11	Enhancement of the safety assessment processes for rotorcraft designs	05/11/2021	N/A
Opinion 05/2021	Part 21 Light — Certification and declaration of design compliance of aircraft used for sport and recreational aviation and related products and parts, and declaration of design and production capability of organisations	05/11/2021	N/A
working arrangement	Working Arrangement between Civil Aviation Authority of the United Kingdom and EASA on the design and production of Rolls-Royce Products	05/11/2021	27/10/2021
AIR-21-15R1	Aeroplanes with Honeywell Primus II Radio System with Radio Management Unit (RMU) 855 - Navigation System	05/11/2021	N/A
SIB 2020-01R1	Carbon Monoxide Risk in Small Aeroplanes and Helicopters	05/11/2021	N/A

AC151	Demande d'approbation de conception d'une évolution d'aéronef, moteur ou hélice non transféré à EASA	16/11/2021
AC113	Fiche d'approbation de conception d'une évolution (modification, réparation)	15/11/2021

Liste des emetteurs homologués

Bulletin officiel de la DGAC

Bulletin Officiel des Ministères de la Transition écologique et solidaire et de la Cohésion des territoires et des Relations avec les collectivités territoriales (developpement-durable.gouv.fr)

TREA2132811S - DÉCISION DU 3 NOVEMBRE 2021 PORTANT ORGANISATION DE LA DIRECTION DE LA SÉCURITÉ DE L'AVIATION CIVILE CENTRE-EST.

European Centre for Cybersecurity in Aviation (ECCSA)

See : https://www.easa.europa.eu/eccsa

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U.A.S. – Drones

See : https://www.easa.europa.eu/eccsa

Drone Innovations (icao.int)

joe_20211127_0276_0001 - Décret n° 2021-1522 du 25 novembre 2021 fixant la liste des zones dans lesquelles les aéronefs sans personne à bord, d'une masse supérieure à un seuil fixé par voie réglementaire, qui ne peut être supérieur à 800 grammes, sont exemptés de l'obligation d'être équipés d'un dispositif de signalement lumineux et d'un dispositif de signalement électronique ou numérique

EASA High Level Conference on Drones

Hybrid event (partially online and partially physical meeting)

Date & Time

Day 1: Tue, 18/01/2022, 09:30 - 18:00 CET (UCT+1)

Day 2: Wed, 19/01/2022, 09:00 - 16:30 CET (UCT+1)

Description

"EASA HLC on drones - UAM Becoming a Reality"

Day 1: Plenary panel discussions

The first day of the conference - Tuesday January 18 - is dedicated to the new reality of UAM, the importance of societal acceptance, working in partnership with all the stakeholders and the identification of the key building blocks of UAM. The official opening by Patrick Ky will be followed by keynote speeches delivered by high level representatives of the European Commission, National Governments and industry active in UAM. Three panel discussions on the central theme are planned in the afternoon.

Day 2: Interactive technical workshops

The second day of the conference - Wednesday January 19 - will be devoted to more detailed technical workshops, giving attendees opportunities to discuss their questions in an open Q&A setting. Subjects under discussion will be, for example, the application of the guidelines related to design verification of UAS, technical specifications on vertiports, U-space implementation in an UAM environment together with ATM integration of manned UAM vehicles and licensing and operational requirements for UAM operators.

The two-day EASA High Level Conference on Drones is hosted by RAI together with the Amsterdam Drone Week (ADW) which is the global platform for sharing knowledge on current solutions, innovation and crucial regulation pertaining to Unmanned Aircraft System (UAS) industry. During the three days you

will have access to the ADW Hybrid, the EASA High Level Conference on Drones and you will be able to connect through ADW Matchmaking with selected delegates, speakers and partners. During ADW you can visit the EASA High Level Conference (HLC) on Drones and ADW Hybrid 18 - 20 January 2022.

Registration

https://www.amsterdamdroneweek.com/easa-high-level-conference/

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NAT OPS Bulletin

NAT OPS Bulletins - All Documents (icao.int)

No up date for this month

Cabinet d'Expertise en Aéronautique - Inscrit près la cour d'appel d'Amiens – Indépendant de l'EASA

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IOSA

IATA - IOSA

Related documents can also be found here:

- IOSA Guidance for Safety Monitoring under COVID-19 Ed. 5 (pdf)
- IPM Ed 13 – Temporary Appendix - Revision 1 (pdf)
- IAH P&G Ed 11 - Temporary Appendix Revision 1(pdf)
- IOSA Operator Alert 18 - IPM IAH updates (pdf)

Benefits for Airlines and Regulators

- Quality audit program under stewardship of IATA
- Continuous updating of standards to reflect regulatory revisions and best practices
- Elimination of audit redundancy, reducing costs and audit resource requirements
- Accredited audit organizations with formally trained and qualified auditors
- Accredited training organizations with auditor training courses
- Structured audit methodology, standardized checklists

Safety Alerts

Date Posted	Affected Product(s)	Effective Date	Subject and Additional Information
Nov 16, 2021	**d-TPP Metafile XML**	December 30, 2021	The FAANFD18 field will no longer contain values for Standard Instrument Approach Procedures (SIAPs). See the 21-04 TERM Charting Notice (PDF) for complete information.

Safety information bulletin

FAA

All Information for Operators (InFOs) (faa.gov)

All Safety Alerts for Operators (SAFOs) (faa.gov)

https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/MainFrame?OpenFrameSet

2021 InFOs

Number	Title
21005	Cancelled
21004 (PDF)	InFO 21004, Updates to "Cold Temperature Restricted Airports" Program.
21003 (PDF)	InFO 21003, Issues Related to the Use of Light Emitting Diode (LED) Landing Lights in an Icing Environment.
21002 (PDF)	InFO 21002, Cabin Air Quality Educational Materials.
21001 (PDF)	InFO 21001, New Oceanic Contingency Procedures, Effective November 5, 2020.

2021 SAFOs

Number	Title
21006 (PDF)	SAFO SAFO 21006, Boeing Model 757 and 767 Airplane Inadvertent Pilot Activation of Go-Around Mode.
21005 (PDF)	SAFO 21005, Risks Associated with Visual Approaches.
21004 (PDF)	SAFO 21004, Air Traffic Control (ATC) Notification and Pilot Awareness When Conducting an Instrument Landing System (ILS) Autoland Procedure.
21003 (PDF)	SAFO 21003, Inspection of Lavatory Fire Extinguishing Bottles on Aircraft Parked or Stored for a Prolonged Period of Time in a High-Temperature Environment.
21002 (PDF)	SAFO 21002, Fraudulent or Intentionally False Reproduction and/or Alteration of a Genuine Certificate of Flammability Test.

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2021 SAFOs	
Number	**Title**
21001 (PDF)	SAFO 21001, The Improper Maintenance and/or Installation of F&M Enterprises, Inc., and Stratus Tool Technologies, LLC, Oil Filter Adapters.

02/11/2021	AIR-21-18	Risk of Potential Adverse Effects on Radio Altimeters
10/11/2021	Info21005	Snow Related Aviation Selected Special Weather Report (SPECI) for Meteorological Terminal Aviation Routine Weather Reports (METAR).
29/11/2021	AIR-21-19	AERIAL TOW EQUIPMENT, Side Pull Hook

EASA

EASA Safety Publications Tool (europa.eu)

No Update for this month

Conflict zone information bulletin

Conflict Zone Information Bulletin (CZIB's) | EASA (europa.eu)

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Certification Up date

FAA do not need to be followed in this part due to ECFR – See part Regulation or safety Bulletins for completion.

EASA

FAA

ocument Title:	Order 8260.58B (CHG 1), U.S. Standard for Performance Based Navigation (PBN) Instrument Procedure Design
Summary:	This change incorporates general design criteria for helicopter instrument approaches and departures, transferring those criteria from Order 8260.42B (Change 2), U.S. Standard for Helicopter Area Navigation.
Documents for Download:	Draft Order (PDF) Draft Document Comment Grid (MS Word)
Reference:	***Title 14 of the Code of Federal Regulations (14 CFR)*** • Part 95, IFR Altitudes • Part 97, Standard Instrument Procedures
Comments Due:	November 29, 2021
How to Comment:	**Email comments to:** Email Comments **Deliver comments by mail or hand to:** Flight Procedures and Airspace Group (AFS-420) 6500 S. MacArthur Blvd. Registry Bldg., Room 104 Oklahoma City, OK 73169

Master MEL-OSD

MMEL

Document Title:	MMEL GVII-G500/G600 Rev 3, Gulfstream Aerospace, GVII-G500/G600
Summary:	Outlines the Master Minimum Equipment requirements and procedures for Gulfstream Aerospace aircraft models GVII G500 and GVII G600. Provides lists/tables and resources for use by inspectors, pilots, technicians, and others in the field and public sector.
Documents for Download:	Draft Document (PDF) Draft Document Comment Grid (MS Word)
Reference:	***Title 14 of the Code of Federal Regulations (14 CFR)*** • Part 91, General Operating and Flight Rules • Part 121, Operating Requirements: Domestic, Flag, and Supplemental Operations • Part 125, Certification and Operations: Airplanes Having A Seating Capacity of 20 or More Passengers or A Maximum Payload Capacity of 6,000 Pounds or More; and Rules Governing Persons On Board Such Aircraft • Part 129, Operations: Foreign Air Carriers and Foreign Operators of U.S.-Registered Aircraft Engaged In Common Carriage • Part 135, Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft. MMEL Policy Letter PL-25, MMEL and MEL Definitions MMEL Policy Letter PL-34, MMEL and MEL Preamble MMEL Policy Letter PL-36, 14 CFR Part 91 MEL Approval and Preamble
Document Title:	**MMEL AS-355 Rev 7, Airbus Helicopters, AS355E, AS355F, AS355F1, AS355F2, AS355N, AS355NP (H11EU)**
Summary:	Outlines the Master Minimum Equipment requirements and procedures for AS355E, AS355F, AS355F1, AS355F2, AS355N, and AS355NP. Provides lists/tables and

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	resources for use by inspectors, pilots, technicians, and others in the field and public sector.
Documents for Download:	Draft Document (PDF) Draft Document Comment Grid (MS Word)
Reference:	***Title 14 of the Code of Federal Regulations (14 CFR)*** • Part 91, General Operating and Flight Rules • Part 135, Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft. MMEL Policy Letter PL-25, MMEL and MEL Definitions MMEL Policy Letter PL-34, MMEL and MEL Preamble MMEL Policy Letter PL-36, 14 CFR Part 91 MEL Approval and Preamble MMEL Policy Letter PL-120, Emergency Locator Transmitters (ELT) MMEL Policy Letter PL-131, Radar (Radio) Altimeters for Rotorcraft
Document Title:	**MMEL A350 Rev 6, Airbus SAS, A350-900 Series, A350-1000 Series, All Models**
Summary:	Outlines the Master Minimum Equipment requirements and procedures for all models of Airbus series A350-900 and A350-1000 aircrafts. Provides lists/tables and resources for use by inspectors, pilots, technicians, and others in the field and public sector.
Documents for Download:	Draft Document (PDF) Draft Document Comment Grid (MS Word)
Reference:	***Title 14 of the Code of Federal Regulations (14 CFR)*** • Part 91, General Operating and Flight Rules • Part 121, Operating Requirements: Domestic, Flag, and Supplemental Operations • Part 125, Certification and Operations: Airplanes Having A Seating Capacity of 20 or More Passengers or A Maximum Payload Capacity

Document Title:	MMEL A350 Rev 6, Airbus SAS, A350-900 Series, A350-1000 Series, All Models
	of 6,000 Pounds or More; and Rules Governing Persons On Board Such Aircraft • Part 129, Operations: Foreign Air Carriers and Foreign Operators of U.S.-Registered Aircraft Engaged In Common Carriage • Part 135, Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft. MMEL Policy Letter PL-25, MMEL and MEL Definitions MMEL Policy Letter PL-34, MMEL and MEL Preamble MMEL Policy Letter PL-36, 14 CFR Part 91 MEL Approval and Preamble

OSD – FSBR

Operational Evaluation Guidance Material (OE GM) / Operational Evaluation Reports (OEB) / Operational Suitability Data (OSD) | EASA (europa.eu)

No Update for this month

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FAA Safety Briefing

CFIT and Overreliance on Automation

Technological advances in situational awareness have dramatically reduced the number of general aviation controlled flight into terrain (CFIT) accidents. However, the General Aviation Joint Steering Committee (GAJSC) has found that reliance on automation is a precursor to CFIT events. They found that automation use contributed to visual meteorological condition (VMC) and instrument meteorological condition (IMC) accidents in day and night flight conditions. Awareness of automation limitations and pilot proficiency in flying with and without automation are key to safe flight operations.

What is CFIT?

CFIT is defined as an unintentional collision with terrain (the ground, a mountain, a body of water, or an obstacle) while an aircraft is under positive control. Most often, the pilot or crew is unaware of the looming disaster until it is too late. CFIT most commonly occurs in the approach or landing phase of flight. In a typical year, there are about 40 CFIT accidents, about half of which are fatal.

Accidents where the aircraft is out of control at the point of impact are not known as CFIT. Rather, they are considered uncontrolled flight into terrain. Similarly, incidents resulting from deliberate acts, such as terrorism or suicide by the pilot, are also not considered to be CFIT.

Why Does CFIT Happen?

Pop Quiz: CFIT accidents occur primarily at night. True or False?

Surprisingly, the answer is false. It's logical to think that CFIT accidents usually involve inexperienced pilots in dark night and/or in IMC. In reality though, more than 75% of CFIT accidents in a typical year occur in daylight and more than half of those are in visual conditions. Although pilots involved in most CFIT accidents are not instrument-rated, more than 30% hold an instrument rating.

As far as CFIT accident precursors, continued visual flight rules (VFR) into IMC is the deadliest, proving fatal in most cases. The GAJSC did a study on a group of 41 CFIT accidents. Eleven, or 25% of these accidents were preceded by continued VFR into IMC and all of them were fatal. Six of those pilots were instrument-rated, five were not.

Helicopter striking powerlines.

Another big factor in CFIT accidents is wire strikes. You might think most wire strikes are confined to agricultural flying, but more than half do not involve this type of operation. Accident data also shows that wire strikes often occur below 200 feet above ground level. If you've got to fly low, give yourself some room. A little extra altitude — even 500 feet — will keep you above 90% of the wires.

Other top causes of CFIT are IFR procedural mistakes (e.g., flight below minimum enroute altitude, descent below MDA or minimum descent altitude) and unrealistic aircraft performance expectations (e.g., high density altitude, tailwinds on approach). To avoid these pitfalls, make sure you're in compliance with all aspects of the clearances you accept and the procedures you fly. Equally important is to thoroughly research the environment you plan to operate in, especially at high altitudes and/or with short or obstructed runways.

Technology Traps

Pilot in cockpit.

Another key precursor for CFIT is a pilot's overreliance on automation. This can lead to pilot complacency and degraded hand-flying competence and confidence.

Automation is by no means a bad thing; today's autopilots with associated navigation equipment can greatly reduce cockpit workload and help pilots fly with greater precision and accuracy. However, pilots must be keenly aware of an automation system's capabilities and limitations. That means understanding when your system is operating normally, and when a failure mode requires you to step in and fly manually. Automation systems are also dependent on good data to fly precisely, so be on the lookout for any faulty sensor input that could lead to an inappropriate response.

Creeping Complacency

The most insidious aspect of automation is its propensity to breed complacency and erode pilot confidence. The more time we spend on autopilot, the less time is available to maintain our hands-on skills. Instrument approaches on autopilot are so precise that it's tempting to "let George do it" all the time. But how would you feel if "George" decided to take a break in the middle of an instrument approach? Strive to achieve a balance between hands-on and automated flying.

https://youtu.be/Ud3SaAWgtV0

https://youtu.be/JBxg6hgbAr8

https://youtu.be/uLe4X2E73qc

FAASTeam CFIT Events (November 2021)

- 11/20 In-person Seminar Plant City, FL, @ 1100 Eastern: *How Can We Reduce or Eliminate CFIT Accidents?*
- 11/20 In-person Seminar Michigan City, IN, @ 1000 Central: *CFIT and Overreliance on Automation*
- 11/22 Webinar @ 2000 Eastern: *CFIT — The Greatest Scourge in Aviation*

Pipelines, Pathways, Partnerships

By Robert C. (Rico) Carty, FAA Flight Standards Service Acting Executive Director

Mission: Inspire youth from diverse backgrounds to pursue aerospace careers and create a consistent pipeline of professionals for a robust workforce of the future. — FAA STEM AVSED Action Plan

Greetings! As you might have seen in the September/October issue, Rick Domingo retired from his position as executive director of the FAA Flight Standards Service at the end of September. It is my pleasure to occupy this space in FAA Safety Briefing magazine in my capacity as acting executive director. I am especially happy to introduce an issue devoted to a subject very close to my heart: encouraging education in science, technology, engineering, and mathematics (STEM) as a portal to any of the many constantly evolving careers in aviation.

(Note: we'll talk about the "arts" component of the "STEAM" acronym a bit later in this issue.)

Aerospace is a huge field. According to the FAA's January 2020 report on The Economic Impact of Civil Aviation on the U.S. Economy, the U.S. aerospace system contributes to more than 5% of the U.S. Gross Domestic Product and accounts for $1.8 trillion in total economic activity. The industry also supports nearly 11 million jobs. Supporting this critical industry today and as it evolves into the future, while also ensuring the safety and efficiency of the U.S. aerospace system, requires a robust pipeline of future aerospace professionals who have the right skills to meet the 21st century challenges of the aerospace industry.

Not surprisingly, the FAA places high priority on doing its part to fill the future aerospace workforce pipeline with diverse and highly skilled individuals. The agency is working closely with partners in industry, academia, non-profits, and other government agencies to develop and implement a robust program to reach as many young people as possible, including those in underrepresented and underserved populations, and address industry needs. The FAA's STEM Aviation and Space Education (AVSED) program is an essential part of our outreach to the public.

The FAA's STEM AVSED program is not new. First established in 1961, the goal is to conduct outreach and prepare skilled professionals for careers in the aerospace industry. Over the last 60 years, the STEM AVSED program has reached countless numbers of young people through both formal and informal outreach and partnerships. While its fundamental aims are constant, the specifics of the program have evolved to meet the changing needs of the highly dynamic aviation industry. At this stage, the guiding principles for FAA STEM AVSED engagement include: (1) developing robust pipeline and pathway activities that reach diverse student populations; (2) using partnerships with industry, academia, and government; and (3) ensuring successful internal and external collaboration on these efforts.

Ambassadors for Aviation

You don't have to work for the FAA to contribute to the critical work of introducing young people to aviation. Each and every person with a passion for aviation can help by sharing that enthusiasm with people you know. You can get some specific ideas from information on the FAA website's STEM AVSED page. You might also consider finding ways to help publicize and celebrate National STEM Day on November 8. The possibilities are endless, and the rewards are great. I hope you'll take the time to get involved in this very important cause.

