

A background image featuring a complex network diagram. The diagram consists of numerous small, multi-colored nodes (white, pink, blue, yellow) connected by thin, light-colored lines, creating a dense web of connections. The background has a light teal to purple gradient.

GAJSC

Navigating a Period of Rapid
Change: COVID-19 Best
Practices

COVID-19 LESSONS LEARNED: MITIGATING AREAS OF CONCERN DURING A PERIOD OF RAPID CHANGE THROUGH COLLABORATIVE BEST PRACTICES

The Coronavirus Pandemic (COVID-19) created a unique set of stressors and hazards affecting nearly every facet of domestic and international transportation, and, in response, the aviation community developed and implemented a host of mitigations and best practices to reduce the negative impact of COVID-19 on the safety of operations and the health of personnel. While all areas of general aviation were impacted by COVID-19, not all areas were impacted in the same way or at the same time; similarly, the return to normal operations was not uniform. This document is a collaborative guide to some of the best practices developed by government and industry to mitigate the risks from this period of unique and changing threats.

Some of the best practices in this document are a response to the mitigations necessitated by COVID-19. For instance, social distancing is an effective tool to stop the spread and reduce exposure to COVID-19; however, the impacts of social distancing in a myriad of situations common to the aviation industry creates a secondary set of hazards. The best practices developed by government and industry to meet these challenges reflect the particular set of circumstances in each domain.

This document is organized by domain:

- [Business Aviation](#)
- [Flight Training](#)
- [Recreational General Aviation](#)
- [Maintenance](#)
- [Airports/FBOs](#)
- [Rotorcraft](#)
- And concluded with an [appendix](#) listing each organization's best practices.

While this document seeks to provide a comprehensive guide to the major threats facing general aviation during COVID-19; it is also designed to be a living document. As general aviation reflects on the COVID-19 pandemic, especially as operations return to normal, it is likely additional best practices will emerge. The goal of this document is to act as a reference for future periods of risk and stress, and as more knowledge becomes available, this reference will grow as well.

Lastly, while this document is a reflection on COVID-19 and its associated risks and best practices, it should not be only used in case of another pandemic. Instead, this reference should be utilized whenever a hazard becomes known. For instance, while many areas of general aviation experienced unprecedented levels of fatigue because of COVID-19; aviation safety

professionals understand fatigue is not restricted only to a pandemic. This document should be used as a tool that takes the combined best practices of government and industry across a broad swath of threats in order to mitigate them.

Business Aviation

Business Aviation operations experienced a sharp downturn in the early spring of 2020 when COVID-19 began to rapidly spread throughout the United States and the entire air travel industry faced a rapid decrease in operations. However, unlike Part 121 air carriers, the summer of 2020 brought a steady increase to business aviation operations and a close return to pre-pandemic levels. Although business aviation operations experience a shorter decrease in demand than other sectors of the aviation industry, the impacts of the COVID-19 pandemic were widely felt and many organizations worked together to mitigate the risks.

➤ Lack of Recent Flying Experience

Flying after a period of inactivity has been a known risk for the aviation community, and the GAJSC has implemented several strategies and outreach campaigns to address this issue. While flying after a period of inactivity has been a known threat, the extent to which COVID-19 impacted the currency across all domains should not be underestimated. For business operations, flying after a period of inactivity led to missed checklist items, altitude and heading deviations, and an increase in unstable approaches. Some examples include:

- Business pilot reported having an altitude deviation while hand-flying the aircraft and attributed it to lack of flying due to the COVID-19 slow down.
- Business flight crew reported flying the incorrect pattern to a landing and attributed the error to an irregular flying schedule.
- Business pilot reported being unsure about currency for night flying due to the slow-down in operations as a result of COVID-19.

Best Practices and Mitigations

GAJSC (General Aviation Joint Steering Committee)

GAJSC SE 8: Flight Training after a Period of Inactivity

- Safety Enhancement focused on providing resources and outreach for pilots returning to active flying after a period of inactivity including courses, webinars, and other online material.