See attached

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Publications

Recherche : NEWS (icao.int)

News & Updates (faa.gov)

Newsroom & Events | EASA (europa.eu)

Sl No	Code	Title	Type	Edition
1	978-92-9258-539-6	الملحق الثامن — صلاحية الطائرات للطيران	Safety	
2	10088-6	Doc 10088 - Manuel sur la coopération civilo-militaire dans la gestion du trafic aérien	Safety	1
3	978-92-9258-278-4	Annex 10 — Aeronautical Telecommunications	Safety	2
4	978-92-9258-970-7	Приложение 10. Авиационная электросвязь	Safety	2
5	92-9194-954-X	Annexe 10 — Télécommunications aéronautiques	Safety	2
6	92-9194-957-4	Anexo 10 — Telecomunicaciones aeronáuticas	Safety	2
7	978-92-9258-278-4-1	Amendment 91, Annex 10 Aeronautical Telecommunications - Volume III - Communication Systems		

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8	978-92-9258-970-7-1	Поправка 91, Приложение 10. Авиационная электросвязь — Том III. Системы связи		
9	92-9194-954-X-1	Amendement no 91, Annexe 10 — Télécommunications aéronautiques — Volume III — Systèmes de télécommunication		
10	92-9194-957-4-1	Enmienda 91, Anexo 10 — Telecomunicaciones aeronáuticas — Volumen III — Sistemas de comunicaciones		
11	978-92-9265-592-1	Doc 10152 - دليل إدارة المخاطر عبر الحدود بشأن مرض فيروس كورونا	Security and Facilitation	3
12	10151-9	Doc 10151 - Manuel sur les performances humaines (PH) à l'intention des organismes de réglementation	Safety	1
13	978-92-9258-472-6	Annex 8 — Airworthiness of Aircraft	Safety	12
14	978-92-9258-534-1	Приложение 8 — Летная годность воздушных судов	Safety	12
15	978-92-9258-542-6	Annexe 8 — Navigabilité des aéronefs	Safety	12

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16	978-92-9258-492-4	Anexo 8 — Aeronavegabilidad	Safety	12
17	978-92-9258-540-2	附件8 — 《航空器适航性》	Safety	12
18	978-92-9265-583-9	Doc 10152 - Manuel sur la gestion des risques transfrontières liés à la COVID-19	Security and Facilitation	3
19	978-92-9265-628-7	Doc 10152 - Руководство по мерам управления факторами риска при международных операциях в связи с COVID-19	Security and Facilitation	3
20	978-92-9265-602-7	Doc 10152 - 2019 冠状病毒病跨境风险管理手册	Security and Facilitation	3

Innovation and cooperation key to aviation's sustainable and resilient future – ICAO Council President

Montréal and Brussels, 26 November 2021 - Pointing to the exemplary success of ICAO's High Level Conference on COVID-19 (HLCC), ICAO Council President Salvatore Sciacchitano encouraged European aviation leaders to continue pursuing innovation and cooperation as a means to address the interlinked challenges of climate change and pandemic recovery.

He presented his appeal in Brussels, at the ECAC-Eurocontrol Event on Artificial Intelligence on 24 November, and the following day at the 56th Session of the Eurocontrol Provisional Council.

"We have seen excellent levels of cooperation from all stakeholders, which is greatly encouraging," Mr. Sciacchitano remarked. "The post-pandemic scenario requires all of us to think differently from the past. It also reinforces our longstanding appreciation in global aviation that solidarity and regional cooperation are essential to our common success."

The HLCC Ministerial Declaration paves the way for aviation recovery and resilience. While it is not a legally binding document, it demonstrates the solidarity and determination, and conveys a strong political "message" to international communities and world economies.

One salient aspect of the consensus around the recovery of the global aviation sector is the focus on innovation. In order to support this, ICAO is aligning the organization's efforts and reforms with the needs of States and industry in mind, re-assessing how it interfaces with innovation and innovators.

It is a response to the fact that the aviation sector is at the dawn of a new era of innovation in aircraft design and operation, touching on aviation safety, security, efficiency and sustainability in very profound and inter-related ways, and demanding a holistic approach to integration.

The Council President pointed to the example of autonomous aircraft, which are envisioned performing rapid and spontaneous trajectories in a congested environment, and requiring the adoption of Artificial Intelligence (AI) as the fundamental backbone for key future airspace management capabilities.

Mr. Sciacchitano highlighted the success of Europe's model elaboration and adoption of regional cooperation mechanisms, which have enabled it to address major challenges and opportunities in air transportation at both the technical and political level, in all areas of aviation safety, security, and sustainability, and in response to emerging crises.

Looking beyond the achievement of aviation's complex path to recovery, the President noted the importance of prioritizing the evolution of approaches to aviation safety, to deliver "structural and system-wide capability to manage risk in an intensely collaborative and resource-shared environment."

Environmental sustainability was a further major theme of the President's advocacy in Brussels, notably within the context of ICAO's preparatory work on a Long Term Aspirational Goal. This work will culminate

A specialized agency of the United Nations, ICAO was created by governments in 1944 to support their diplomacy on international air transport matters. Since that time, countries have adopted over 12,000 standards and practices through ICAO which help to align their national regulations relevant to aviation safety, security, efficiency, capacity and environmental protection, enabling a truly global network to be realized. ICAO forums also provide opportunities for advice and advocacy to be shared with government decision-makers by industry groups, civil society NGOs, and other officially-recognized air transport stakeholders.

FAA Levies $161,823 Against Eight Passengers for Alleged Alcohol-Related Unruly Behavior

WASHINGTON – The U.S. Department of Transportation's Federal Aviation Administration (FAA) proposes $161,823 in civil penalties against eight airline passengers for alleged unruly behavior involving alcohol. Since Jan. 1, 2021, the FAA has received nearly 300 reports of passenger disturbances due to alcohol and intoxication.

Federal law prohibits passengers from consuming alcohol aboard a flight that is not served by a flight attendant. In August, the FAA administrator sent a letter to airports requesting that they work to prevent passengers from bringing "to-go" cups of alcohol aboard the aircraft.

The rate of unruly passenger incidents on commercial flights has dropped sharply since the FAA launched its Zero Tolerance campaign but the rate remains too high. Detailed current data on these incidents is available on our unruly passenger website.

The new cases announced today are:

- $40,823 against a passenger on an April 15, 2021, Southwest Airlines flight from San Jose, Calif., to San Diego, Calif. The FAA alleges the passenger drank their own alcohol during the flight, and continued to do so after a flight attendant told the passenger that was prohibited. The passenger then sexually assaulted the flight attendant. As the flight was descending into San Diego, the passenger entered the lavatory and smoked marijuana. The flight crew asked for law enforcement to meet the plane at the arrival gate. Police arrested the passenger for resisting arrest and public intoxication.
- $24,000 against a passenger on a March 31, 2021, Delta Air Lines flight from Fort Meyers, Fla., to Detroit, Mich. The FAA alleges the passenger repeatedly took off his facemask after crewmembers told him multiple times to keep it on. He repeatedly swore at other passengers and accused them of stealing his property. After crewmembers asked him multiple times to calm down, he yelled at one of them, "This is America. This is free speech. What don't you understand?" The passenger was reseated in the last row and a crewmember sat next to him because he had become a security risk. He appeared to be intoxicated and admitted he had been drinking in the airport before the flight. He then jumped out of his seat, stood very close to a crewmember as if he would lunge at her, pointed his finger in her face and yelled, "You!" The flight crew decided it was necessary for security reasons to divert to Atlanta, and asked for law enforcement to meet the plane at the gate. The flight arrived 45 minutes late in Detroit because of the diversion.
- $17,000 against a passenger on an April 16, 2021, jetBlue Airlines flight from New York City, N.Y., to Guayaquil, Ecuador. The FAA alleges the passenger drank alcohol that the airline did not serve to him, which is against federal regulation. The FAA further alleges the passenger urinated on the lavatory floor, verbally abused the flight crew, and refused to follow crew instructions to wear a facemask. The flight diverted to Fort Lauderdale, Fla., due to his actions.
- $16,000 against a passenger on a Jan. 24, 2021, Delta Air Lines flight from San Francisco, Calif., to Atlanta, Ga. The FAA alleges the passenger was told on two occasions that she could not drink her own mini bottles of alcohol on the flight. When the flight attendant approached her the second time, she finished the bottle in front of the flight attendant, who spoke with her about the alcohol rules. In response, the passenger pulled her mask down, came very close to the flight attendant's face, demanded the flight attendant's name and employee number, and began filming the flight attendant. The flight diverted to Las Vegas, and the crew asked for law enforcement to meet the passenger at the gate.

- $34,250 against a passenger on a March 14, 2021, American Airlines flight from Dallas/Fort Worth, Texas, to Burbank, Calif. The FAA alleges the passenger refused to wear his facemask several times at the beginning of the flight, including during the time he was asleep. When he woke, a flight attendant asked him to put his facemask on and asked if he wanted a drink or sandwich. He responded that he wanted a refund for the flight because he was skipped for food and beverage service. The flight attendant said they couldn't offer a refund and that he was not offered service initially because he was sleeping. He declined service and refused to wear his mask. A second flight attendant brought him a new mask and after several attempts to serve him, he requested an alcoholic beverage. The flight attendant made and delivered the drink. After he finished the drink, a flight attendant reminded him to wear his mask in between sips and after drinking. He argued that he was drinking and brought the empty glass to his lips. He continued to be combative during the flight and requested another alcoholic beverage. He was served another drink but threw the drink to the floor and stomped on it while the flight attendant was serving other passengers. He approached the flight attendants to ask for a third alcoholic beverage when a nearby passenger said he had had enough to drink and that he was out of line. The passenger began yelling profanities at the other passengers and crew. A flight attendant de-escalated the situation, and law enforcement was requested to meet the passenger at the arrival gate. He continued to not wear his mask properly for the remainder of the flight.
- $12,500 against a passenger on a Southwest Airlines flight from Dallas, Texas, to Fort Lauderdale, Fla., with a stop in Nashville, Tenn. The FAA alleges that during the flights, flight attendants had to ask the passenger multiple times to wear his mask properly over his mouth and nose. During the stop in Nashville, he consumed his own alcohol on board the plane after mixing it in a soft drink. A flight attendant told him that was prohibited and confiscated the drink. After a Southwest Airlines operations agent boarded the plane and told him not to consume his own alcohol and wear his facemask, he agreed. However, during the flight from Nashville to Fort Lauderdale, he went to the lavatory, mixed his own alcohol with a soft drink, and threw the empty liquor bottle into the toilet. When flight attendants tried to confiscate the drink, he quickly consumed it. The crew contacted law enforcement and gate security at Fort Lauderdale, and the passenger was escorted off the aircraft. Flight attendants subsequently found multiple empty mini alcohol bottles belonging to him.
- $9,000 against a passenger on a Feb. 3, 2021, United Airlines flight from Chicago, Ill., to Windsor Locks, Conn. The FAA alleges that, when flight attendants told the passenger that there were no alcoholic beverages or snacks available, he shouted profanities at them. He continued to yell and use profane language after a flight attendant led him to view the beverage cart to show no alcohol or snacks were available. The passenger also repeatedly pulled down his facemask throughout the flight. A flight attendant contacted the captain to request that a customer service representative meet the passenger at the arrival gate. The passenger then interfered with the flight attendant by taking photos and videos of the flight attendant. The captain and first officer were contacted a second time to request law enforcement to meet the passenger at the gate.
- $8,250 against a passenger on a May 14, 2021, Allegiant Air flight from Grand Rapids, Mich., to Punta Gorda, Fla. The FAA alleges that during the in-flight beverage service, the passenger and three others each ordered Bloody Mary mix and ice. The passenger then removed a bottle of vodka

from his carry-on bag. Despite a crewmember's warning that he could not drink his own alcohol, he passed the bottle to the other three passengers. A crewmember saw him consuming his own alcohol, again informed him of the prohibition, and asked him to hand over the bottle. The passenger handed over one empty and one half-full bottle, and told the crewmember to "kiss my a** and get away." The passenger then became loud, argumentative and rude. When a crewmember handed him a notice warning that his behavior violated FAA regulations, he crumpled it up, threw it, called the crewmember a vulgar name and flipped her off as she walked by his seat.

Today's fines are part of the agency's Zero Tolerance campaign against unruly passenger behavior. In September, the FAA met with airports, airlines, unions and industry partners to discuss what additional efforts the FAA and aviation stakeholders can take to prevent unruly passenger incidents.

The FAA launched a public awareness campaign to engage with airline passengers, flight attendants, pilots, and travelers on this issue. Campaign items to discourage unruly behavior include the FAA Kids Talk PSA and other content across its social media platforms.

The FAA does not have criminal prosecutorial authority but is working with the FBI and Department of Justice to refer cases as appropriate.

Federal law prohibits interfering with aircraft crew or physically assaulting or threatening to physically assault aircraft crew or anyone else on an aircraft. Passengers are subject to civil penalties for such misconduct, which can threaten the safety of the flight by disrupting or distracting cabin crew from their safety duties. Additionally, federal law provides for criminal fines and imprisonment of passengers who interfere with the performance of a crewmember's duties by assaulting or intimidating that crewmember.

The passengers have 30 days after receiving the FAA's enforcement letter to respond to the agency. The FAA does not identify individuals against whom it proposes civil penalties.

Message de Anne Rigail – Directrice Générale Air France

Chères clientes, chers clients,

Depuis le début de la crise sanitaire, nous mettons toute notre énergie à votre service, pour vous offrir la meilleure expérience de voyage possible.

Votre santé et votre bien-être restent notre première priorité. Air France Protect continue de vous garantir les mesures sanitaires les plus strictes sur l'ensemble de votre parcours et Air France vient de recevoir une reconnaissance mondiale pour la qualité de son programme sanitaire, en décrochant le « Prix d'Excellence COVID » décerné par Skytrax, une agence renommée de notation du transport aérien. Nous sommes également très heureux d'avoir été désignés par le même organisme « Meilleure compagnie européenne de l'année 2021 », au dixième rang mondial. Ces distinctions nous encouragent à poursuivre nos investissements afin de vous proposer une offre aux plus hauts standards mondiaux. Pour en profiter pleinement et vous

permettre de réserver vos prochains voyages avec nous en toute sérénité, nos billets sont exceptionnellement 100% remboursables et modifiables, pour des voyages jusqu'au 30 juin 2022.

Pour la saison « Hiver 2021 » qui commence, nous continuons à vous proposer un réseau d'une grande richesse, qui puisse s'adapter à vos envies. 182 destinations, 87 en long-courrier et 95 en court et moyen-courrier, sont d'ores et déjà disponibles sur le site d'Air France, avec des nouveautés pensées pour l'évasion : Rovaniemi (Laponie, Finlande), Tenerife (Canaries, Espagne), Zanzibar (Tanzanie), Mascate (Sultanat d'Oman), Colombo (Sri Lanka) ou encore Banjul (Gambie).

Et avec la réouverture tant attendue des Etats-Unis aux voyageurs vaccinés, effective depuis le 8 novembre, nous allons progressivement vous proposer davantage de vols de et vers nos destinations américaines : New York JFK, Boston, Washington DC, Détroit, Atlanta, Chicago, Miami, Houston, Seattle, San Francisco et Los Angeles. Ces 11 destinations bénéficient de notre service digital ReadyToFly, destiné à vous simplifier le voyage. Gratuit et facultatif, il vous permet d'obtenir la confirmation que vous êtes en possession de tous les justificatifs sanitaires nécessaires avant même de vous rendre à l'aéroport. Désormais disponible sur plus de 143 liaisons au départ de 89 aéroports, ReadyToFly se déploie progressivement sur le réseau d'Air France.

Sur notre réseau moyen-courrier, nous serons heureux de vous accueillir dans notre tout nouveau salon situé au terminal 2F de l'aéroport Paris-Charles de Gaulle. Vous pourrez profiter d'un espace lumineux de 3.000 m2, spécialement conçu pour votre confort et votre bien-être.

La nouveauté est aussi dans les airs, avec la mise en service fin octobre de notre tout premier Airbus A220-300, fleuron de notre réseau court et moyen-courrier, destiné à remplacer nos Airbus A318 et A319. Cet appareil de nouvelle génération présente des performances remarquables : une réduction de 20% des émissions de CO^2 et de 34% de l'empreinte sonore. Avec une flotte de 60 appareils livrés d'ici 2025, il marque une étape importante dans la réduction de notre empreinte carbone sur le court et moyen-courrier, un an après l'introduction d'un autre appareil de nouvel génération, l'Airbus A350, sur notre réseau long-courrier. Mais au-delà de la performance technique, l'Airbus A220-300 vous proposera surtout une expérience à bord largement améliorée avec une cabine lumineuse, 80% de sièges côté hublot ou couloir, des fauteuils confortables – les plus larges de la catégorie –, le wifi à bord et des coffres à bagages plus volumineux pour accueillir davantage de bagages à main.

Mais au-delà des mots, c'est avec ces quelques images de notre Airbus A220 en vol que je souhaite partager avec vous notre émotion d'accueillir un si bel avion. Des images qui sont, à elles seules, une invitation au voyage. Vous pouvez actuellement découvrir notre A220 sur des destinations telles que Berlin, Venise, Madrid, Barcelone ou Milan, et bien d'autres suivront rapidement.

Le mois dernier, Air France a soufflé ses 88 bougies. Depuis 1933, nous avons traversé bien des tempêtes et nous sommes toujours pleinement mobilisés pour faire face à la crise actuelle, dont l'intensité est inédite. Nous continuons de nous réinventer pour avoir toujours le plaisir de vous accueillir dans nos aéroports et dans nos avions, pour que le voyage avec Air France continue d'être synonyme de plaisir et de découverte.

Prenez soin de vous et de vos proches,

Bien chaleureusement,

Safety Precautions to Take When You Fly

The holiday season is upon us! Are your travel plans underway? Make sure safety is at the top of your itinerary. In this episode, we explore safety precautions you should take when you fly, as well as the dos and don'ts for packing your bags. If you're thinking about chartering an airplane, we'll help you learn the rules, regulations, and requirements so you can easily identify a safe air charter service.

Listen to the episode on FAA.gov, Apple Podcasts, Stitcher, or Google Podcasts!

You'll hear from: Jay Sorah, an FAA Hazardous Materials Aviation Safety Specialist; Don Riley, an FAA Safety Inspector; and Ryan Waguespack, Senior Vice President of Aircraft Management and Air Charter Services for the National Air Transportation Association.

FAA Invites Public Input on Draft Environmental Review to Operate Huntsville International **Airport as Commercial Space Reentry Site**

WASHINGTON – The Federal Aviation Administration (FAA) invites the public to comment on a Draft Environmental Assessment (EA) for Huntsville International Airport (HSV) to serve as a reentry site for horizontally landed commercial reentry vehicles. The Draft EA also addresses a proposal by Sierra Space Corporation to land its Dream Chaser vehicle at the site up to eight times between 2023 and 2027.

The FAA plans to hold a virtual public hearing for the draft review on Dec. 9 at 5 p.m. Central Time as part of the 40-day public comment period that ends on Dec. 22. Public comments can also be submitted to HuntsvilleReentry@icf.com.

The Huntsville-Madison Airport Authority is seeking a Reentry Site Operator License and Sierra Space is seeking a Vehicle Operator License. The draft review is part of both licensing processes. It evaluates the potential environmental impacts of the proposed reentry operations, including associated airspace closures.

Following the public comment period, the FAA will revise the draft as appropriate and prepare a Final EA. The FAA will then either issue a Finding of No Significant Impact or a Notice of Intent to prepare a more comprehensive Environmental Impact Statement.

The FAA will make licensing determinations after completing the environmental review and all applicable safety and financial responsibility requirements are met.

Any future commercial space vehicle operator seeking to conduct reentry operations at the proposed HSV site would need to obtain its own FAA license, which would require a separate environmental review. The Authority also would need to modify its license to accommodate another operator at HSV.

Currently, there are 12 FAA-licensed commercial spaceports in Alaska, California, Colorado, Florida, New Mexico, Oklahoma, Texas and Virginia.

FAA Levies $201,287 Against Passengers for Alleged Assault-Related Unruly Behavior

WASHINGTON – The U.S. Department of Transportation's Federal Aviation Administration (FAA) proposes $201,287 in civil penalties against 10 airline passengers for alleged unruly behavior involving physical assault. Since Jan. 1, 2021, the FAA has received more than 100 reports of passenger disturbances involving physical assault. Federal law prohibits passengers from assaulting fellow passengers or crew aboard a flight.

The rate of unruly passenger incidents on commercial flights has dropped sharply since the FAA launched its Zero Tolerance campaign but the rate remains too high. Detailed current data on these incidents is available on our unruly passenger webpage. The fines are part of the agency's Zero Tolerance campaign against unruly passenger behavior. The FAA lacks criminal prosecutorial authority but has referred cases to the Department of Justice where the evidence supports criminal review.

The new cases announced today are:

- $32,000 against a passenger on a May 18, 2021, Horizon Air flight from Austin, Texas, to San Francisco, Calif. The FAA alleges the passenger did not follow crew instruction to fasten her seatbelt. She punched and screamed at her husband and son, repeatedly, diverting flight attendants from their duties. She threw trash at a flight attendant, and snatched cookies from a nearby passenger.
- $20,000 against a passenger on a Jan. 4, 2021, Delta Air Lines flight from New York, N.Y., to Los Angeles, Calif. The FAA alleges the passenger yelled orders at multiple flight attendants while the plane taxied from the gate. He removed his seatbelt, left his seat while the fastened seatbelt sign was on, and refused to return to his seat after a flight attendant instructed him to do so. He threatened a flight attendant by saying he was going to "[expletive] up his a**." While moving up and down the aisle during taxiing, he made physical contact with a flight attendant, and continued yelling profanities. The flight returned to the gate and law enforcement officers were forced to board the flight to remove the man.
- $26,787 against a passenger on a May 5, 2021, Southwest Airlines flight from New York City to Chicago, Ill. The FAA alleges that during final descent and despite crew instruction to remain seated, he left his seat and attempted to enter the cockpit. Flight attendants did not consider his actions to be aggressive but determined he needed additional observation. After he returned to his seat, he incorrectly thought the aircraft was already at the gate and attempted to remove his luggage from the overhead bin. Flight attendants coaxed him to the back of the aircraft and sat him on the floor to ensure he remained seated during landing. While the aircraft braked during touch down, flight attendants attempted to hold him down to keep him from injuring himself. He began punching one of the flight attendants. The flight attendant required medical attention. Law enforcement met the passenger at the arrival gate.

- $25,000 against a passenger on a Feb. 3, 2021, Southwest Airlines flight from Boston, Mass., to Chicago Ill. The FAA alleges the passenger refused crew instruction to stow her carry-on luggage in the overhead bin. Crew instructed her to exit the aircraft and speak with ground station personnel. Ground station personnel informed her that she could not continue with the flight. She re-boarded the aircraft to collect her carry-on luggage. Instead, she sat in a seat, held onto the armrest, shouted loudly and aggressively, and used derogatory language and obscene gestures towards the crewmember. As she disembarked, she broke loose from a travel companion's grip and spat on a crewmember. Police met her at the gate.
- $24,000 against a passenger on a Jan. 21, 2021, American Airlines flight from Tampa, Fla., to Miami, Fla. The FAA alleges that the passenger failed to follow crew instruction to wear her facemask during boarding. The passenger and her travel companions were disruptive while the aircraft stayed at the gate due to a minor mechanical issue. Several passengers requested a seat reassignment to avoid the group. A flight attendant asked her to wear her facemask but she removed it as the flight attendant walked away. The captain requested to remove her from the aircraft. On her way off the plane, she physically assaulted the flight attendant by shoving her in the chest.
- $24,000 against a passenger on a March 28, 2021, Southwest Airlines flight from New Orleans, La., to Baltimore, Md. The FAA alleges that a flight attendant instructed her to comply with the facemask policy. As the flight attendant continued trash pick-up, she intentionally elbowed him in the side and kicked him. This behavior was reported to the captain who locked down the cockpit and requested law enforcement to meet the woman at the gate.
- $24,000 against a passenger on a Dec. 27, 2020, Delta Air Lines flight from Detroit, Mich., to Salt Lake City, Utah. The FAA alleges she refused to follow crew instruction to wear her mask, threatened crewmembers, cursed at crewmembers and shoved a crewmember.
- $23,000 against a passenger on a March 11, 2021, American Airlines flight from Dallas-Fort Worth, Texas, to Aspen, Colo. The FAA alleges that the passenger verbally abused flight attendants after she realized her assigned seat would not recline. Multiple passengers offered to switch seats with her, but she repeatedly declined and kept yelling at flight attendants. She agreed to switch seats with another passenger but continued to verbally abuse flight attendants. She then struck a flight attendant on the right forearm, and attempted to do so again. Further, she repeatedly refused to comply with the facemask policy. Law enforcement met her at the arrival gate.
- $17,500 against a passenger on a Nov. 7, 2020, jetBlue Airlines flight from Newark, N.J., to Fort Lauderdale, Fla. The FAA alleges the passenger used profane language and physically assaulted a flight crewmember. The man yelled at the crewmember to "get his fat a** out of my face," and then pushed him. The captain diverted the flight to Richmond, Va. Police met the passenger at the gate.

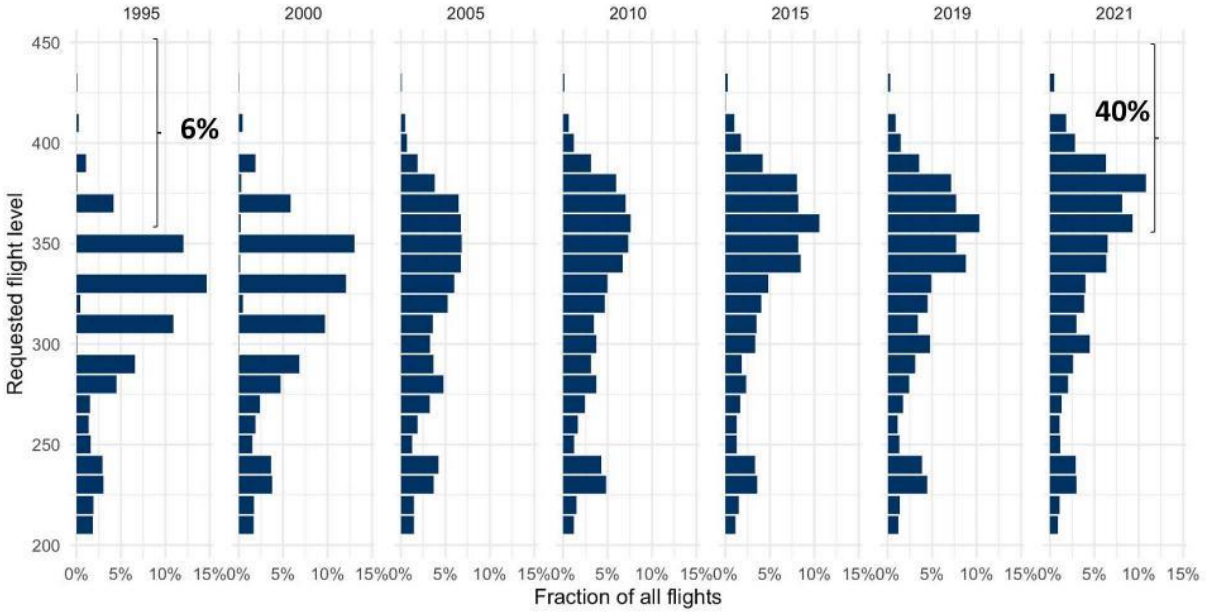
- $9,000 against a passenger on a March 20, 2021, American Airlines flight from Cancun, Mexico, to Indianapolis, Ind. As the flight descended, he stomped and/or kicked the feet of the passenger seated behind him. The captain asked police to meet the flight at the arrival gate.

The FAA launched a public awareness campaign to engage with airline passengers, flight attendants, pilots, and travelers on this issue. Campaign items to discourage unruly behavior include the FAA Kids Talk PSA and other content across the FAA's social media platforms.

The passengers have 30 days after receiving the FAA's enforcement letter to respond to the agency. The FAA does not identify individuals against whom it proposes civil penalties.

EUROCONTROL DATA SNAPSHOT

Aircraft keep flying higher, creating extra airspace capacity and burning less fuel, saving 1 million tonnes of CO2 per year



In their flight plans, aircraft request to cruise at an altitude ('flight level') that's most efficient for them, so that they burn less fuel. When airspace is congested, they might request lower or be kept lower by air traffic management. The graph shows how requested cruise levels have increased over the last 25 years: in September 1995 only 6% of flights requested to cruise above flight level 350 (FL350, approximately 35,000 feet), by September 2021 40% of flights did.

Two advances in aircraft technology have driven cruise levels higher over this period. First, altimeters improved to the point where it was safe to switch from 2,000 to 1,000 foot vertical spacing in the upper airspace, as it had been in lower airspace for some years. The graph shows the benefits of the 'Reduced Vertical Separation Minima' (RVSM) project through which EUROCONTROL, air navigation service

providers and airlines came together to transform European airspace at the beginning of the century, opening up the 'even-numbered' flight levels up to FL400. As a result by 2005, rather than having 13% of flights asking to fly at FL350 (in 2000), the traffic was more evenly spread.

The second advance was less of a revolution in airspace management and more an evolution of the aircraft fleet: newer aircraft are built to cruise efficiently at higher levels. By September 2021, the most-requested cruise level was FL380, 5,000 feet (1.5km) higher than 1995's most-requested FL330.

We estimate that the efficiency improvements resulting from the six new flight levels deliver annual fuel savings of over 300,000 tonnes, equivalent to reductions of almost 1 million tonnes of CO2 every year. RVSM demonstrates that the provision of greater capacity can help to reduce the environmental impact of aviation by offering more flexibility to airspace users and ANSPs allowing them to implement more efficient and environmentally friendly operations.

The graph shows growing demand at FL410 and FL430. This is particularly true over the North Atlantic, and the air navigation providers responsible are beginning to think about what would be involved in extending RVSM above FL410.

See attached

ICAO/ACI Obstacle Limitation Surfaces Symposium (OLSS 2021)

The joint International Civil Aviation Organization (ICAO)/Airports Council International (ACI) Obstacle Limitation Surfaces Symposium (OLSS 2021) aims at increasing international awareness of the proposed changes and obtaining feedback from States and industry prior to ICAO adoption for global applicability.

The materials, presentations and panel discussions of the symposium will provide a platform for ICAO to engage with concerned stakeholders such as States, aerodromes, air navigation service providers, airlines, town and land-use planners, and pilots, on the proposed new obstacle limitation surfaces (OLS) concept, including associated aeronautical studies.

FAA Proposes Medical Requirements for Commercial Hot-Air Balloon Pilots

WASHINGTON— The Federal Aviation Administration (FAA) proposed a rule today requiring commercial hot-air-balloon pilots to hold medical certificates when operating for hire. The rule would mandate a second-class medical certificate, the same standard required for commercial pilots.

"Balloon pilots are responsible for the safety of their passengers," FAA Administrator Steve Dickson said. "This proposed rule would ensure that balloon pilots meet the same medical requirements as pilots of other commercial aircraft."

Currently, commercial balloon pilots are exempt from the medical requirement. In the FAA Reauthorization Act of 2018, Congress directed the FAA to revise the medical certification standards for

commercial balloon pilots. The draft rule also addresses a National Transportation Safety Board (NTSB) recommendation that the FAA remove the exemption.

The FAA in recent years took steps to increase the safety of hot-air-balloon tourism by working with the Balloon Federation of America (BFA) on an accreditation program. The program includes voluntary standards for pilots and operators and offers multiple tiers of BFA safety accreditation.

The FAA will publish the draft rule in the Federal Register in November, and the public will have 60 days to provide comments. After the comment period closes, the FAA will review all comments before publishing a final rule.

EUROCONTROL Data Snapshot

In a recent snapshot, we showed how checking COVID documents was a significant cause of delays to passengers, up to 0.7 minutes per flight in July 2021. Now looking back over the summer months, despite en-route ATFM regulations being lower than 2019, we see that delays in total have been climbing again. Summers 2018 and 2019 were very poor for delay, with 18 and 16 minutes of delay per flight on average. Summer 2021 is lower than that but, at 10.9 minutes per flight, already close to the 2010-2017 average (12 minutes).

Airlines categorise their delays into primary causes and reactionary delays, the latter caused by delays on earlier flights (of this aircraft, for this crew, or these passengers). The most common primary delays are from airlines' own processes, such as baggage loading, boarding or refuelling. Airport processes (such as check-in), air traffic management and government (such as health checks) make up the remainder. While reactionary delay in theory is due to some original, primary cause, in practice the situation is too complex to be worth splitting 'reactionary' amongst the primary causes.

As passengers, most of us have experienced reactionary delays: arriving at the boarding gate to find the aircraft hasn't yet arrived. It's a problem carried from flights early in the day to those later on. Airlines try to break the chain of delays by building gaps into the schedule, or switching aircraft, or accelerating processes such as boarding to make up lost time. With relatively light traffic this summer, they were able to do more of that, which is why the rate was relatively low (36% of total, rather than 45%).

These solutions rely on luck (can we get everyone boarded quickly?) or are costly in capacity (having spare aircraft). Better to aim to stop the delays at source. That's why the EUROCONTROL Network Manager and all the operational teams at airlines, airports and air navigation service providers work to reduce (primary) delays in the 'first rotation', the first couple of flights each day. 10 minutes of primary delay during the first rotation can cause 40 or 50 minutes in total across the day.

Total delay remains relatively low (19 million minutes) compared to 2018-2019 (45-50 million). But, as the recovery continues, keeping down delays on the first flights of the day needs to be a priority.

See attached

Cabinet d'Expertise en Aéronautique - Inscrit près la cour d'appel d'Amiens – Indépendant de l'EASA

15, le souguehain – Sénécourt – 60140 BAILLEVAL - tél : +33 (0)6 13 66 05 99 - mail : *philippe.julienne.aeroprojet@live.fr*

Sites de surveillance

https://flightsafety.org/toolkits-resources/

https://aviation-safety.net

http://www.skybrary.aero

https://asrs.arc.nasa.gov/

Bulletin Officiel des Ministères de la Transition écologique et solidaire et de la Cohésion des territoires et des Relations avec les collectivités territoriales (developpement-durable.gouv.fr)

SIA - La référence en information aéronautique - Page d'accueil (aviation-civile.gouv.fr)

Info sécurité DGAC | Ministère de la Transition écologique (ecologie.gouv.fr)

http://www.developpement-durable.gouv.fr/Objectif-Securite-lebulletin.html

http://www.bea.aero/

http://ad.easa.europa.eu/sib-docs/page-1

https://www.easa.europa.eu/eccsa

http://www.jigonline.com/all-bulletins/

Accueil (defense.gouv.fr)

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NEW ICAO METHODOLOGY FOR ASSESSING AND REPORTING RUNWAY SURFACE CONDITIONS (GRF)

IMPLEMENTATION ACTION PLAN TEMPLATE (to be tailored and detailed by each State)

STATE NAME

Note: IDs 2, 4, 7, 10, 11, 14 and 15 will be monitored as part of the implementation

ID	ACTION	ENTITY RESPONSIBLE	TARGET DATE[1]	REMARKS
GRF 1	Review ICAO provisions and guidance and other Organisations guidance (see below)	CAA		
GRF 2	Designate a focal point to coordinate implementation activities at the national level	CAA		
GRF 3	Identify concerned focal points in each entity (CAA, Airport, ANSP, Aircraft operators – include BA, GA and military as applicable)	CAA, Airports, ANSP, Aircraft operators		
GRF 4	Establish an Implementation Coordination Team including staff from the identified stakeholder entities	CAA		
GRF 5	Conduct the initial training for the CAA, Airports, ANSP and Aircraft Operators' personnel (e.g. ICAO/ACI/IATA online courses, national awareness workshop, etc.)	CAA		
GRF 6	Identify regulations, standards, procedures and guidance material to be developed/amended	National Focal Point and the Implementation Coordination Team		
GRF 7	Develop a detailed national implementation plan and safety risk assessment. Each entity should also establish its specific implementation plan and safety risk assessment.	CAA, Airports, ANSP, Aircraft operators		
GRF 8	Identify the necessary means and resources for the implementation (human, financial and material resources)	National Focal Point and the Implementation Coordination Team		
GRF 9	Consult with Airport Runway Safety Teams	Airports		

[1] Target dates are indicative only and should be replaced by realistic dates by each State

ID	ACTION	ENTITY RESPONSIBLE	TARGET DATE[1]	REMARKS
GRF 10	Develop and promulgate regulations and standards	CAA		
GRF 11	Develop procedures and guidance material (translate if required)	National Focal Point and the Implementation Coordination Team		
GRF 12	Provide the necessary means and resources for the implementation (human, financial and material resources)	CAA, Airports, ANSP, Aircraft operators		
GRF 13	Conduct On-the-Job Training (OJT) on the implementation (ACI on-site GRF training course is available to support Airports)	CAA, Airports, ANSP, Aircraft operators		
GRF 14	Perform tests/trials prior to the effective implementation	All		
GRF 15	Applicability date for the new methodology for assessing and reporting runway surface conditions	All	4/Nov/2021	

Notes: ICAO Runway Safety Go-Team Virtual Assistance Missions are available to support States and Airports. ACI APEX Safety Reviews are also available to support Airports.

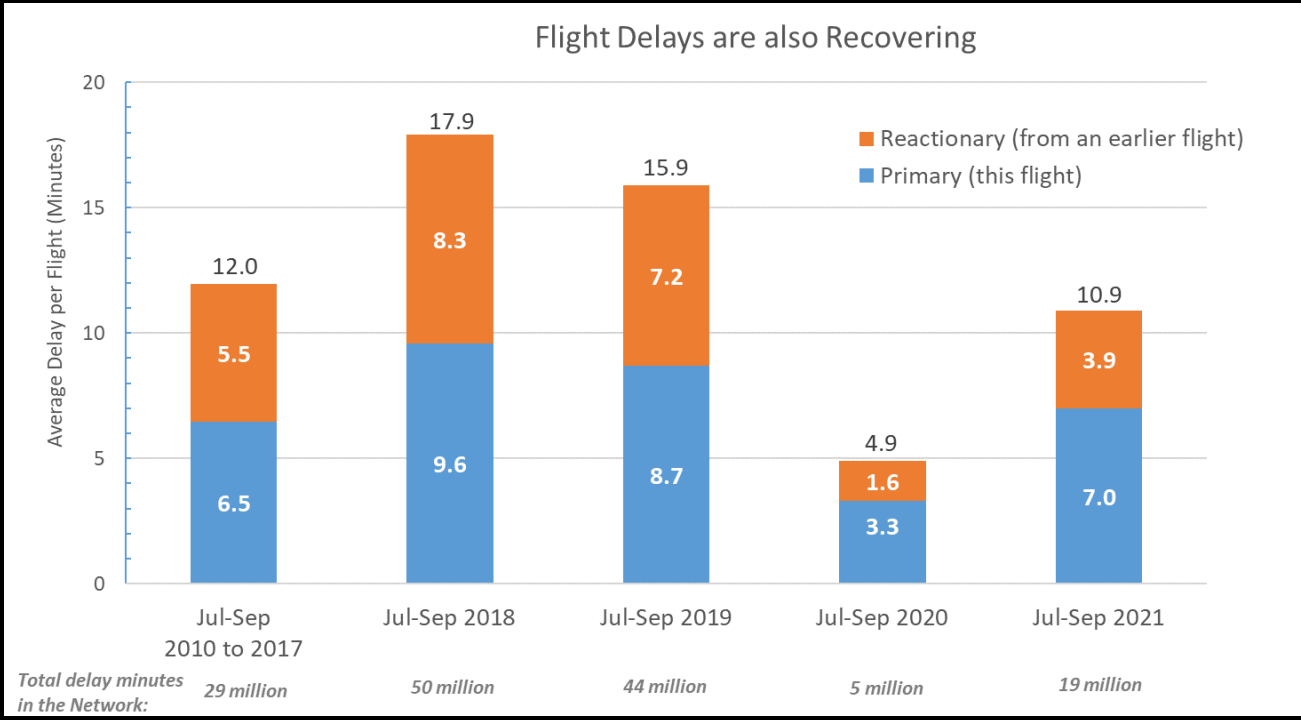
References:

- Annexes 3, 6, 8, 14, & 15 – applicability date 5 Nov 2021
- PANS Aerodromes (Doc 9981), Aeronautical Information Management Doc 10066), & Air Traffic Management (Doc 4444)
- Assessment, Measurement and Reporting of Runway Surface Conditions (Cir 355)
- Aeroplane Performance Manual (Doc 10064)
- EUR/NAT Guidance on the Issuance of SNOWTAM
- ICAO/ACI Online Course for Airport Operators
- ICAO/IATA Online Course for Aircraft Operators & Flight Crew
- *Future* ICAO-IATA-CANSO Online Course for ANSPs, ATS & AIS staff
- ICAO GRF web site https://www.icao.int/safety/Pages/GRF.aspx
- ICAO Global GRF Symposium https://www.icao.int/Meetings/grf2019/Pages/default.aspx

EUROCONTROL Data Snapshot

Flights have recovered this summer, but so have delays. A saving grace is that reactionary delays remain relatively low.