FAA (Federal Aviation Administration)

Exemption 18685

- FAA Exemption providing relief to business aviation operators by extending the time frame for check airman to conduct a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner from 24 to 36 months.

NBAA (National Business Aviation Association)

[Aircraft Operational Considerations with the Coronavirus](#)

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

[COVID-19 Risk Mitigation for Business Aircraft Operations](#)

- Resources, checklists, and articles for operators and pilots pertaining to each stage of flight from preflight to after landing.

[Business Flying After COVID-19](#)

- Article discussing the continuation of certain best practices following the COVID-19 pandemic including operational status, cleaning procedures, and human factors considerations.

NATA (National Air Transportation Association)

[Coronavirus Resource Page](#)

- Resources for NATA members on best practices during COVID-19 including testing requirements for city pairing, operational considerations, and information on FAA exemptions and other relief.

AOPA (Aircraft Owners and Pilots Association)

[COVID-19 Flight Operations Guide](#)

- Provides guidance on flight operations during COVID-19 including instructional flights, dual flights, and solo flights across a variety of domains.

[Rusty Pilot Program](#)

- Webinars and online instruction to aid general aviation pilots returning to active flying after a period of inactivity.

IATA (International Air Transport Association)

[Human Factors and COVID-19](#)

- Guidance from IATA on best practices regarding human factors and operational considerations during and after the COVID-19 pandemic including the impacts of stress and fatigue, as well as returning to service.

➤ COVID Procedure Changes

Business aviation operators and flight crews reported experiencing additional stressors due to the numerous procedure changes implemented to mitigate COVID-19 from additional cleaning procedures to city pairing changes to NOTAM currency. While the procedure changes were many and varied, the impact of the changes from a human factors perspective created an additional threat for flight crews and operators. Working together, members of the business aviation community worked to mitigate these impacts through checklists, guidance, and other online resources. For business aviation pilots the additional and altered procedures sometimes led to missed checklist items, departing without proper documentation, and navigational errors. Some examples include:

- Business aviation pilot reported flying an aircraft without the proper documentation and correct maintenance records.
- Business aviation pilots reported requiring additional time for preflight checks due to additional COVID-19 procedures.
- Business aviation pilots reported difficulty acquiring most current NOTAMs between routine city pairings due to the rapidly changing nature of the National Airspace System.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

Internal FAA Guidance

- ATC published guidance on standardized phraseology for NOTAMs regarding ATC Contingency Operations.

NBAA (National Business Aviation Association)

COVID-19 Restrictions by State

- Real time tracking of COVID-19 restrictions by state (for domestic U.S. use only). Also provides POC for NBAA Regional Representatives.

COVID-19 Point of Impact

- Compendium of resources for NBAA members including news articles and best practices from across the industry.

Aircraft Operational Considerations with the Coronavirus

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

COVID-19 Risk Mitigation for Business Aircraft Operations

- Best practices for operators and pilots pertaining to each stage of flight from preflight to after landing.

NATA (National Air Transportation Association)

Coronavirus Resource Page

- Resources for NATA members on best practices during COVID-19 including testing requirements for city pairing, operational considerations, and information on FAA exemptions and other relief.

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Transitioning to Normal Operations

- Guidance and best practices for FBO and airport operators on maintaining safety during COVID-19 and for a return to normal operations including detailed cleaning procedures and human factors considerations.

FSF (Flight Safety Foundation)

COVID-19 Roadmap

- Comprehensive guide for maintaining safe and effective operations during COVID-19. Revised as additional information and change in operations occurs.

COVID-19 Punchlists

- Series of checklists on COVID-19 procedures across all phases of flight and industries, including reduced operations, continuing operations, and return to normal status.

IATA (International Air Transport Association)

TESTING AND CROSS-BORDER RISK MANAGEMENT MEASURES MANUAL

- Provides guidance for testing policies and procedures, travel between city pairings with dissimilar procedures, and risk management procedures for operators.