3 November 2021



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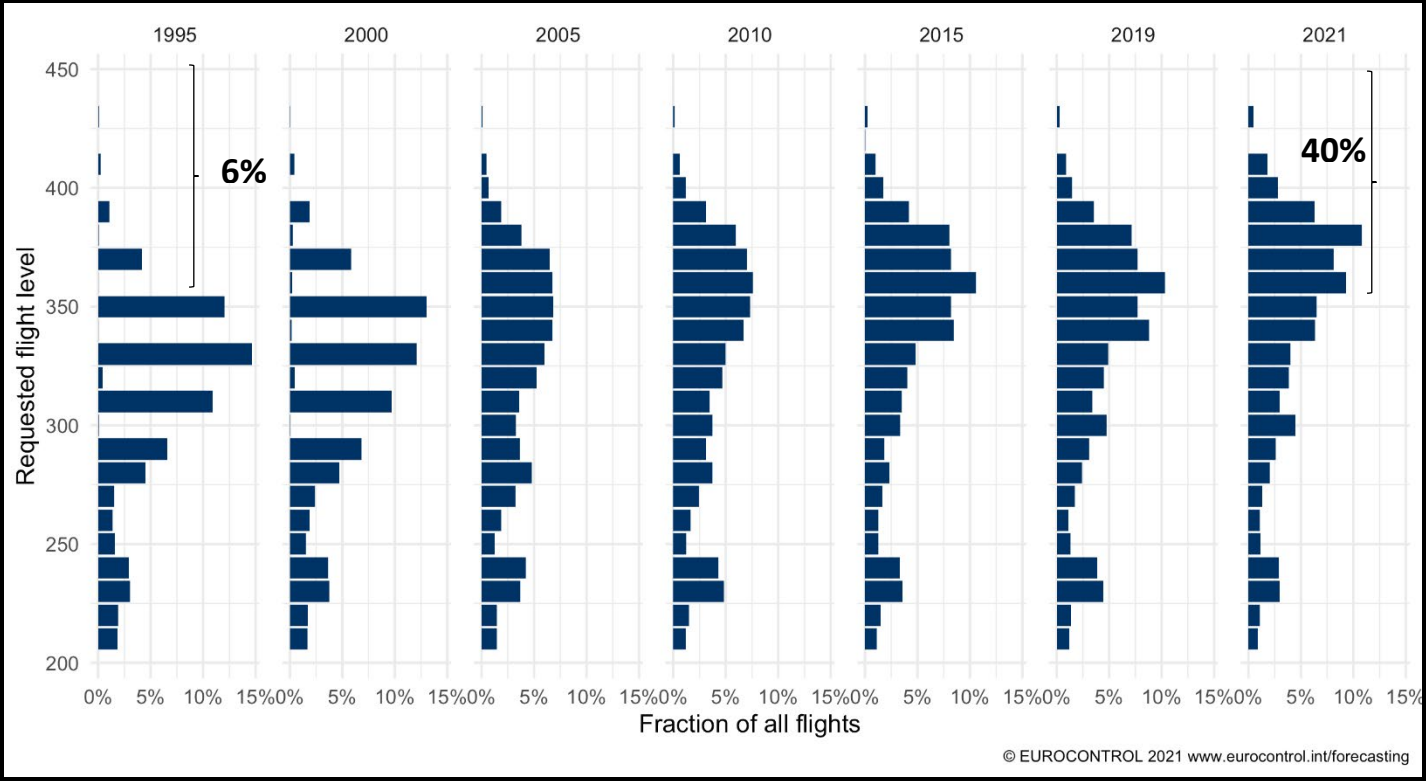
Total delay remains relatively low (19 million minutes) compared to 2018-2019 (45-50 million). But, as the recovery continues, keeping down delays on the first flights of the day needs to be a priority.

Technical Bits: Delays from all causes are monitored and recorded by airlines and airports and reported direct to EUROCONTROL. This data is the basis for these statistics. Regular reports on delays from all causes are available here

EUROCONTROL Data Snapshot

Aircraft keep flying higher, creating extra airspace capacity and burning less fuel, saving 1 million tonnes of CO_2 per year.

9 November 2021



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Two advances in aircraft technology have driven cruise levels higher over this period. First, altimeters improved to the point where it was safe to switch from 2,000 to 1,000 foot vertical spacing in the upper airspace, as it had been in lower airspace for some years. The graph shows the benefits of the 'Reduced Vertical Separation Minima' (RVSM) project through which EUROCONTROL, air navigation service providers and airlines came together to transform European airspace at the beginning of the century, opening up the 'even-numbered' flight levels up to FL400. As a result by 2005, rather than having 13% of flights asking to fly at FL350 (in 2000), the traffic was more evenly spread.

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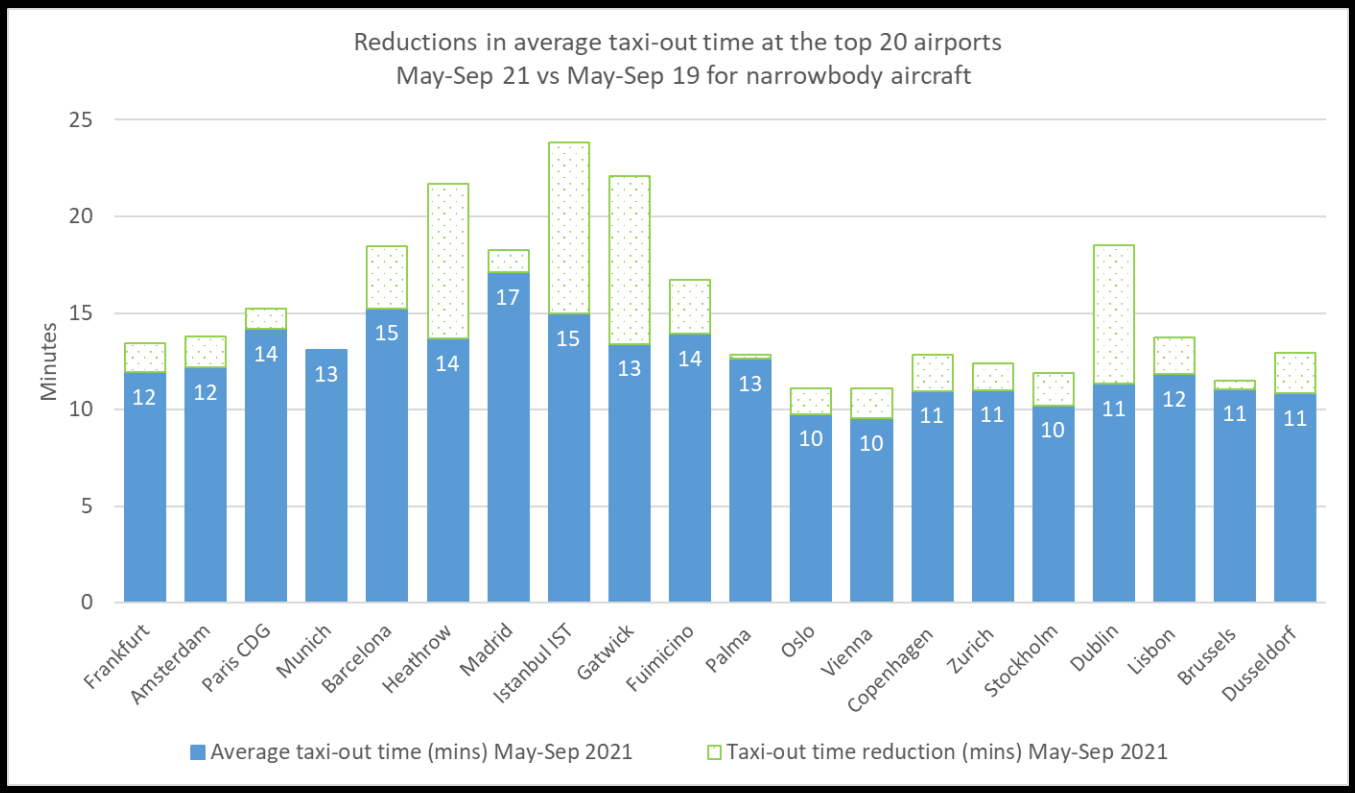
The graph shows growing demand at FL410 and FL430. This is particularly true over the North Atlantic, and the air navigation providers responsible are beginning to think about what would be involved in extending RVSM above FL410.

Technical Bits: Data are for all flights in the Network Manager area, in September of the year. Some aircraft request cruise levels which are not shown in the figure, but *are* counted in the fraction of all flights. Data on requested and actual cruise flight levels are available in the R&D Data Archive.

EUROCONTROL Data Snapshot

Welcome benefits as taxi-out times fell this summer - the challenge is to keep them low.

30 November 2021



We publish seasonal data on taxi times to help airlines develop their schedules and plan their operations. The latest data show that, even as traffic recovered to 60 or 70% of 2019 this summer, some of the longest taxi times were cut. The graph illustrates that the time taken to taxi out to the runway, for narrowbody aircraft (the majority of flights) dropped by 7-9 minutes in some cases.

The shorter taxi times were due to a variety of reasons: fewer flights, so less congestion on the taxiways and less queueing for take-off; less need to use stands or gates that are further from the runway, or down congested cul-de-sacs; even closure of more-distant runways in some cases.

Less time taxiing means less fuel burned: a small contribution to better air quality around the airport, and less CO_2 from the flight. In the longer-term, if shorter taxi-times persist, they allow schedules to be adapted to get more out of each aircraft – making the most of a very expensive asset.

But there are also costs, largely from *unexpected* changes in and lack of predictability of taxi times. If a flight takes off 5 or 10 minutes earlier than planned, then it could cause an unexpected peak in a congested sector of airspace, or remove a peak of demand that had led to regulation of a flow to avoid overloading a sector. The first puts unexpected pressure on controllers, the second means potentially unnecessary delay for other flights. On top of this, the flight will then arrive early at the destination airport, upsetting plans there. And while the flight will burn less fuel, more fuel will have been carried than necessary, which costs CO_2.

Airlines build schedules that last a whole (summer or winter) 'season', so that they can sell tickets with fixed times to passengers. Reductions in taxi times are welcome, but if they keep changing, airlines' commercial departments can't readily change the schedules, so operations departments and air traffic managers have to manage the variability every day to keep the flights moving smoothly.

Technical Bits: Taxi-in times are also available here: Seasonal Taxi Times. We separate narrowbody from widebody aircraft since they tend to have different average taxi times.

November/December 2021

FAA Safety BRIEFING

Full STEAM Ahead!

Preparing the Aviation Workforce of Tomorrow

Federal Aviation Administration

U.S. Department
of Transportation

**Federal Aviation
Administration**

ISSN: 1057-9648
FAA Safety Briefing
November/December 2021
Volume 60/Number 6

Published six times a year, *FAA Safety Briefing*, formerly *FAA Aviation News*, promotes aviation safety by discussing current technical, regulatory, and procedural aspects affecting the safe operation and maintenance of aircraft. Although based on current FAA policy and rule interpretations, all material is advisory or informational in nature and should not be construed to have regulatory effect. Certain details of accidents described herein may have been altered to protect the privacy of those involved.

The Office of Management and Budget has approved the use of public funds for printing *FAA Safety Briefing*.

ABOUT THIS ISSUE…

The November/December 2021 issue of *FAA Safety Briefing* focuses on the FAA's efforts to inspire our nation's youth, especially young women and those from diverse backgrounds, to pursue aerospace careers and create a consistent pipeline of professionals for a robust workforce of the future. We'll look at the important role science, technology, engineering, arts, and math (STEAM) education plays in this endeavor, and how FAA partnerships with industry, academia, non-profits, and government agencies help to develop STEM/STEAM outreach and educational programs. We will also explore some of the many aerospace career options available and ways you can help introduce others to this exciting and growing industry.

Contact Information
The magazine is available on the internet at:
www.faa.gov/news/safety_briefing

Comments or questions should be directed to the staff by:

- **Emailing:** SafetyBriefing@faa.gov
- **Writing:** Editor, FAA Safety Briefing, Federal Aviation Administration, AFS-850, 800 Independence Avenue, SW, Washington, DC 20591
- **Calling:** (202) 267-1100
- **Tweeting:** @FAASafetyBrief

We also encourage readers to check out the many aviation safety resources available at: FAASafety.gov.

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FAA Safety BRIEFING

The FAA Safety Policy Voice of Non-commercial General Aviation

DEPARTMENTS

PIPELINES, PATHWAYS, PARTNERSHIPS

Mission: *Inspire youth from diverse backgrounds to pursue aerospace careers and create a consistent pipeline of professionals for a robust workforce of the future.* — FAA STEM AVSED Action Plan

Greetings! As you might have seen in the September/October issue, Rick Domingo retired from his position as executive director of the FAA Flight Standards Service at the end of September. It is my pleasure to occupy this space in *FAA Safety Briefing* magazine in my capacity as acting executive director. I am especially happy to introduce an issue devoted to a subject very close to my heart: encouraging education in science, technology, engineering, and mathematics (STEM) as a portal to any of the many constantly evolving careers in aviation.

(*Note: we'll talk about the "arts" component of the "STEAM" acronym a bit later in this issue.*)

Aerospace is a huge field. According to the FAA's January 2020 report on *The Economic Impact of Civil Aviation on the U.S. Economy*, the U.S. aerospace system contributes to more than 5% of the U.S. Gross Domestic Product and accounts for $1.8 trillion in total economic activity. The industry also supports nearly 11 million jobs. Supporting this critical industry today and as it evolves into the future, while also ensuring the safety and efficiency of the U.S. aerospace system, requires a robust pipeline of future aerospace professionals who have the right skills to meet the 21st century challenges of the aerospace industry.

FAA Outreach

Not surprisingly, the FAA places high priority on doing its part to fill the future aerospace workforce pipeline with diverse and highly skilled individuals. The agency is working closely with partners in industry, academia, non-profits, and other government agencies to develop and implement a robust program to reach as many young people as possible, including those in underrepresented and underserved populations, and address industry needs. The FAA's STEM Aviation and Space Education (AVSED) Program is an essential part of our outreach to the public.

The FAA's STEM AVSED program is not new. First established in 1961, the goal is to conduct outreach and prepare skilled professionals for careers in the aerospace industry. Over the last 60 years, the STEM AVSED program has reached countless numbers of young people through both formal and informal outreach and partnerships. While its fundamental aims are constant, the specifics of the program have evolved to meet the changing needs of the highly dynamic aviation industry. At this stage, the guiding principles for FAA STEM AVSED engagement include: (1) developing robust pipeline and pathway activities that reach diverse student populations; (2) using partnerships with industry, academia, and government; and (3) ensuring successful internal and external collaboration on these efforts.

Ambassadors for Aviation

You don't have to work for the FAA to contribute to the critical work of introducing young people to aviation. Each and every person with a passion for aviation can help by sharing that enthusiasm with people you know. You can get some specific ideas from information on the FAA website's STEM AVSED page. You might also consider finding ways to help publicize and celebrate National STEM Day on November 8. The possibilities are endless, and the rewards are great. I hope you'll take the time to get involved in this very important cause.

Robert C. (Rico) Carty is Acting Executive Director of the FAA Aviation Safety Organization's Flight Standards Service. Before joining the FAA in 2006, Mr. Carty flew as a captain for a major part 121 U.S. air carrier. His background also includes corporate flying and a distinguished career in the U.S. Air Force as a C-130 and C-141 pilot.

LEARN MORE

FAA STEM AVSED
faa.gov/education

AVIATION NEWS ROUNDUP

New SAFO Clears You for Success

In July 2021, the FAA published Safety Alert for Operators (SAFO) 21005, *Risks Associated with Visual Approaches*, which warns airplane operators and pilots of risks associated with visual approaches. While the SAFO's target audience is instrument flight rules (IFR) commercial operators, it provides risk mitigation strategies that all general aviation (GA) pilots can use. The SAFO advises flight crews to:

- Consider requesting an instrument approach to reduce the likelihood of aligning with the wrong runway or a taxiway, and/or exiting controlled airspace.
- Communicate "UNABLE" to ATC when, in the judgment of the pilot-in-command, compliance with a specific instruction, request, or clearance may reduce safety.

You can view or download SAFO 21005 at bit.ly/SAFO21005.

Tips for Speeding Up Your Medical Certification

In the inaugural episode of the *Pilot Minute*, FAA Federal Air Surgeon Dr. Susan Northrup provides simple tips

you can use to streamline the medical certification process. For more information, see the Guide for Aviation Medical Examiners at faa.gov/go/ameguide. The *Pilot Minute* video series is produced by the Civil Aerospace Medical Institute, Medical Education Division. To watch the video, go to youtu.be/sC-C4GwFZ9Q.

Trends in Dangerous Laser Strikes

Shining a laser at an aircraft poses a serious safety threat and can result in large fines and criminal penalties. People who shine lasers at aircraft face FAA fines of up to $11,000 per violation and up to $30,800 for multiple laser incidents. The FAA has issued $600,000 in fines since 2016, which includes $120,000 in 2021. Violators can also face criminal penalties from federal, state, and local law enforcement agencies.

Working to identify trends in laser strikes, the FAA has developed a visualization tool that analyzes laser strike data from 2010 to 2020.

Using the Tableau software platform, the tool identifies trends that include geographic area, per capita data, and time of day and year. The FAA is sharing the information in the new format to draw attention to the

SAFETY ENHANCEMENT TOPICS

Please visit bit.ly/GAFactSheets for more information on these and other topics.

NOVEMBER

Overreliance on Automation — Learn how overreliance on automation technology can inhibit terrain awareness.

DECEMBER

Aircraft Performance Monitoring — A review of best practices for determining and predicting aircraft performance.

dangerously high rate of laser strikes on airplanes.

Laser strikes increased in 2020 despite the decrease in flights due to the COVID-19 public health emergency. Pilots reported 6,852 laser strikes to the FAA last year, up from 6,136 in 2019. The number of incidents reported in 2020 was the highest annual total since 2016. Laser report data by year is available for download on the FAA's website at faa.gov/go/lasers.

The FAA remains vigilant in raising awareness about the dangers of pointing lasers at aircraft and encourages the public to report laser strikes to the FAA and local law enforcement.

Free "Learn to Turn" Program Available

Master Flight Instructor and 2014 National FAA Safety Team (FAASTeam) Rep of the Year Rich Stowell recently released "Learn to Turn," a free program that takes a stick and rudder approach to help reduce the frequency of loss of control accidents. Sponsored by Avemco Insurance Company and Hartzell Propeller Inc., the program is anchored by a 98-page digital booklet. Supporting assets include a 42-page graphics supplement to facilitate classroom discussion, a 28-minute webinar recording, a 12-minute video, targeted training exercises, and a pilot survey.

"Through no fault of their own, light airplane pilots generally have been misinformed and undertrained regarding turn dynamics," says Stowell, who has more than 30 years of experience providing spin, emergency maneuver, and aerobatic training. "In addition to academic content, 'Learn to Turn' offers training exercises designed to improve basic flying skills and increase awareness of the consequences of our control inputs."

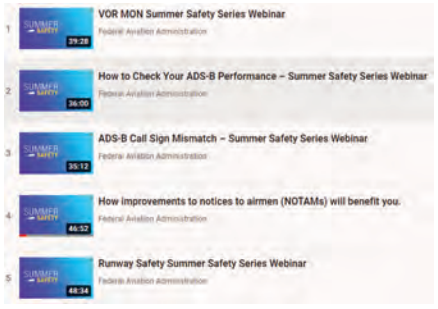
The FAASTeam is among a coalition of thirty early supporters sharing and promoting the content. Pilots, and especially instructors, are encouraged

to use "Learn to Turn" to gain more knowledge and experience with all aspects of turning flight.
The e-booklet along with all of the program assets can be accessed at communityaviation.com/learn-to-turn. Further, pilots who participate in "Learn to Turn" can qualify for a five percent discount on their annual Avemco insurance premium through the company's safety rewards program.

Summer Aviation Safety Series

In case you missed it, watch our summer aviation safety playlist on YouTube to learn about NOTAM modernization, navigation tools, safe takeoffs and landings, and how to access critical safety information.

To watch the webinars, go to bit.ly/3x1fwPy.