Flight Crew and ATCO Interface during Restart

- Updated guidance for flight crews and operators regarding human factors considerations, standardized procedures, and implementing CDC guidance.

➤ Fatigue

Business aviation operators and pilots reported feeling unusual amounts of fatigue as the COVID-19 pandemic continued. Contributing factors include psychological and physiological stressors of unusual operations, the increase in time and number of daily procedures, as well as the inundation of new information prior to each mission. Flight crews specifically reported:

- Business aviation pilot reported a speed deviation during climb out. Pilot referenced distraction while trying to communicate with a busy ATC as well as a lack of flying contributed to the event.
- Pilot reported an airborne conflict after confusion identifying the correct runway for a night visual landing.

Best Practices and Mitigations

FSF (Flight Safety Foundation)

Human Factors Punchcard

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

NBAA (National Business Aviation Association)

Aircraft Operational Considerations with the Coronavirus

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

COVID-19 Risk Mitigation for Business Aircraft Operations

- Best practices for operators and pilots pertaining to each stage of flight from preflight to after landing.

Business Flying After COVID-19

- Article discussing the continuation of certain best practices following the COVID-19 pandemic including operational status, cleaning procedures, and human factors considerations.

IATA (International Air Transport Association)

Flight Crew and ATCO Interface during Restart

- Updated guidance for flight crews and operators regarding human factors considerations, standardized procedures, and implementing CDC guidance.

NATA (National Air Transportation Association)

Keep Employees Safe during the COVID-19 Pandemic

- Guidance from NATA on physiological and psychological safety during the COVID-19 pandemic, as well as actionable best practices for operators on how to maintain a safe and professional environment.

Flight Training

The COVID-19 pandemic created an unprecedented flight training environment as the difficulties of training in an enclosed space for a prolonged period of time was met with the realities of a global pandemic. The initial downturn in operations was largely offset as cleaning practices, quarantine, and social distancing became accepted ways to mitigate the spread of COVID-19. Working together a number of flight schools and university flight training programs were able to share best practices and resume operations in a safe environment. One key element to the continuing presence of flight training operations is:

U.S. Department of State

National Interest Exceptions

- Policy affirming pilot training is in the National Interest of the United States. Policy is utilized both for domestic flight training including Part 142, as well as for foreign persons completing flight training in the United States because similar training is unavailable in their home country.

This policy was leveraged in several situations including simulator training and continued operations for GA/Part 142 operations. While this policy does not provide guidance specifically for operations during COVID-19; the policy enables flight training to continue as an item of national interest.

➤ Aircraft Cleaning

One of the primary concerns regarding flight training and shared aircraft usage was maintaining a clean and sanitized environment despite a variety of student pilots and instructors. In addition to maintaining proper sanitization, reports from early in the pandemic noted decreased airworthiness as a result of harsh cleaning chemicals. Guidance from the CDC on proper cleaning protocols as well as aircraft manufacturers enabled flight training to proceed in a safe manner.

- Pilot reported cleaning solution impacted aircraft instrument panel and avionics.
- Pilot reported smoke during flight due to alcohol-based cleaning solution coming into contact with aircraft equipment.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

SAFO 20003

- Guidance to flight crews on cleaning and sanitizing flight decks prior to departure to minimize the spread of COVID-19. Guidance should be used in conjunction with specific instructions from manufacturers.

SAIB NM-20-17

- Guidance from the FAA for cleaning aircraft interiors for owners and operators of aircraft. Guidance should be used in conjunction with specific instructions from manufacturers.

CDC (Center for Disease Control)

Airline Guidance

- Guidance from the CDC for cabin crews in a commercial air carrier environment. However, CDC guidance stresses the importance of universal PPE usage (including face masks) and sanitizing high touch surfaces between flights.

GAMA (General Aviation Manufacturers Association)

COVID-19 Cleaning and Disinfecting Guidance

- Collected GAMA member guidance on how to safely clean certificated aircraft to maintain airworthiness and avoid damaging avionics. Guidance for both airframes and avionics.