Next Generation of Sustainable Aircraft Technology

The FAA has awarded more than $100 million for companies to help develop technologies that reduce fuel use, emissions, and noise. The award is part of a series of steps President Biden is taking to coordinate leadership and innovation across the federal government, aircraft manufacturers, airlines, fuel producers, and more to position American aviation to soar towards net zero emissions by 2050.

The Continuous Lower Energy, Emissions, and Noise (CLEEN) Program is a public-private partnership that began in 2010 and is a key part of the FAA's overall strategy to tackle the global challenge of climate change and lower the impact aviation has on communities. The program requires the companies receiving the contracts to match or exceed the FAA's investment, bringing the total to at least $200 million over a five-year period. The awards are the third phase of the FAA's CLEEN program.

Under CLEEN Phase III, the FAA and six industry partners will focus on reducing aviation emissions and noise, including pursuing goals of reducing carbon dioxide (CO_2) emissions by improving fuel efficiency by at least 20% below the relevant International Civil Aviation Organization (ICAO) standard; NOx emissions by 70% relative to the most recent ICAO standard; particulate matter emissions below the ICAO standard; and noise by 25 dB cumulative, relative to the FAA Stage 5 standard.

The CLEEN technologies developed so far are estimated to reduce CO_2 emissions equivalent to removing 3 million cars from the road by 2050 and to save the aviation industry 36 billion gallons of fuel. The fuel savings is the equivalent of 11.4 million Boeing 737 flights between New York and Los Angeles.

The FAA anticipates that technologies developed under CLEEN Phase III could be introduced into commercial aircraft by 2031.

FAA MEDICAL CERTIFICATION AND ALTERNATIVES

Several years ago, my predecessor penned an article regarding the history of medical certification and an article on the process of certification. As he noted, the fundamental purpose of medical evaluation and certification is safety, yours and the public's.

With this in mind, and with occasional direction from Congress, the FAA developed a set of standards that a pilot must meet to fly. As you might expect, these standards get more stringent as the potential risk to the public increases. A review of the medical certification process and alternatives is now timely.

Some aviation activities, including ultralights, gliders, and balloons, do not require a medical certificate at all. Ultralight pilots, under 14 CFR part 103, do not even need a pilot certificate. Sport pilots can fly with a driver's license. In many states, you are allowed to drive with physical conditions that are incompatible with flight safety. Some of these conditions could contribute to higher fatal and non-fatal accident rates for light-sport aircraft than for the rest of general aviation.

BasicMed provides an alternate path to medical certification, although with limitations compared to a Class III medical. I support this program, as it has made it easier for many pilots to return to the cockpit. I understand the burden the special issuance (waiver) medical certification requirements can place on an individual. In fact, almost 30% of pilots using BasicMed had a special issuance (SI) at their last medical (compared to less than 5% for Class III medical certificate holders). We encourage BasicMed pilots to have frank and open discussions with their treating providers (hopefully the person signing their BasicMed Comprehensive Medical Examination Checklist (CMEC)) to ensure flight safety and appropriate treatment(s) to remain compatible with flight safety.

The FAA's Office of Aerospace Medicine recently reviewed accident data for pilots flying under BasicMed. While the trend may show a slight increase in mishaps in BasicMed pilots compared to those who maintain a medical certificate, it did not reach statistical significance when comparing the number of accidents under BasicMed and Class III medical certificates. In other words, we cannot determine if this is a real difference or simply due to chance.

We will continue to monitor the trends in all categories of accident data, as we have done for decades. Please remember that changing from medical certification to BasicMed does not cure any underlying condition(s) you may have. We recommend continued follow-up with your personal physician and discussing any underlying health condition with someone knowledgeable in aviation medicine.

Traditionally, the FAA has issued Class I, II, and III medicals. Typically, these are needed for airline, commercial, and private aviation activities, respectively. The standards and duration of these medicals are governed by both your age at the time of the medical, as well as the class of medical requested.

When an individual meets the standards (derived from 14 CFR part 67) for a particular class of medical, Aerospace Medicine issues an unrestricted medical (no time limitations other than the regulatory duration). There are some conditions for which additional information must be provided to your Aviation Medical Examiner

(AME), but these "Conditions AMEs Can Issue (CACI)" also qualify for an unrestricted medical.

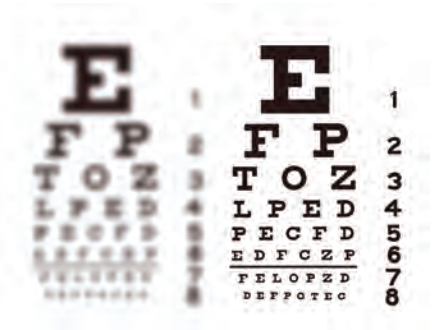
In most cases, even when someone does not meet the standards, we can still issue a medical, with either a SODA (statement of demonstrated ability) or SI (special issuance). After an appropriate and successful evaluation, a SODA is issued for a condition that is expected to be stable. An SI, on the other hand, is issued when progression of a symptom or condition is likely and follow-up is required. A SODA generally has no expiration date, while an SI is time-limited.

As a reminder, all holders of a pilot certificate under 14 CFR part 61 are subject to the provisions of 14 CFR part 61.53 regardless of whether you require a medical certificate or chose either Sport Pilot or BasicMed.

The medical pathway you choose depends on your own medical history and what type of aircraft you want to fly. There are several paths available, but the end goal to all is safety.

Dr. Susan Northrup received a bachelor's degree in chemistry and a medical degree from The Ohio State University, as well as a master's degree in public health from the University of Texas. She is double board certified by the American Board of Preventive Medicine in Aerospace Medicine and Occupational Medicine. She is a retired U.S. Air Force colonel and a former regional medical director for Delta Air Lines. She is also an active private pilot.

WHAT TO EXPECT FROM AN FAA MEDICAL EXAM



Are you seeking your first FAA medical certificate? Do you have a medical condition that might make it difficult to get certified? If the answer is yes to either question, this article is for you.

As Dr. Northrup notes in this issue's Aeromedical Advisory department, you can fly certain aircraft without holding a medical certificate. These include ultralights, gliders, and balloons. (Note, however, that Congress has mandated that the FAA require commercial balloon operators in commercial aviation maintain a Class II medical certificate.) To fly light-sport aircraft (LSA), you only need a driver's license. For other aircraft, you need an FAA medical certificate. However for BasicMed operations, the airman must have had a FAA Medical Certificate valid for at least one day after July 14, 2006 that wasn't subsequently denied, suspended, revoked, or withdrawn (bit.ly/BasicMedCert).

How To Find an Aviation Medical Examiner (AME)

Most pilots seeking an AME will use their instructor/flight school, pilot acquaintances, advocacy groups, or search online. Go to bit.ly/FindAnAME and select AME under the "Designee Types" tab.

The FAA authorizes all AMEs to issue Class II and III FAA medical certificates, but Class I medical certificates must be completed by a senior AME. For any class of medical certificate, the AME will review the history and answers you provide on your MedXPress 8500-8 application, your lifetime medical history, including medications, surgery, hospitalizations, and medical conditions (even if now resolved). Review the AME Guide for help (bit.ly/AMEGuide).

Having all your reports in order (complete, legible, and without duplication) is an excellent start.

We also recommend contacting your AME before your appointment to ensure you bring all the necessary documentation. Your AME might even ask you to forward the information prior to your appointment. Note that your AME must transmit the examination to the FAA within 14 days, so it's best to obtain all needed medical records before your appointment.

Typically, you will walk out of your AME's office with a medical certificate in hand. Delays occur when additional information or evaluations are necessary. Sometimes your AME simply needs existing documentation for a CACI (Conditions AMEs Can Issue) condition, for example. If there is a disqualifying or potentially disqualifying condition, a further evaluation might be necessary before the FAA can authorize a medical certificate. If you adequately mitigate the risk from the disqualifying condition, the FAA can issue a special issuance (SI) for conditions that can progress or a statement of demonstrated ability (SODA) for static conditions. For color vision deficiency, we can issue a letter of evidence if you pass appropriate alternate testing.

The fee for the examination varies based on the region, the examiner, and the class of medical you are seeking. The FAA does not determine the fee. If your case is complicated, such as a CACI, SODA, or SI, there may be an additional charge.

As a reminder, there are ten conditions for which an SI is required, even under BasicMed. This is generally a one-time requirement; however, should the condition change after the issuance of the SI, a new SI might be required. You can find more information at bit.ly/BasicMedFAQs (PDF).

For example, let's say a pilot had a heart attack treated with a stent and was later granted a SI. A new stent, bypass surgery, or another heart attack would require the pilot to obtain a new SI to continue under BasicMed.

The FAA's goal is to authorize as many applicants as possible, and we approve almost 99% of all applicants. Of those applicants that we denied, 95% did not provide the requested information.

If you have any questions, please reach out to your AME. You can also contact your FAA Regional Flight Surgeon's office at (bit.ly/MedCertContacts).

We hope this information will help facilitate your medical certification experience.

Leo M. Hattrup, M.D., received a bachelor's degree from Wichita State University, a master's in public health from Harvard University, and a doctorate from Vanderbilt University. He is retired from the U.S. Air Force in which he spent the majority of his career in aerospace medicine. He is board certified in aerospace and occupational medicine. He is a certificated flight instructor and enjoys flying airplanes, helicopters, and gliders.

THE AIR UP THERE

A podcast for people who are curious about the wide world of aviation. Join the FAA as we nerd out about the future of flight, drones, and ways to make the National Airspace System safer, smarter, and more efficient. For details on how to listen and subscribe, visit:

faa.gov/podcasts

When I Grow Up, I Want To Be An AVIATOR!

How the FAA Helps To Launch Students Into an Aviation Career

By Jennifer Caron

"If you do what you love,
you'll never work a day in your life."
— Marc Anthony

My dad took me to my first airshow when I was in 4th grade, and that's when I knew I wanted to be an aviator. I met so many cool pilots, and I got to see neat airplanes and explore in the cockpit. Back then, most of my friends wanted to be superheroes or ballerinas, but not me — sitting right seat was my ultimate thrill ride, and I couldn't wait to move to the command seat one day. The aviation bug had bitten me from the start, and I've been smitten ever since.

There is no doubt in my mind that if my dad had not introduced me to the wonders of aviation early on, I probably would not have developed my "plane" passion that continues to this day. Research confirms it, and studies show that if you have a passion for something now, it more than likely came from an early childhood experience. Ask any of today's aerospace engineers, pilots, or mechanics, and they can tell you what inspired them to pursue their career in aviation.

For some, it was their natural ability to fix things, taking them apart and putting them back together again — the right way. Others were hooked on math or science and their favorite superheroes were Bill Nye the Science Guy and Stephen Hawking. Still others, who could tell aircraft types just by the sound they made, were always curious to learn the principles of flight and the forces that keep the metal birds in the sky.

Did you know that children are born scientists and mathematicians — testing, exploring, and questioning the world around them? Science, technology, engineering, and math support your child's instinctive curiosity. These fields of study, also known as STEM subjects, play a critical role in a young aviator's future. Early exposure to these disciplines prepares students not only for subsequent careers in the aviation and aerospace industries, but also for the workforce of tomorrow.

There are so many opportunities — not just for new pilots, dispatchers, air traffic controllers, maintenance technicians, drone operators, and engineers — but also for cybersecurity specialists, data analysts, program managers, communication specialists, and other professionals who play an essential role in the National Airspace System.

The aviation industry is quickly evolving, but at the same time, baby boomers are retiring in large numbers. Add that to our current shortfall in qualified aviators and mechanics, and you're looking at a tremendous opportunity for today's students. That's the good news. In fact, according to the U.S. Bureau of Labor Statistics, Aerospace Employment is projected to grow 7% from 2019 to 2029 — faster than the average for all occupations. In May 2020, the median annual wage for aerospace employees was $68,570. The bad news: we've got a shortage today that's projected to shrink the workforce of tomorrow. The demand to fill these STEM-related aerospace fields exists right now, and the need is only growing.

A program the FAA created to address this issue is the STEM Aviation and Space Education (STEM AVSED) Program. It's mission:

- Promote aerospace STEM-based education, and
- Prepare and inspire the next generation for aviation and aerospace careers.

STEM AVSED is a catalyst to encourage elementary, secondary, and college students to study and strengthen STEM skills. Its forward-thinking program introduces students to the educational experience they will need to get those well-paying aerospace jobs that are available and in high demand.

Let's take a closer look at the STEM AVSED Program.

STEM AVSED 101

Since 1935, the FAA and its predecessor organizations have been working with schools and colleges across the nation, and in partnership with other government agencies, industry, and non-profit organizations to promote STEM education. Fast forward to the launch of Sputnik in 1957, signaling the start of the space race. That's when the FAA added space education to the mission, paving the way for the 1961 establishment of the comprehensive program, STEM AVSED, to prepare and inspire students for both aviation and aerospace careers.

National FAA STEM AVSED Program Lead Jim Brough, (whom you'll meet in this issue's FAA Faces department), has worked with the program since 2008, collaborating with the regional STEM AVSED program analysts, FAA employees, and the aerospace community working every day to provide information and quality programs for students and their educators.

The STEM AVSED program has four strategic goals:

- **Pipelines and Pathways to Aerospace Careers:** Perform student outreach to inspire the next generation and provide them with pathways to aerospace careers.
- **STEM Education for Every Student:** Ensure access to our outreach activities for all students, with a focus on underrepresented and underserved communities.
- **Strategic Partnerships to Maximize Benefits:** Collaborate with industry, academia, and other government agencies to develop pipelines into aerospace careers.
- **Cross-agency Collaboration to Optimize the Program:** Making the most of the FAA's internal resources to raise student awareness of opportunities in aviation and aerospace.

The STEM AVSED program reaches thousands of students of every age and grade level nationwide each year. National, regional, and local partnerships with industry, academia, government, and non-profits are the crucial relationships that provide the resources, expertise, and networks to help make this program such a huge success and a champion for students.

STEM AVSED
Aviation & Space Education

FUN and EDUCATIONAL STEM AVSED PROGRAMS

ACE ACADEMIES

You'll get to spend an entire week at a summer camp learning about aviation (faa.gov/education/ace_academy).

- Lessons in flight planning, history, and the physics of flight.
- Field trips to aviation-related sites.
- Instruction on aircraft design and maintenance.
- Flight simulations and aircraft flights.

EAA and many other industry programs also offer aviation camps for middle and high school-aged students (bit.ly/EAACamps).

MINECRAFT BUILD AN AIRPORT CHALLENGE

In 2020, the FAA created a fun and educational program called Airport Design Challenge. Here are some details about the program:

- Using Minecraft, teams recreated and built local airports using 3D blocks.
- At the end of the contest, FAA staff scored each entry for technical accuracy, creativity, innovation, and demonstrated knowledge.
- Winners received certificates and enjoyed a fun, hands-on way to learn about STEM, teamwork, and problem solving.
- It's free and anyone can join.
- Due to the great response from the public, the FAA is currently reviewing the program and hopes to re-release it in the near future.
- Stay tuned for more on this great program (bit.ly/FAAMinecraft).

Don't miss the General Aviation Manufacturers Association (GAMA) Aviation Design Challenge where high school students can compete to design an aircraft (bit.ly/GAMAChallenge).

Opportunities for Girls? Diverse Students? Youth with Disabilities?

Yes! The FAA is committed to building an aviation workforce of the future that reflects the diversity of our nation, and the STEM AVSED Program is at the forefront of that initiative with "STEM for Every Student."

Our airspace is evolving, and diversity brings a wide range of life experiences, new ideas, and different perspectives to the table. We're looking at a future of drones, commercial space, air taxis, and increasingly complex cybersecurity needs. Embracing and cultivating diversity creates an environment open to fresh approaches and innovation to safely enable and address the challenges of our modern airspace. The ability to attract, develop, and retain a qualified, diverse workforce is essential to the FAA's safety mission.

"It is a well-recognized fact that although aviation and aerospace provide excellent job opportunities for many women and minorities, there is currently a very small percentage in the aviation industry," says Chris Sharp, manager in the FAA's Aviation Workforce and Education division. Many lack awareness of aviation and aerospace as a career path.

"STEM AVSED reaches out to and encourages young women and girls, more diverse students, and youth from all walks of life to pursue STEM education and to see themselves in these careers," says Sharp.

PROGRAMS FOR WOMEN AND MINORITIES

STEM AVSED partners with organizations such as Women in Aviation International, the Organization of Black Aerospace Professionals, and the International Black Aerospace Council, focused on attracting youth to pursue a career in aviation. Close ties to colleges, universities, public school systems, and other organizations with a high concentration of underserved groups assist STEM AVSED in targeting students for inclusion from all minority groups, women, and youth with disabilities.

Federal committees, such as the Women in Aviation Advisory Board and the Youth Access to American Jobs in Aviation Task Force, are tasked to provide recommendations to identify pathways for recruitment and detect barriers to equity and access.

Here's just a few of the many programs available:

- Women in Aviation International: Education and career resources to encourage and advance women in all aviation fields (wai.org/resources). Check out the *Aviation for Girls* magazine! (bit.ly/WAImagazine)
- Organization of Black Aerospace Professionals: Advancing and enhancing minority participation in aviation. School career day events, summer programs,

flight training academies, professional development (obap.org).

- Fly For The Culture: Making the world of aviation accessible and affordable to all, regardless of race or ethnicity (flyfortheculture.org).

Visit faa.gov/education/partnerships to learn more.

Looking for Grants, Scholarships, FAA Internships?

Check out faa.gov/jobs/students/internships and find the organizations that can help finance your education at (faa.gov/education/grants_and_scholarships).

What Parents and Teachers Need to Know

Educators, counselors, and parents help guide students to future aviation success, and STEM AVSED is here to support you. See page 12 to find aviation-themed curricula, virtual classroom visits, and the newly created Adopt-a-School program.

Virtual and Free

"The unexpected benefit of going all virtual has really opened up the opportunity to expand our reach with larger and much broader audiences — any student can attend from anywhere," says Sharp.

- This past September, thousands of girls aged 8-17 from around the world participated in the free, seventh Annual Girls in Aviation Day hosted by Women in Aviation International (wai.org/girls-aviation-day-2021). Virtual events included career panel videos, instructional and learning activities, virtual tours, information about scholarships and more, introducing girls to aviation careers and STEM.
- Download the free Aviation for Girls app to view the events and keep up to date with year-round content, including hands-on activities and videos of female role models in the industry (wai.org/aviation-girls-2021-app).
- September also kicked off the FAA's fourth annual, free Aviation Safety STEM career symposium that included guest speakers, interactive visual presentations, STEM engagement activities, and opportunities for middle, high school, and college students to talk with aviation professionals (avsstemcareersymposium.vfairs.com).
- In October, STEM AVSED sponsored a virtual, Girls in Aviation-themed pavilion at the USA Science and Engineering Festival (SciFest) to spotlight aviation careers (usasciencefestival.org).

Image courtesy of Women in Aviation International.

Click bit.ly/WAImagazine for the 2021 issue. You'll find all past issues here: wai.org/giad/issues.

The FAA welcomed organizations like Women in Aviation International, the National Air and Space Museum, and Dreams Soar, started by Shaesta Waiz, the first female from Afghanistan certified as a civilian pilot. Read "Meet Shaesta Waiz" in this issue to learn more about her amazing journey and work to empower young women and girls into aviation.

Call To Action

Let this be the moment that inspires a young aviator to pursue STEM and open the doors to a life-long and rewarding career in aviation. As a parent, teacher, friend, or counselor, you are the wind beneath the wings of a student's future flight path.

Share this information with the future aviators in your life — and spread the word!

But don't stop there. There are many intersecting runways to a career in aviation. ***Tell us what you're doing to reach the next generation. Reach out by email to*** 9-AHR-AVSED@faa.gov**.**

"When we get the community talking, connecting, and exchanging ideas, the pathways open," says Sharp. We can set the flight plan for the next generation, as we share our passion with the aviators of tomorrow.

Jennifer Caron is *FAA Safety Briefing*'s copy editor and quality assurance lead. She is a certified technical writer-editor in the FAA's Flight Standards Service.

LEARN MORE

Additional Resources for Aviation and Aerospace Education
faa.gov/education/students/resources

Aviation-Themed STEM Lessons and Resources

Check out faa.gov/education/educators. To find aviation-themed STEM lessons and resources and the K-12 curriculum, check out faa.gov/education/educators/curriculum/k12. For games, puzzles, projects, and fun hands-on experiments for every grade level, visit faa.gov/education/students/activities.

Don't miss the Youth Access to American Jobs in Aviation Task Force public meetings. They're live-streamed, include guest speakers from the aviation community, and anyone can virtually attend. You'll find a YouTube playlist of past meetings at bit.ly/YAAJATF.

Industry programs offer STEM aviation curricula as well:

- Check out AOPA's free High School Aviation STEM curriculum for high school teachers (youcanfly.aopa.org).
- Discover the Experimental Aircraft Association's (EAA) AeroEducate. It's free, with turnkey aviation-themed activities for teachers of kids aged 5 to 18. EAA also offers free introductory (Young Eagles) flights for students (eaa.org/eaa/youth/free-ye-flights).
- Choose this site for an aviation maintenance-focused curriculum for students interested in aviation technical training (chooseaerospace.org).
- Find fun and interactive FAA aviation and aerospace educational videos on YouTube (bit.ly/AviationAerospaceFAA).

Adopt-a-School

The newly created Adopt-a-School program pairs teachers with FAA Liaisons that come to your school. Initially, the program will work with your schools to teach six aerospace lessons for 4th grade students for free, with lessons and materials on a wide range of STEM-related aerospace topics. The program launched during the 2021-22 school year with nine schools across the country selected, based on a combination of factors including diversity and proximity to FAA facilities. Adopt-a-School provides a unique learning opportunity for students. Stay tuned at faa.gov/education/students for more on this innovative new program as it grows in future years.

Virtual Classroom Visits

At the heart of STEM AVSED are close to 1,700 FAA employees who train as outreach representatives to share their time, expertise, and passion for aviation with students aged K through 12. Since 2016, the program has tapped into FAA employees and industry partners who are drone pilots, mechanics, engineers, and so much more to cultivate students' love for STEM education and to consider aviation careers. They visit schools, scout programs, community events, etc., (now virtually, due to COVID-19) to serve as online guest presenters, virtual science fair judges, conduct virtual job shadow sessions, introduce fundamental aviation concepts to students, and conduct educator workshops with learning packets for teachers and parents to use at home.

continued on page 27

Beyond the Flight Deck

Non-Flying Work in the Aviation World

By James Williams

Time lapse photo of arrivals into Ronald Reagan Washington National Airport (DCA). Flying is only one piece of an elaborate aviation system.

We've all been there. You're at a junction point in your life, maybe after graduating from high school or college, or after a milestone birthday, where you need to either change a career or start one. In the pages of this training and career-focused issue of *FAA Safety Briefing*, we tend to focus on the pilot centric world. However, aviation is filled with opportunities that don't involve actually piloting an aircraft. We've looked at a few of these career options in the past — see p. 20 of our September/October 2016 issue, "The Airway Less Travelled." Here are a few more options to consider should you desire a non-flying career in aviation.

Keep 'em Flying, Safely

Aircraft are fickle beasts. Their care and feeding is no easy task because they are fundamentally a system of systems. Aviation Maintenance Technicians (AMTs) are required to understand how to repair and keep these systems in good working order. While there are some similarities with the work of automotive technicians, the stakes in the aviation world are much higher since you can't just pull over and wait for the tow truck.

Mike Dunkley

"You need to have a love for aircraft," explains Mike Dunkley, the 2021 National Aviation Technician of the Year. "It's not just doing the work of a mechanic — you can do that on a car. I

know there's a shortage of aviation mechanics in the U.S. today, so we need them, but we need people with a love of aircraft too."

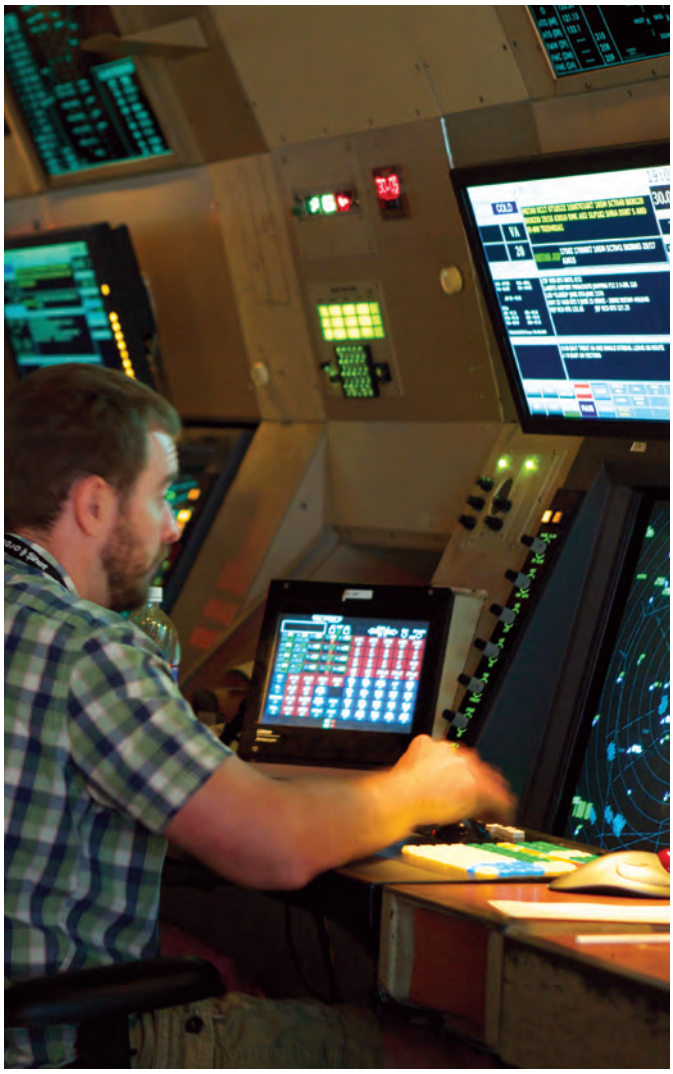
Dunkley emphasizes the need to work with pilots to determine the root cause of maintenance issues due to their highly integrated systems. "I might have a pilot who says, 'I have this problem,' and then digging deeper I discover that there's an associated problem which caused that problem, and that wasn't the original problem anyway." According to Dunkley, the bottom line is to get the full story.

Dunkley has another piece of advice for those currently in or getting into the field of aviation maintenance. "Check it, and check it again. After completing a job, put your inspector's hat on, and look at what you just did," says Dunkley. Ask yourself — "Did I perform the work correctly and in accordance with the appropriate airworthiness standards and maintenance manuals? Yes, it may take a little longer, but you're going to be satisfied with the work, and it's going to be a safe product by the time you release that airplane back into flying status again," he explains.
For more information on becoming an AMT, visit faa.gov/mechanics/become.

Command the Sky

"I had never even considered a job as an air traffic controller," says Sarah Patten, Air Traffic Control Specialist at the FAA's Potomac Consolidated Terminal Radar Approach Control (TRACON). Patten started her aviation career as a pilot and flight instructor, but in 2008 she was convinced to apply for an FAA job as an air traffic controller (ATC). "I'm so glad I took a chance and applied," Patten explains. "The job has been so interesting, and I've had some incredible opportunities along the way."

Sarah Patten. Sarah is also a pilot, in addition to working as an air traffic controller, so she knows what it's like to be on both sides of the mic.



Potomac TRACON handles air traffic control services for the Baltimore-Washington, D.C. and Richmond-Charlottesville, Virginia regions. "The increased security of the airspace can be a bit intimidating to pilots, but once you know how it works, it's really not that scary," says Patten. She uses her pilot and instructor skills to help fellow pilots navigate that complex and restricted airspace. She also participates in Potomac TRACON's Operation Raincheck (when available), which allows pilots to learn how ATC works from the controller's side.

If you are interested in becoming an Air Traffic Control Specialist, visit faa.gov/jobs/career_fields/aviation_careers.

> **With change comes opportunity and right now there's a lot of change in aviation.**

And Now for Something Completely Different

Well, not exactly, but here's something far less defined than the previous entries. With change comes opportunity and right now there's a lot of change in aviation. This fact is especially applicable to the introduction of Unmanned Aircraft Systems (UAS) Traffic Management (UTM). There's a tremendous fervor around how UAS can be used to revolutionize aviation. But the key to that revolution is UTM — how to safely get those new operators into the National Airspace System (NAS). So if you like solving complex problems, then UTM might be for you.

"I used to be an air traffic controller at San Francisco International Airport (SFO), and by early 2017, I was hearing a lot about drones as the FAA rolled out the Low Altitude Authorization and Notification Capability (LAANC)," says FAA UTM Implementation Program Manager Peter Sachs. "We got several requests at SFO from people wanting to fly drones near the airport, but we didn't have good tools at the time, other than our own judgment, to decide what was safe. That's when I learned about the UTM concept. I realized I could contribute to it since I had a lot of background knowledge, not just from working air traffic, but also from being a flight instructor, and understanding some of the FAA's systems like the Standard Terminal Automation Replacement System (STARS) radar and the electronic flight strip prototypes."

Peter Sachs

NASA image.

A concept image provided by NASA of a fully developed UTM system.

UTM is full of unsolved problems, and I've come to relish working in a space where we don't have all the answers yet, let alone how to make them a reality," says Sachs. "The work we're doing now, whether technical or regulatory, will shape future systems in 10, 20, even 30 years' time, and probably in ways we can't quite fathom. That makes it a really fun set of challenges for me."

When asked what advice he would have for someone interested in UTM, Sachs explains that much of what you need to know can be learned on the job. "This is an emerging and quickly growing field, so if you don't know the answer, it's possible that no one else does either. That's an opportunity for you to find a new approach." Sachs continues, "I went to school for sociology and journalism and took flying lessons in my free time. Everything else, including everything I do that counts as — 'systems engineering,' are skills I picked up along the way. You also don't need to be a software engineer or a coder, although learning how to talk to those teams is certainly helpful," Sachs explains. He believes the most essential qualification is a desire to keep learning, and lots of curiosity.

As you can see, there are several career paths that exist beyond the bounds of the flight deck. You have options that let you join the aviation world with or without a pilot certificate — so take a look!

James Williams is *FAA Safety Briefing*'s associate editor and photo editor. He is also a pilot and ground instructor.

Picking Up STEAM

How FAA-Industry Collaboration Keeps Training Real

By Susan K. Parson

One of the many clichés batted about in the flying world is that a new aviation certificate or rating is a "license to learn." It is true that the achievement is a starting point, and it is also true that we should always be learning. Still, I was shocked by how many times my private pilot ground school instructor emphasized some point, but immediately assured us that we didn't need to recall it for long. Rather, we could just memorize whatever it was and, "because you don't *really* need that," we could forget it as soon as we had successfully passed "the written" (aka the knowledge test) and/or the oral portion of the practical test. Huh?!

Two subsequent events reinforced both my instructor's well-meaning assurance and my budding outrage about devoting time and effort to irrelevant material. The first was my experience in taking the knowledge test. Even as I dutifully churned through the multi-step process required to answer a particular question, I thought it was ridiculous. The overly complex question required me first to pore over several badly rendered weather charts and use that information to perform multiple interpolations across several performance charts. The result of these careful calculations was a two — yes, two (!!) — knot wind difference. Adding insult to injury was the fact that the calculations were for an altitude I could not possibly reach in a GA airplane.

The second reinforcing event came when I was introduced to the automatic direction finder (ADF), an airborne navigation instrument now vanishing as quickly as the ground-based non-directional beacons (NDB) that supported it. Ground school drills, practice exams, and the actual "written" test were chock full of questions requiring use of the MB = MH + RB formula for the fixed-card ADF. I didn't quite believe the ground school instructor's "you won't really need this" assurance until I saw for myself that (a) fixed card ADF instruments were already mostly extinct, and (b) determining the bearing to or from an NDB didn't require mental math.

So, you could say I had lots of objections to the "the written" as it was constructed.

A Decade of Progress

It seems I had plenty of company. When the opportunity arose in 2011 for the FAA to team up with experts in the aviation community to address this problem, there was no shortage of eager volunteers. Since then, the FAA has worked with several diverse and highly qualified groups of aviation industry experts to find a better way. The team includes advocacy groups, instructor organizations, academia, courseware providers, manufacturers, part 61, 121, 141, and 142 training providers, and some very knowledgeable individuals, along with FAA employees from a variety of specialties and policy divisions.

The first results of this ongoing effort — the Airman Certification Standards (ACS) for the Private Pilot-Airplane certificate and the Instrument Rating for airplane — replaced the corresponding Practical Test Standards (PTS) documents in June 2016. Several additional PTS-to-ACS transitions have been published since then, and still more are in queue for release. For those new to aviation, the ACS is fundamentally an enhanced version of the PTS. It adds task-specific knowledge and risk management elements to each PTS Area of Operation and Task. The result

is a comprehensive document that integrates the standards for what an applicant needs to know, consider, and do in order to pass both the knowledge test and the practical test for a certificate or rating, and to operate safely in the National Airspace System (NAS).

The lion's share of the work on the ACS project is accomplished by the aviation community participants who volunteer for the Aviation Rulemaking Advisory Committee (ARAC) working group. Our aviation community partners in the ACS project have helped not only with the massive task of creating the ACS, but also with recommending how FAA handbooks should be revised to align with the ACS and stay fully up to date. In addition, their work has provided both the framework (i.e., the ACS) and the flexibility (i.e., freed-up resources) for the FAA to develop meaningful knowledge test questions.

Testing, Testing

Given the success of the collaborative effort to develop the ACS, there was no shortage of volunteers for a more recent effort: the Designated Pilot Examiner Reforms (DPER) Working Group. This activity arose from a 2018 congressional mandate for the FAA to ask the ARAC to review regulations and policies related to designated pilot examiners.

In accordance with this mandate, the FAA formally asked the ARAC in June 2019 to provide advice and recommendations on reforms needed to ensure the FAA's ability to deploy a sufficient number of DPEs. As in the case of the ARAC ACS Working Group, numerous individuals and organizations requested participation. The FAA selected a diverse group of technical experts who could collectively represent all major sectors. The DPER Working Group began its work in October 2019 and submitted its final report to ARAC in June 2021.

The DPER Working Group's recommendations focus around three areas: selection, training and mentorship, and deployment and oversight. It provided extensive details on these three themes. In addition, the final report takes note of benefits from use of an industry-developed code of conduct for designees. At the time of this writing,

the FAA is reviewing the DPER Working Group's final report and recommendations to plan next steps.

Also new in the realm of testing is a requirement for all recreational drone flyers to pass an aeronautical knowledge and safety test. Introduced earlier this year, The Recreational UAS Safety Test (TRUST) is a free online exam divided into two sections. The first section provides the information needed to pass the test. The second is a series of multiple-choice questions. The questions are designed such that if you answer one incorrectly, you get information on why the answer you chose was incorrect and will be prompted to try again.

The FAA developed TRUST in three stages. First, the agency developed the test content with input from drone stakeholders. The next step was a Request for Information seeking to work with drone stakeholders on test administration. On June 22, the FAA announced FAA-approved TRUST Test Administrators. As with other elements of aviation training and testing, the FAA will continue working with expert stakeholders to keep TRUST up to date and relevant to real world activity.

Better Together

Leveraging industry expertise to accomplish the kind of work described here is essential. As much as we like to fly and teach, there is no way that FAA employees can hope to stay as current as those who work in the aviation training world every day. While the agency cannot accommodate every recommendation it receives from aviation community stakeholders, the kind of open communication and collaboration established over the past decade is critical to keeping FAA training and testing materials relevant — and real — to everyone who operates in the NAS.

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LEARN MORE

FAA Airman Testing webpage
faa.gov/training_testing/testing

DPE Reforms Working Group Final Report
bit.ly/DPEreforms

TRUST Test for UAS
bit.ly/FAATRUST

MEET SHAESTA WAIZ

Trailblazer, Mentor, and a Global Inspiration for Women in Aviation

By Tom Hoffmann

All photos courtesy of Dreams Soar, Inc.

There is a small, but elite group of aviators who have earned their membership in the "earth-rounders" club by flying around the world in a light aircraft. This group, which includes the likes of Wiley Post, Amelia Earhart, and Dick Rutan, gained some esteemed company in 2017 when then 30 year-old Shaesta Waiz completed her round-the-world flight in a Beechcraft *Bonanza*, duly dubbed the *Dream Catcher*. In addition to this amazing feat of flying that spanned 145 days, 22 countries, and nearly 25,000 nautical miles, her accomplishment comes with some important distinctions that put her in some truly rarified air.

> **Shaesta's record-breaking round-the-world flight spanned 145 days, 22 countries, and nearly 25,000 nautical miles.**

First, Shaesta became the youngest female pilot in history to fly solo around the world in a single-engine aircraft. (*Note — at the time of this writing, Belgian teen Zara Rutherford is hot on her heels in pursuit of this record.*) Shaesta also accomplished her historic flight as the first female civilian certificated pilot from Afghanistan, becoming a critical beacon of inspiration to the millions of women in her native country who aspire to have careers in the science, technology, engineering, and math (STEM) fields. Superlatives aside, it was her educational outreach role that Shaesta considered to be the most notable and important part of her around-the-world trip. Emboldened by her ability to make a lasting impression on thousands of youth, this leg of her journey continues to this day.

A Dream was Born

Shaesta wasn't always crazy about flying. After fleeing Afghanistan with her family in 1987, Shaesta grew up in Richmond, Calif., with her parents and five sisters. She had little to no exposure to aviation, except for the news or occasional airline disaster show on television, which ironically fomented a fear of flying. It wasn't until a commercial flight at age 18 during a family vacation to Florida when everything changed. The formative and freeing experience of flight gave Shaesta an instant sense of belonging, which for years she had struggled to come to terms with. "I was always too American to be truly Afghani, and too Afghani to be truly American," she explains. But after the flight, she found a place where she could claim her true identity: her mind was set on becoming a pilot.

While earning her pilot certificates and pursuing a degree at Embry Riddle Aeronautical University (ERAU), Shaesta's career path in aviation began taking shape. But instead of pursuing an airline or military flying job, Shaesta decided her true passion was helping to inspire other people discover their own passions — particularly those who, like her, remain vastly underrepresented in the aviation industry.

"I realized that I needed to do something with my story," says Shaesta, reflecting on her family's refugee experience

Shaesta interacted with more than 3,000 youth in 22 countries during her round-the-world trip.

and growing up as a minority female in an underprivileged city. "More importantly, I wanted to talk to young kids about believing in themselves, taking a leap of faith, and going after things they are passionate about."

She started with the Women's Ambassador Program, an initiative that helps mentor and support young women pursuing an education in aviation and engineering. Her efforts soon shifted to a more global scale. After meeting Barrington Irving, a Jamaican-born pilot and fellow earth-rounder, she got the idea of doing a round-the-world flight to expand her outreach platform.

"It wasn't my mission to set any kind of world record," says Shaesta, who admits not even knowing who held the record before her. Instead, her goal was to reach as many children in as many countries as she could to help spread her "Yes, you can fly!" message. To help facilitate these efforts and gain support for her flight, she founded Dreams Soar (dreamssoar.org), a non-profit organization dedicated to sharing and promoting the importance of STEM education for girls and young women.

Let the Flight Begin

After several years of planning, Shaesta's round-the-world trip finally took flight in May 2017 with 30 stops strategically selected to maximize STEM outreach. With the help of sponsors, local ground support, and various civil aviation authorities (including the FAA), Shaesta was able to inspire and visit with more than 3,000 children during the trip. Highlights included a stop in her native Afghanistan to discuss STEM opportunities with its former president and an incredibly warm welcome in Egypt where authorities arranged for an all-female crew of air traffic controllers to handle her flight. "I was really blown away by the hospitality I received," said Shaesta. "It was simply incredible."

Shaesta also made sure to take time during the flight to reflect on the personal significance of her voyage. She remarks that when reaching the "point of no return" over the Atlantic Ocean, pride washed over her when she realized that only seven other women had crossed this ocean solo in a general aviation aircraft. "It felt special that this was something I uniquely shared with someone like Amelia Earhart."