NBAA (National Business Aviation Association)

Aircraft Disinfection for the Coronavirus

- Resource for operators and pilots on disinfecting procedures for various airframes and avionics. Includes guidance from manufacturers as well as the CDC and the FAA.

NATA (National Air Transportation Association)

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Other Best Practices

- Flight schools developed their own best practices including:
 - Students were assigned specific aircraft to minimize cross-contamination of high touch points (including controls surfaces and instruments).
 - Individual cleaning kits to sanitize high touch points prior to and after a flight lesson.
 - Updated checklists to include cleaning procedures of high touch points in an aircraft.

➤ Quarantine/Social Distancing

Minimizing exposure and spread of COVID-19 emerged as a corollary risk to aircraft cleaning procedures. While quarantine to minimize the spread of COVID-19 and social distancing to minimize exposure are mitigations in themselves to the risks of the Coronavirus, they also presented unique challenges to the flight training community due to the difficulty of maintaining social distance in an aircraft, particularly light general aviation aircraft frequently used in the training environment.

- CFIs and students reported concerns over face mask usage during flight instruction: both its use and lack thereof.
- CFIs and students reported difficulty maintaining social distancing as recommended by the CDC during flight instruction.

Best Practices and Mitigations

FSF (Flight Safety Foundation)

COVID-19 Roadmap

- Comprehensive guide for maintaining safe and effective operations during COVID-19. Revised as additional information and change in operations occurs.

COVID-19 Punchlists

- Series of checklists on COVID-19 procedures across all phases of flight and industries, including reduced operations, continuing operations, and return to normal status.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

NATA (National Air Transportation Association)

Coronavirus Resource Page

- Resources for NATA members on best practices during COVID-19 including testing requirements for city pairing, operational considerations, and information on FAA exemptions and other relief.

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Transitioning to Normal Operations

- Guidance and best practices for FBO and airport operators on maintaining safety during COVID-19 and for a return to normal operations including detailed cleaning procedures and human factors considerations.

Other Best Practices

- Flight schools and flight training centers reported implementing these best practices:
 - Students and instructors formed pods to minimize interaction.
 - Quarantine before returning to school/flight instruction.
 - Quarantine after exposure to COVID-19.
 - Easily accessible COVID-19 testing procedures including daily temperature checks.
 - Easily visible social distancing cues including floor markings.

➤ Support

The unusual procedures required to minimize the risk and spread of COVID-19 necessitated a diversion from normal operating procedures, particularly for flight training purposes. In addition, university flight training programs faced the unique challenge of also housing student pilots in close proximity with others. These procedures and constraints led to a notably more stressful training program as some students contended an academic year unlike anything they had been anticipating. The psychological fatigue from these stressors is as important as cleaning procedures or social distancing.

Best Practices and Mitigations

NATA (National Air Transportation Association)

Keep Employees Safe during the COVID-19 Pandemic

- Best practice for keeping employees physically and psychologically healthy including procedures for minimizing the spread of COVID

Transitioning to Normal Operations

- Guidance and best practices for FBO and airport operators on maintaining safety during COVID-19 and for a return to normal operations including detailed cleaning procedures and human factors considerations.

FSF (Flight Safety Foundation)

Human Factors Punch-card

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

Other Best Practices:

- University training programs also implemented:
 - Increased access to mental health care.
 - Awareness regarding fatigue as an aviation safety hazard.

Recreational General Aviation

Like the other general aviation domains, recreational flying also saw a dip in operations during the COVID-19 pandemic. However, in large part due to the ability to recreational general aviation pilots to maintain social distance through flying alone or with close family members, the number of recreational general aviation operations soon recovered to close to its pre-pandemic levels.

➤ NOTAM Status

During the COVID-19 pandemic, the rapidly changing national airspace system required frequent and sudden NOTAM changes. Recreational general aviation pilots sometimes found themselves in situations where they did not have the most current or accurate knowledge of open airspace or airports.