Of course, with a trip as long and complicated as this, things are bound to go awry. Shaesta had her share of challenges along the way, including mechanical issues, unexpected weather, and a rather frustrating bout of head lice towards the end. On the longest and most stressful leg of the flight, from Honolulu to Hayward, Calif., an extra one-knot of headwind forced her to turn around three hours into the flight. Shaesta was understandably frustrated, but proud of her decision to call out mission creep when she saw it, especially in light of the razor thin safety margins for this leg of her flight.

Coming Full Circle

On her next attempt at reaching the California shore, she encountered unavoidable dense fog. Despite feeling fatigued, Shaesta remained laser-focused on her instruments, wondering at times if she was even moving. "When I finally heard ATC's voice on the radio, it sounded like opera!" she exclaimed. Her arrival into Hayward was all the more rewarding given it was just a stone's throw from her Bay Area hometown. "It sounds cheesy, but at that moment, it dawned on me that you really can achieve anything you set your mind to."

Shaesta interacted with more than 3,000 youth in 22 countries during her round-the-world trip.

That sense of accomplishment is the very thing Shaesta worked hard to instill in the minds of youth during her flight. It didn't take long to see the fruits of her labor, either. Thanks to Shaesta's inspiration, a young woman she encountered in Spain immediately began flight training to pursue her dream of flying. Over the years, Shaesta has watched her blossom from a student pilot to a now gainfully employed commercial pilot.

From STEM to Stern

Since her historic flight, Shaesta has continued her work with Dreams Soar, promoting STEM outreach to nine additional countries and hosting another 30 outreach events to a total of 12,000 children. Going forward, Shaesta is excited about inspiring the next generation of aviators by focusing the organization on three main pillars: outreach, scholarships, and innovation. Dreams Soar presented its first flight training scholarship in 2019 to a woman at ERAU and hopes to provide more.

> **Shaesta decided her true passion was helping to inspire other people discover their own passions — particularly those who, like her, remain vastly underrepresented in the aviation industry.**

Her educational outreach activities have also received the attention of the FAA, who made Shaesta an official STEM ambassador for the agency in 2020. "The FAA has always been very supportive of my activities, including the round-the-world flight," said Shaesta. "Since we were doing a lot of the same work in terms of engagement and outreach, it just made sense to collaborate efforts."

This new symbiotic relationship allows Shaesta to showcase the work of Dreams Soar at different events, while also helping people understand the FAA's organizational values and safety mission. Shaesta collaborated with the FAA on one such event — the USA Science and Engineering Festival (SciFest) this past October, where she helped support a Girls in Aviation themed pavilion.

In and On the Air

At EAA's Airventure 2021, Shaesta launched another new and exciting outreach platform — her *AVIATE with Shaesta* podcast, which brings together female aviators to have open and honest conversations about what it means to be a woman in aviation. Discussion topics have spanned everything from balancing motherhood and flying, to dealing with social media pressures, to mental health issues. Shaesta is pleased with the podcast's success thus far, including its ability to attract many international listeners. She plans to wrap up season one with a celebration event at the National Business Aviation Association's annual conference in October and begin the planning process for season two in 2022.

To augment her podcast, Shaesta also launched an app that she based on building a community for female aviators. "What if there is an aspiring aviator who wants to be a pilot, but has questions about motherhood? Who does she turn to?" asks Shaesta. The idea is to continue the important conversations she has with podcast guests in a more intimate setting on the app. Shaesta hopes to be able to host live discussions on the app as well with herself or other experts. Find out more about the app and catch up on all the podcast episodes here: aviatewithshaesta.com.

Embracing the Future

On a more personal note, Shaesta has focused much of her energy in recent years on starting a family and maintaining a residence overseas, leaving her little time for personal flying. She aims to get back to more regular flying with aspirations of some future glider and aerobatic training. "I also like the idea of teaching," says Shaesta, "I feel like the perspectives I've gained would be fun to impart." No matter what, Shaesta says flying will always be a part of her identity.

That same belief goes to the core of her outreach messaging. "You need to embrace who you are and embrace your challenges," says Shaesta. "You might not see people like you in aviation — but that's a cue that you're needed. The aviation community is an incredible community to be a part of, and we need more people that look different to be a part of it so that it is more diverse and inclusive."

As for ways that you, the GA community, can help inspire interest in aviation and STEM careers, Shaesta

Shaesta interacted with more than 3,000 youth in 22 countries during her round-the-world trip.

offers that engagement is essential. "Keep showing up, keep sharing your stories, keep inspiring. Whether you think it might help or not, at one point in a youth's journey to becoming a pilot, they're going to remember the people who were there contributing their time. It just takes one person to inspire another, so any contribution you can make is going to have an impact on the bigger picture."

In line with her own advice, Shaesta has magnanimously offered counsel to 19-year old Zara Rutherford, who is currently on her way to beating Shaesta's record as the youngest female to solo around the globe (*read about Zara's flight at flyzolo.com*). "I wished her safety and success, and to go out there and show the world that women are capable of doing great things."

Terrific advice for Zara, as well as for future generations of young aviators!

Tom Hoffmann is the managing editor of *FAA Safety Briefing* magazine. He is a commercial pilot and holds an Airframe and Powerplant mechanic certificate.

LEARN MORE

Dream Soar video
bit.ly/DreamsSoarVideo

A Passion for Aviation video
bit.ly/AviationPassion

Small Props for BIG CHANGE

Dive into Drone Jobs

By Paul Cianciolo

Opportunities to take to the skies are more abundant today than ever before in human history. You don't even need to leave the ground to fly anymore. With nearly one million drones registered, opportunities to either professionally pilot, or work on unmanned aircraft systems (UAS) or drones, are ripe for the taking.

If you are interested in expanding your remote flying skills, or want to encourage a future aviator into a career working with drones, then read on.

It All Starts With TRUST

Do you know what it takes to fly a drone? Find out by taking The Recreational UAS Safety Test (TRUST). It's free, and you can't fail it. TRUST is also required if you want to fly a drone for fun.

If you want to go beyond recreational flying and become a pro, then you will need a Remote Pilot certificate to fly a drone under 55 pounds. This is commonly called a "Part 107 Certificate" because the rules are outlined under 14 CFR part 107. These rules cover any small drone flying for any non-recreational purpose. The *sky's the limit* as long as you are following the rules.

Use Your Skills Where You Work

Many companies and organizations are using drones as tools to get a job done more efficiently and safely. Firefighters can get a bird's eye view to understand where to send resources during an emergency. Police can keep an eye from above to keep the public safe. Utilities can inspect wind turbines, pipelines, and power lines. Farmers can

inspect crops and spray for pests. Rescuers can use sensors to save lives. Real estate agents can show buyers more angles to sell a property. Insurance adjusters can better examine property damage from a distance and in less time. Cinematographers can capture unique shots. And retailers can deliver products more precisely.

There are many more uses, but you get the picture. There may even be a use for a drone operation where you work.

Go Drone or Go Home

For those trying to figure out what to study in college, there are now direct vectors right into the world of drones. Many universities are now offering bachelor's and master's degrees in drone operations. Additionally, STEM education careers from K-12 and higher are in demand.

You don't need a drone degree, though, to work for a drone company or teach students. The drone industry is bursting with opportunity. New companies specializing in drone operations, development, manufacturing, and design are spreading across the country.

There is more to the drone industry than just flying. The Association for Unmanned Vehicle Systems International (AUVSI) is one place to look for these types of jobs. Positions range from engineering (software, mechanical, electrical, Java, etc.) to project management, business development, geographic information systems (GIS), research, aviation safety, and sales. Go to auvsi.org or your favorite job search website to take a look at opportunities available today.

The Prop Tip

The drone industry grows every day. One last tip in order to stand out in the crowd — record your hours/experience. Even if you are just starting out with some recreational flying, keep a log. Record the time you spend at the controls, the type of flying you are doing, and any training you take. Just like traditional aviation, your logbook (paper or electronic) is your best resume. Your drone log could just be the key to convincing your company to let you fly a drone for them or get that job in the drone industry. In addition to documenting your experience, a log can show that you are serious about a drone career.

Paul Cianciolo is an associate editor and the social media lead for *FAA Safety Briefing*. He is a U.S. Air Force veteran, and an auxiliary airman with Civil Air Patrol.

LEARN MORE

TRUST
bit.ly/FAATRUST

Part 107 Remote Pilot
bit.ly/UASComm

Drones for Educational Users
bit.ly/UASEd

AUVSI Job Search
auvsi.org

OPTIMIZING OPTIONS AND OPPORTUNITIES

"Mentoring is a brain to pick, an ear to listen, and a push in the right direction." — John Crosby

Aviation is a big world. Even for those who have a sharply focused aviation goal, it's not always easy to navigate the many avenues to aviation. There is great value in having a mentor to help illuminate the many pathways and possibilities. Like the original Mentor, a character in *The Odyssey*, a modern-day mentor is a trusted advisor who provides one-to-one support, encouragement, and advice.

> IF YOU DON'T KNOW WHERE OR HOW TO START WITH ENCOURAGING STEM EDUCATION AS A PATHWAY TO AVIATION, THE FAA'S STEM AVIATION AND SPACE EDUCATION (AVSED) PROGRAM OFFERS SUPPORT.

One of the mentor's most important functions is to share experience and insights that can help a less-experienced colleague learn faster and make fewer mistakes along the way. If you are an experienced pilot, you can contribute by being a mentor to others. As Khalil Gibran offers in *The Prophet*: the teacher/mentor "gives not of his wisdom, but rather of his faith and his lovingness … If he is indeed wise, he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind." By offering a sounding board, a fresh perspective, and simple encouragement to help build confidence, the mentor can play a vital role in helping someone discern their own pathways.

Mentoring certainly involves sharing your own experience and ideas. But if you don't quite know where or how to start with encouraging science, technology, engineering, and math (STEM) education as a pathway to aviation, the FAA's STEM Aviation and Space Education (AVSED) program offers support — both directly to educators and students, but also to those who want some ideas for mentoring.

One of the most important things you can convey is that aviation career opportunities go far beyond piloting an aircraft or a drone. STEM education can provide the foundation for a wide range of aviation job options, such as:

- Air Traffic Control Specialist — promote airplane safety by directing the movement of air traffic
- Electrician — install, maintain, and repair aircraft electrical systems
- Engineer — design and develop aircraft and related aviation/aerospace technologies
- Flight Attendant — travel the world and ensure the safety and comfort of airplane passengers
- Ground Crew Member — support many aspects of the aircraft while it's on the runway
- Mechanic — inspect, diagnose, and repair aircraft
- Pilot — fly aircraft (including drones) for pleasure, recreation, or career
- Safety Inspector — develop and administer aircraft safety standards
- Sales and Service Representative — assist airline passengers with flight travel details

STEM AVSED
Aviation & Space Education

- Technical Operations Specialist — manage various technical aspects of aircraft operations

For curriculum and activity resources, the AVSED site's K-12 curriculum (link below) includes ideas and examples of various aviation-themed lessons, which can serve as a guide and resource for educators, parents, and mentors. These lessons and activities introduce students to STEM using aviation-based topics.

Along with its partners, the FAA is proud to offer the STEM AVSED program to students and educators worldwide. Join us in using STEM to help prepare and inspire the next generation of skilled professionals for aviation and aerospace careers!

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LEARN MORE

FAA STEM AVSED
faa.gov/education/about

AVSED Virtual Learning
faa.gov/education/virtual_learning

AVSED K-12 Curriculum
faa.gov/education/educators/curriculum/k12

Aviation Career Academy (ACE)
faa.gov/education/ace_academy

Aviation & Aerospace Resources
faa.gov/education/students/resources

STEM AND UAS EDUCATION

The concept and development of science, technology, engineering, and math (STEM) education has a long history in the United States, and its importance continues to the present day.

Unlike with traditional aircraft, drones offer fewer barriers into aviation which increases the reach to historically excluded communities, women, and people with disabilities. For students in middle and high school, drones open many doors to career opportunities from piloting to engineering to filmography.

The drone industry is the fastest growing segment in aviation, and drones are truly an equalizer for students interested in aviation. Operating a drone is relatively inexpensive, exciting, and a fun hobby that can easily serve as an entry point to engage in STEM activities and future careers.

Drones also play an important role in fostering curiosity, creativity, and analytical thinking. Establishing these characteristics at an early age, when young minds are excited about learning, imparts lifelong critical thinking skills.

The FAA's STEM Aviation and Space Education (AVSED) Program has taken a strategic approach in reaching out to schools: through engagement, providing resources, and implementing STEM-aviation programs such as Adopt-a-School. This year, drones were included in the STEM AVSED lessons.

Industry, academia, as well as local, state, and tribal governments, have partnered with the FAA's BEYOND and the Alliance for System Safety of UAS (ASSURE) programs to encourage STEM education.

In 2020, the FAA launched the UAS Collegiate Training Initiative (UAS-CTI). The UAS-CTI created a network of universities, colleges, technical schools, and institutions to prepare students for new and exciting careers in the drone workforce. Currently, 84 schools across the U.S. are participating in the UAS-CTI program with new applications coming in every month. Many of the participating schools host drone summer camps and partner with local K-12 schools to teach and encourage drones in the classroom. It has been an incredibly successful program. You can read more about the UAS-CTI program in the article, "Engaging with Academia," in our May/June 2021 issue (bit.ly/FAASB-Arc).

High school students in California participating in a drone summer camp hosted by the UAS Technical Education Program (UASTEP), the University of California, Irvine, and local high school teachers.

> OPERATING A DRONE IS RELATIVELY INEXPENSIVE, EXCITING, AND A FUN HOBBY THAT CAN EASILY SERVE AS AN ENTRY POINT FOR STUDENTS TO ENGAGE IN STEM ACTIVITIES.

The FAA's UAS Integration Office and the FAA Safety Team (FAASTeam) DronePros also participate in STEM conferences, symposiums, and events. They too are passionate about STEM education and volunteer regularly in STEM activities.

Alina George and Diana Robinson are project specialists in the Operational Programs Branch of the FAA's Office of UAS Integration.

JENNIFER CARON

SAFETY IS A JOURNEY

Technology is advancing at a rapid rate — it changes almost daily. Staying proficient to meet the needs of tomorrow's workforce is not easy, but it is important for each aviation maintenance technician (AMT) to take a personal interest in continued and recurrent training.

The FAA Safety Team (FAASTeam) is committed to helping you achieve the highest level of safety by providing the "tools" and resources you need to enhance your knowledge and proficiency.

Take advantage of the free or low cost training on FAASafety.gov. You will be recognized, awarded, and become a safer technician.

Get An Award for Initial and Recurrent Training

Participate in the AMT Awards Program to get your award for receiving, promoting, and fostering initial and recurrent maintenance training.

- Register on ***FAASafety.gov*** to enroll in the awards program.
- Complete the online Core Course — A Case for Non-Technical Training (ALC-666) — click on the *Maintenance Hangar* tab and you'll find it under *My AMT*.
  - You can complete the course in multiple sessions, and then take the exam.
  - Second time's a charm — if you didn't pass the first time, you can re-take the exam right after your first try.
  - Need a refresher? You can take the course again 90 days later and receive additional AMT or WINGS program credit.
- Eligible training also includes aviation maintenance career-related training in such categories as technology, human factors, and certain courses from an accredited trade school or university.
  - You can enter your eligible training in the *My AMT* tab under *Enter Eligible Training*.
  - Pro Tip: Keep a personal log to document all completed training and recent experience requirements. Keep all your training certificates.
  - Manufacturers, repair stations, and FAASTeam members develop courses for AMT credit with a focus on accident/incident causal factors, special emphasis items, and regulatory issues.
  - There's a different core course each year. Next year's course — *Ethics for Aviation Maintainers*.
- Technicians who successfully meet the program requirements within a given calendar year will obtain a certificate of training, and a Bronze, Silver, or Gold AMT Award!
- Your employer can also get a Gold or Diamond Award of Excellence based on the number of technicians in the company that receive an award each year.

Train From Home or Hangar

You'll also find thousands of free, online safety and risk reduction seminars and webinars that you can attend virtually. There's online courses available too. Most are free or low cost.

Need to renew your inspection authorization? There's a list of IA renewal courses and programs as well.

Take a look at the special training projects on risk management and human error in the maintenance hangar tab, and you'll also discover resources on everything from maintenance alerts and safety tips to standards, regulations, and scholarships for up-and-coming mechanics.

- If you have any questions or need help, contact Guy Minor at Guy.D.Minor@faa.gov.

The learning process never ends. Keep an open manual and an open mind. As the Mechanic's Creed says, "… the safety and lives of others are dependent upon (your) skill and judgment."

Jennifer Caron is *FAA Safety Briefing*'s copy editor and quality assurance lead. She is a certified technical writer-editor in the FAA's Flight Standards Service.

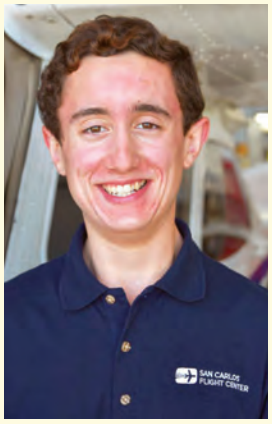
LEARN MORE

FAA Information and Services for Mechanics
faa.gov/mechanics

Continued from page 12

Be All You Can Be

Brandan Dadoun is just 17 years old and already has his private pilot's certificate with instrument privileges. This past September, he received the Western Pacific Regional Administrator's Aviation Partner Award that honors individuals who promote, improve, and support flight safety. Brandan is an FAA Safety Team (FAASTeam) Rep in the San Jose district and enjoys producing and writing an average of three seminars a week. Over the course of a year, he made possible approximately 150 opportunities for airmen to earn WINGS credits. As an ambassador and spokesperson for young people interested in aviation, he created the Flight Teen Volunteer Program at the San Carlos Airport's Hiller Aviation Museum, inspiring a significant number of teen volunteers to join. As a trainer in a volunteer network of air traffic controllers, he helps pilots obtain real-world experience on the mic. He also developed an aviation network at his high school with activities, airport visits, and opportunities for students to sit left seat in an aircraft. These are just a few of Brandan's accomplishments as he continues on his flight path to motivate, inform, and encourage young adults to experience the passion he holds for aviation.



Brandan Dadoun

- Check out Stevie Triesenberg, a top aviation influencer on TikTok *@planegirl*, and see how she's inspiring the next generation through social media.
- "I wanted to help Black students see that they could also work in aviation … Representation matters." — read Johnny Rose's story at *bit.ly/YouCanAchieve*.

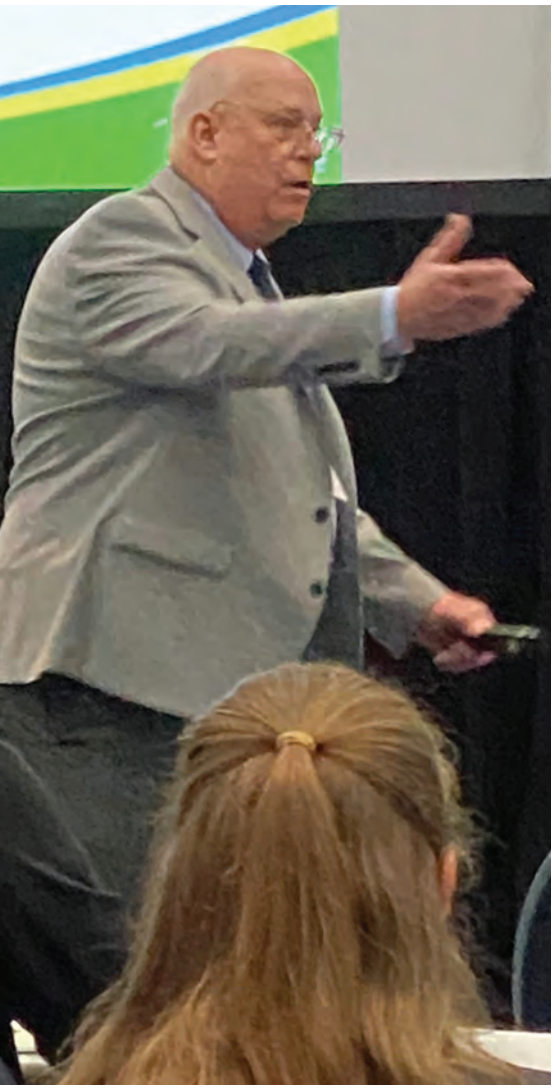
Learn how the arts can also be a gateway to aviation through STEAM (science, technology, engineering, *Arts*, and math). Check out Postflight in this issue for more.