- Recreation general aviation pilot reported landing on a closed runway due to the relevant NOTAM not being issued until the pilot was already enroute.
- Recreational general aviation pilot reported an airspace incursion due to not having access to the most relevant NOTAM.
- Recreational general aviation pilot reported doing pattern work, practice landings and takeoffs at an airport that had been NOTAMed closed.
- Recreational general aviation pilot reported an airspace infraction due to ATC-0 operations in the airspace.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

NOTAM Modernization

- Pre-pandemic FAA initiative to modernize and standardize NOTAMs including a single portal to access current NOTAM information. Implementation is on-going.

IATA (International Air Transport Association)

COVID-19 Dashboard on State & Airport Restrictions

- COVID-19 Dashboard including current NOTAMs and other guidance regarding travel procedures and airspace operating conditions.

➤ Pilot Currency

Recreational general aviation pilots also experienced a decrease in operations due to the COVID-19 pandemic, whether due to local and state-wide restrictions, quarantine procedures, or access to aircraft; recreational general aviation pilots reported lack of currency directly related to the COVID-19 pandemic.

- GA pilot reported, after not flying in the last several months due to COVID-19, unintentionally landing and departing on a Displaced Threshold at the destination airport. Pilot reported rusty preflight procedures, runway markings that have not been maintained and are difficult to see contributed to the event.
- GA pilot reported an airspace incursion and attributed it to a lack of recent flying due to COVID-19.
- GA pilot a runway incursion due to a lack of recent flying because of COVID-19. The pilot reported taking an unfamiliar taxi route away from their home airport.

Best Practices and Mitigations

GAJSC (General Aviation Joint Steering Committee)

GAJSC SE 8: Flight Training after a Period of Inactivity

- Safety Enhancement focused on providing resources and outreach for pilots returning to active flying after a period of inactivity including courses, webinars, and other online material.

FAA (Federal Aviation Administration)

SFAR 118

- Special regulatory guidance extending the currency of FAA medical requirements as well as some extensions to training due to COVID-19.

AOPA (Aircraft Owners and Pilots Association)

Rusty Pilot Program

- Webinars and online instruction to aid general aviation pilots returning to active flying after a period of inactivity.

COVID-19 Flight Operations Guide

- Provides guidance on flight operations during COVID-19 including instructional flights, dual flights, and solo flights across a variety of domains.

IATA (International Air Transport Association)

Human Factors and COVID-19

- Guidance from IATA on best practices regarding human factors and operational considerations during and after the COVID-19 pandemic including the impacts of stress and fatigue, as well as returning to service.

➤ Congested ATC Frequencies

Reports from recreational general aviation pilots about long delays on frequency, difficulty obtaining clearances, as well as difficulty communicating over frequency were a result of the unique challenges facing controlled airspace during the Coronavirus pandemic. Recreational general aviation pilots sometimes reported difficulty obtaining flight following due to controller workload, a side effect of ensuring social distancing and minimizing COVID-19 exposure for aircraft traffic controllers. Some examples include:

- Pilot reported communications issues due to Tower Controller working multiple positions on same frequency due to perceived facility staffing issues.
- Pilot reported their perception that ATC was too busy to communicate with them while attempting to request a clearance to descend.
- Pilot reported a speed deviation during climb out. Pilot referenced distraction while trying to communicate with a busy ATC and lack of flying contributed to the event.

Best Practices

AOPA (Aircraft Owners and Pilots Association)

COVID-19 Flight Operations Guide

- Provides guidance on flight operations during COVID-19 including instructional flights, dual flights, and solo flights across a variety of domains.

NBAA (National Business Aviation Association)

COVID-19 Point of Impact

- Compendium of resources for NBAA members including news articles and best practices from across the industry.

Aircraft Operational Considerations with the Coronavirus

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

Internal FAA Guidance:

- Internal FAA guidance regarding perceived congested frequencies included:
 - Guidance on NOTAM construction in the event of ATC-0 operations.
 - Guidance for Air Traffic Controllers on unusual situations arising due to COVID-19 procedures.