"Starry Flight" image courtesy of artist Melissa Bernard, 2021 graduate, University of Maryland Baltimore County, bachelor's degree in visual arts and print media.

FAASTEAM VOLUNTEERS COME IN ALL SHAPES AND SIZES

Bill Hopper organized the first helicopter safety seminar in St. Louis. Since then he has held scores of safety meetings on behalf of the FAA and through organizations he formed — the Greater St. Louis Helicopter Association and the Greater St. Louis Rotor and Wing Association.

Karen Ann Kalishek has worked with the FAA Safety Team (FAASTeam) Program Manager (FPM) at the Milwaukee Flight Standards District Office (FSDO) since 2013. Her efforts to recruit new FAASTeam Reps, schedule meetings, and research topics for webinars made her the agency's National FAASTeam Representative of the Year in 2019.



Bill Hopper

Vic Moss uses drones in his profession as an aerial photographer. He has advised local legislators about drone airspace and safety regulations. He is now a member of industry's Drone Advisory Council that provides insight and advice to the FAA.

Karen Ann Kalishek

These are just a few of the more than 2,500 people who volunteered last year as FAASTeam Reps. They help the FAA spread its safety message to pilots, mechanics, and more recently, drone operators. Representatives are especially important because they encourage members of their community to view aviation safety as a topic of continued education, promoting ongoing participation in safety courses to maintain and increase proficiency. The FAA would welcome more like them.

"Whether they're a pilot, mechanic, or drone operator, FAASTeam Reps share several important characteristics," said Guido Hassig, the National FAASTeam program manager for unmanned aircraft systems (UAS) or drones. "They are passionate about promoting aviation safety and supporting the FAASTeam's mission, and well renowned for their talents as aviation safety experts," he said.

Hassig and his National FAASTeam colleagues, Guy Minor (airworthiness program manager), and Kevin Clover (operations program manager), believe FAASTeam Reps bring significant benefits — both tangible and intangible — to the agency.

"Their impact is huge," said Clover. "Reps multiply our efforts so much," he explained. "They're everything to our program," said Minor.

FAASTeam Reps also cover a wide variety of communities to include those involved in sport aircraft, gliders, and balloons. Their expertise on specific subjects complement FAA inspectors' all-around knowledge. In a sense, they serve as the eyes and ears of the agency.

For example, FAASTeam Rep Adam Magee has used his life-long love of ballooning to become a leading safety advocate, creating hot air balloon-specific content on FAASafety.gov. His balloon safety presentations have

reached close to 2,000 balloon pilots during the past year.

FAASTeam Reps also provide increased access to members of the aviation community via networks, email lists, or other groups on which the FAA can rely. For instance, Moss, an aerial photographer, administers two social media groups with a combined membership of 18,000-20,000 drone enthusiasts. As a FAASTeam "DronePro," he conveys important information about the FAA's drone safety standards, regulations, and policies through those groups while promoting FAA safety seminars. That's vital to the FAA considering there are already more than 800,000 drones registered in the United States, with more expected. As for what prompted Moss to initially volunteer with the FAASTeam, it's all about safety. "I wanted to jump in on that and help the industry," he said.

Reps also supplement the FAA's resources through the thousands of safety briefings they host each year. Volunteers have been influential in promoting continual training and skills enhancement for pilots through the WINGS Pilot Proficiency Program, and for mechanics through the AMT Awards Program.

"When it comes to attending seminars, it is often difficult for mechanics to participate because, at the end of the day, they are ready to go home and spend time with their families and hobbies," explained Bill Hopper, director of safety for Helicopters, Inc., and FAASTeam Rep for airworthiness out of the St. Louis FSDO. "Encouraging mechanics to participate in proficiency courses can be a hard sell," he added. But it's one that Hopper has made for the last 28 years. His motivation is simple, "When you are in aviation, you're either a contributor or a user. I prefer to be a contributor," he said.

Vic Moss

At 66, Hopper said he has no plans to retire. In his mind, there's no hard part to being a rep. "I just enjoy doing it. It's a time commitment. If you enjoy what you're doing there's nothing that's hard. I will continue to promote aviation safety as long as I can do it."

Perhaps one of the biggest advantages FAASTeam volunteers offer is who they are not: government employees. That's an important factor as the FAA seeks to reassure the aviation community of its intent to work together as colleagues. "They're our link to the community," said Clover. "They can talk to someone that an FAA employee could not. It helps build a better safety culture."

> **THE FAA HAS BENEFITED ENORMOUSLY FROM FAASTEAM REPS WHO HELP PUSH THE AGENCY'S SAFETY MESSAGE TO VARIOUS PARTS OF THE AVIATION COMMUNITY.**

FAASTeam Rep Karen Ann Kalishek agrees. "It brings the FAA, which can seem like a large bureaucratic organization, down to a personal level, one pilot talking to another," she said.

As a flight instructor and designated pilot examiner out of Green Bay, Wisc., Kalishek says she has "become, personally, very comfortable working with FAA people. They're wonderful, safety-oriented individuals who are there to help and promote safety."

The core is that I'm very passionate about aviation safety," said Kalishek about her role as a FAASTeam Rep. "I already know seven people who have passed in aviation accidents. The more I can do to prevent similar occurrences, the better."

If you're interested in becoming a FAASTeam Representative, contact a FAASTeam Program Manager (FPM) at your local Flight Standards District Office. Go to FAASafety.gov***, click the "Resources" tab, and then "Directory" (second from top). Enter your state or region and view the list of program managers at the top of the list.***

Jim Tise is an editor in the FAA's Corporate Communications division.

PILOTS PROPEL STUDENTS INTO AVIATION

To help bridge the employment gap in aviation, FAA employees are inspiring students to pursue aviation and aerospace careers.

These employees are part of the FAA's Science, Technology Engineering, and Math (STEM) Aviation and Space Education (AVSED) program established to expose students to aviation and aerospace careers and to promote STEM education. Participating employees are part of a broader program designed to introduce students to aviation careers involving airports, air traffic controllers, aviation maintenance technicians, unmanned aircraft systems (drones), pilots and space.

You may be surprised to learn that many pilots work in the government sector. The FAA's Aircraft Certification Service, for example, employs up to 30 flight test pilots, about half of whom fly helicopters, along with other aircraft. Their job includes evaluating helicopter safety and determining if the aircraft, parts, electronic systems, or other equipment or procedures meet FAA standards. Base pay ranges from $83,458 to $129,384, depending on qualifications and experience, with locality increases from 15.95% to 41.44%.

Aviation job opportunities are on the rise. The expectation is that the need for aviators will outpace needs in other occupations. According to the Federal Bureau of Labor Statistics, careers for helicopter pilots and other commercial pilots (excluding airline pilots), expect to grow "much faster than the average for all occupations." The Bureau also reports that "the number of commercial pilot jobs is projected to increase in various industries, especially in ambulance services."

The median annual wage for commercial pilots in May 2020 was $93,300, which compares favorably to the median pay for all occupations at $41,954 a year, given a 40-hour workweek.

Despite these competitive pay rates and demand, the industry still struggles to fill positions due to the current lack of available pilots.

This potential shortage and the opportunity for well-paying jobs is why U.S. Rep. Eddie Bernice Johnson reached out to the FAA's STEM AVSED Adopt-a-School program to promote aeronautical careers among students in her Dallas-area district.

The FAA Adopt-a-School program encourages FAA personnel to get involved to share personal knowledge and aviation experience with educators and students. The program matches the aviation skills, expertise, knowledge, and resources of the FAA with the needs of the educational objectives of local schools. The FAA identifies Adopt-a-School locations in each region. Two years ago, schools in Maryland and Texas participated in a limited pilot of the program. This year, at least one school per FAA region will participate. In the Southwest Region, for example, which includes Arkansas, Louisiana, New Mexico, Oklahoma, and Rep. Johnson's district in Texas, the FAA will adopt the 580-student Atoka Elementary School in Atoka, Okla., that serves a high percentage of Native American students. The Southwest Region may also add a Dallas Independent School District campus.

The program selects schools based on their diverse populations, proximity to FAA facilities, and the proximity of potential industry partners. Dallas School District representatives and

other educators recommended a group of 4th graders to participate in the program since students often start thinking about future careers by the time they enter middle school.

In 2022, the Adopt-a-School pilot lesson will focus on introducing 4th-grade students to various pilot careers and the solutions they provide. The lesson will review the different types of training and skill requirements for pilots, the types of aircraft they fly, and the different work they perform.

"We're really excited about it," said Janet Scott, FAA Adopt-a-School Southwest Region Program Lead.

The speakers will encourage students interested in aviation careers to do their best in STEM-focused and aviation-focused curricula. "These subjects will help them with their paths to success," Scott said.

FAA pilots who want to volunteer and people who want to learn more about the Adopt-a-School program can email program leaders at 9-APL-FAAEducation@faa.gov. Or contact a STEM AVSED regional program analyst at the nearest FAA regional center. See the website to learn more: faa.gov/education.

Gene Trainor works as the communications specialist/executive technical editor for the FAA's Compliance and Airworthiness Division.

Check out our GA Safety Facebook page at **Facebook.com/groups/GASafety**

If you're not a member, we encourage you to join the group of more than 15,000 participants in the GA community who share safety principles and best practices, participate in positive and safe engagement with the FAA Safety Team (FAASTeam), and post relevant GA content that makes the National Airspace System safer.

STEM to the Students

I am an FAA Safety Rep from Cleveland, Ohio. Six years ago, I started the Aerospace Engineering and Aviation program at Steubenville High School. We are an Ohio career and technical program, and I am happy to say that we started our pilot program in affiliation with the AOPA You Can Fly curriculum, which has grown to include the 4th-12th grade classes. We have implemented the FAA Safety Briefing magazines since the beginning; our students enjoy the articles. During the pandemic, they were crucial to educational quality due to the switch to online learning, and have been a huge benefit ensuring all areas of aviation are meeting FAA standards as our industry evolves.
— Natalie

Hi Natalie — Thanks for sharing and we're so glad to hear that you found success in starting this aviation program with this crucial younger demographic. It's always nice to hear when our efforts to provide informative and engaging pieces have been successful, and we are certainly happy to support Science, Technology, Engineering, and Math (STEM). Some of your students might be especially interested in the two GA Flying Companion issues we've produced (Jul/Aug 2014 and March/April 2018 at bit.ly/FAASB-Arc), since they offer a very basic introduction to a broad range of topics involved in GA flying. Thanks again!

How Do I … ?

Again, a stellar issue of FAA Safety Briefing focusing on UAS aircraft. Now that I've read your article "How Do I… ? FAA Resources for UAS" (bit.ly/FAAdroneResources), I'm thinking of becoming a drone instructor. Yes, I know it won't be the same as boring holes in the sky in a Cessna, but during the pandemic, which is still ravaging the Caribbean, I thought I could add on this skill set. Their multitude of uses is mind blowing, and it will be an asset to capitalize on it. I look forward to next month's article!
— Niven

Hi Niven — Thanks so much for the feedback. It's always nice to know that we've hit the mark in terms of material that our fellow aviators need and want to receive. It is most definitely a team effort! Congrats on sharpening your drone skills and qualifications. One of the great things about aviation is that there is always something new to learn.

The FAA's The Air Up There Podcast Presents: "Drone-ing" Your Own Business

Ever wanted to start your own business? Why not do it with a drone! On the latest episode of the FAA's The Air Up There podcast, you'll learn about drone entrepreneurship and the versatility of drone piloting. Check out the full episode here: bit.ly/DroneCareers.

Get the LED Out

Great information on LED (light emitting diode) lights (see the article here: bit.ly/LEDtechnology). As a pilot, I installed LED lights in the plane too — lots brighter and less wear and tear on the electrical system. See and be seen — good safety improvements.
— John

Hi John — Thanks for your feedback and for sharing your experience with the LED lights on your aircraft. You're 100% correct — they're brighter, lighter, use less power, and are great for increasing visibility to other aircraft, both in the air and on the ground.

For more stories and news, check out our new blog "Cleared for Takeoff" at medium.com/FAA.

Let us hear from you! Send your comments, suggestions, and questions to SafetyBriefing@faa.gov. You can also reach us on Twitter @FAASafetyBrief or on Facebook at facebook.com/FAA.

We may edit letters for style and/or length. Due to our publishing schedule, responses may not appear for several issues. While we do not print anonymous letters, we will withhold names or send personal replies upon request. If you have a concern with an immediate FAA operational issue, contact your local Flight Standards Office or air traffic facility.

STEAM RISES

"Education is not the filling of a pail, but the lighting of a fire."
— William Butler Yeats

Most people are familiar with the fiery incarnation of the phoenix, a mythological bird that obtains new life by rising from the ashes of its predecessor. I've always loved the symbolism, so various versions of the fierce and fiery phoenix hang on my walls. But I also have a medallion of the water-and-fire phoenix, which is a combination of the more familiar fire creature and an alternate water version that cycles from ice to a pool of frozen water, then to liquid, and finally back to the solidity of ice.

If you'd care to follow me on this flight of fancy, perhaps we let this creature illustrate a whimsical riff on Yeats' observation. Just as water and fire are both integral to this version of the phoenix, education involves both filling the pail and lighting the fire. I can't resist observing that the "both/and" nature of the riff has linguistic support: "burn" can refer to both water — a stream — and fire.

"The whole purpose of education is to turn mirrors into windows."
— Sydney J. Harris

When it comes to igniting the passion for aviation, whether as a subject, a hobby, a career, or all three, education in science, technology, engineering, and math (STEM) is clearly important. But as an enthusiastic liberal arts major and an avid all-over-the-map bibliophile, I want to conclude this issue of *FAA Safety Briefing* with a plug for how the arts can also be a portal to aviation. That was certainly true for me. Books, stories, artwork, and movies about airplanes and their crews ignited and fed my passion for aviation. The various forms of aviation art also encouraged me to take a greater interest in, and liking for, science and math classes. Since portals and windows work in both directions, I'd like to encourage those whose aviation interest is rooted in STEM to branch out into STEAM — let your interest in aviation spark curiosity about how both the beauty and the science of aviation can be expressed through the arts. If you need a place to start, I've included a few personal favorites in the sidebar. I'd love to hear from you on worthy additions to the list. Enjoy!

Susan K. Parson (susan.parson@faa.gov) is editor of *FAA Safety Briefing* and a Special Assistant in the FAA's Flight Standards Service. She is a general aviation pilot and flight instructor.

The universe of aviation-themed books, films, podcasts, and other artistic expression is vast and constantly expanding. We offer here just a few selections we have enjoyed, in hopes that you will find them equally enchanting.

AVIATION BOOKS:

- **A Gift of Wings** (Richard Bach)
- **Biplane** (Richard Bach)
- **Fate is the Hunter** (Ernest K Gann)
- **The Flight** (Dan Hampton)
- **Flight to Arras** (Antoine de Saint-Exupery)
- **Fly Girls** (Keith O'Brien)
- **The High and the Mighty** (Ernest K Gann)
- **Jackie Cochran: An Autobiography** (Jackie Cochran)
- **Listen! The Wind** (Anne Morrow Lindbergh)
- **Night Flight** (Antoine de Saint-Exupery)
- **North to the Orient** (Anne Morrow Lindbergh)
- **Skyfaring: A Journey with a Pilot** (Mark Vanhoenacker)
- **Stranger to the Ground** (Richard Bach)
- **Talkin' about Bessie: The Story of Aviator Elizabeth Coleman"** (Nikki Grimes, illustrated by E.B.Lewis)
- **Travels with Puff** (Richard Bach)
- **Unlocking the Sky: Glenn Hammond Curtiss & the Race to Invent the Airplane** (Seth Shulman)
- **West with the Night** (Beryl Markham)
- **Wind, Sand, and Stars** (Antoine de Saint-Exupery)
- **The Wright Brothers** (David McCullough)

PODCASTS:

- **The Air Up There** (www.faa.gov/podcasts)
- **Airplane Geeks** (airplanegeeks.com)
- **Aviation Careers** (aviationcareerspodcast.com)
- **Ask the A&Ps** (aopa.org/podcasts)
- **The Finer Points** (thefinerpoints.com)
- **The Green Dot** (eaa.org)
- **Never Again** (aopa.org/podcasts)
- **Opposing Bases Air Traffic Talk** (opposingbases.com)

FILMS:

- **Flight of the Phoenix**
- **Fly Away Home**
- **Flying the Feathered Edge: Bob Hoover Project**
- **The High and the Mighty**
- **Living in the Age of Airplanes**
- **Memphis Belle**
- **One Six Right**
- **Red Tails**
- **The Right Stuff**
- **Top Gun**

JIM BROUGH

National Aviation and Space Education Program Analyst, *FAA Aviation Workforce and Education Division*

A love for aviation has always been in Jim Brough's blood. He can't help looking up every time an airplane flies overhead. He always knew that he wanted to fly someday. As a teenager, Jim joined Civil Air Patrol as a cadet to get on a flightpath to success.

"Civil Air Patrol was a life-changing experience," he notes. "Being part of CAP allowed me to be around airplanes and around people who shared my same passion for aviation."

Jim's parents advised him to pursue a college education and in 1986 he received a bachelor's degree in elementary education from Keene State College in New Hampshire. Then in 1997, he earned a master of education degree in heritage studies from Plymouth State College.

While working as a teacher in the 1990s, Jim's vector finally crossed with his passion for aviation when he earned a private pilot certificate.

"My principal asked me if I would teach an aviation class to students," Jim said. "That's where my career in aviation education took off!"

Jim began teaching a simple course using the very first flight simulator available on a computer. It allowed him to teach basic math skills like *rate* times *time* equals *distance*, which evolved into teaching ratios and scale. He expanded his teaching to include flight patterns, communications, and other related topics. He also worked with the Experimental Aircraft Association's (EAA) Young Eagles program to give flights to his students.

Recognition for his efforts resulted in a year-long paid sabbatical to develop low-cost aviation programs for schools throughout New Hampshire. During that year, Jim connected with the FAA's Science, Technology, Engineering, and Math (STEM) Aviation and Space Education (AVSED) program, which has been an integral part of FAA outreach and the national education system for decades. The program was established to introduce K-12 students to aviation and aerospace careers and to promote STEM education. Jim assisted the FAA with educator workshops and running aviation career education (ACE) academies.

Jim became an aviation education professional when he was hired to work directly for the FAA as the national AVSED program analyst under the FAA's Aviation Workforce and Education Division.

"With the support of numerous partners in the public and private sectors, we reach out to students around the world so they can learn more about aviation, as well as the critical role that STEM plays in a young aviator's future," Jim explains. "You don't have to get every kid to pursue aviation, but the one you miss might have made all the difference."

At the core of the program are strong relationships with the community and aviation organizations. This vast network facilitates information sharing, increases resources, and provides support to the public.

The FAA has redesigned the STEM AVSED program to address current issues that the aviation community is facing. This redesign is a high priority for the FAA with a focus on building the aviation and aerospace workforce of the future.

"Many people think aviation is too expensive, so they don't entertain the possibility. We want to show the public how they can pursue their dreams, and inform them about grants, scholarships, and other opportunities that exist to support them," Jim says.

Jim encourages general aviation pilots, our ambassadors to the aviation world, to serve as mentors and sources of information to our youth and to others interested in the aviation industry. "Don't expect schools and community organizations to come to you. Go out and be a role model and share your passion for aviation. It sounds simple, but it can make a huge impact."

Paul Cianciolo is an associate editor and the social media lead for *FAA Safety Briefing*. He is a U.S. Air Force veteran, and an auxiliary airman with Civil Air Patrol.

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Look Who's Reading *FAA Safety Briefing*

Pilot, pioneer, and global STEM ambassador Shaesta Waiz keeps her safety skills sharp by reading *FAA Safety Briefing*.