- Human factors guidance on ATC-0 operations.
- Additional procedures to minimize disruption to air traffic in the event of COVID-19 cleaning.
- Guidance for Air Traffic Controllers on a return to normal operations and an increase in traffic.

Additional Best Practices:

- Reviewing standard phraseology and frequencies as part of standard preflight procedure
- Filing an IFR clearance prior to departure to ensure there is no delay during flight nor undue pressure on ATC facilities or pilot workload.
- Recreational general aviation pilots may also choose routes through less congested airspace, particularly if they will be flying VFR and requesting flight following.
- All pilots should review “see and avoid” procedures especially in the airport environment and near approach and departure corridors.

Maintenance

Maintenance professionals were not exempt from the hazards of the Coronavirus pandemic. As more pilots chose to use a period of decreased operations to increase the pace of maintenance (especially preventive maintenance), the pace of maintenance operations increased. Additionally, maintenance professionals were advising pilots on cleaning procedures, as well as altering their own operations to promote social distancing and minimize the spread of COVID-19. Maintenance professionals developed best practices to guide their operations through this period of global change.

➤ Aircraft Cleaning Procedures

Early in the pandemic, maintenance professional reported difficulties adequately cleaning aircraft both to sterilize high touch areas and to maintain airworthiness. Maintenance professionals also reported the use of unauthorized cleaning solutions by pilots and passengers, particularly the use of alcohol and bleach. Some examples include:

- Maintenance technician reported unapproved cleaning solutions used on aircraft causing unnecessary wear on instrument panel.
- Maintenance technician reported confusion over which cleaning solutions are appropriate to use on an aircraft.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

SAFO 20003

- Guidance to flight crews on cleaning and sanitizing flight decks prior to departure to minimize the spread of COVID-19. Guidance should be used in conjunction with specific instructions from manufacturers.

SAIB NM-20-17

- Guidance from the FAA for cleaning aircraft interiors for owners and operators of aircraft. Guidance should be used in conjunction with specific instructions from manufacturers.

CDC (Center for Disease Control)

Airline Guidance

- Guidance from the CDC for cabin crews in a commercial air carrier environment. However, CDC guidance stresses the importance of universal PPE usage (including face masks) and sanitizing high touch surfaces between flights.

GAMA (General Aviation Manufacturers Association)

COVID-19 Cleaning and Disinfecting Guidance

- Collected GAMA member guidance on how to safely clean certificated aircraft to maintain airworthiness and avoid damaging avionics. Guidance for both airframes and avionics.

NBAA (National Business Aviation Association)

Aircraft Disinfection for the Coronavirus

- Resource for operators and pilots on disinfecting procedures for various airframes and avionics. Includes guidance from manufacturers as well as the CDC and the FAA.

NATA (National Air Transportation Association)

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

➤ Aircraft Storage

Maintenance professionals reported an influx of aircraft remaining on the ground for longer periods of time as well as aircraft moving quickly to “long-term” storage and then returning to operations. These issues impacted operators across a several sectors who experienced a rapid downturn followed by a resurgence in operations, maintenance technicians were challenged to safely, efficiently, and rapidly store aircraft followed by a rapid return to service.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

Plane Sense: General Aviation Information

- Handbook for general aviation owners on best practices for maintaining, owning, and operating personal aircraft.

AOPA (Aircraft Owners and Pilots Association)

Winter Storage Tips

- AOPA guidance on preparing a plane for several months of inactivity in order to minimize wear on aircraft and associated components.

IATA (International Air Transport Association)

Guidance for Managing Airworthiness for Aircraft Operations During and Post Pandemic

- Overarching guidance for all domains on high-level best practices for aircraft storage and maintenance during the pandemic. Document also includes high level best practices for returning aircraft to service.

NBAA (National Business Aviation Association)

Fleet Readiness and Maintenance Considerations during COVID-19

- Webinar on safe storage practices including maintenance best practices both for long-term storage and for returning an aircraft to service.

➤ PPE Usage

Maintenance professionals reported concerns over their ability to wear PPE while safely performing their required maintenance duties. Early in the pandemic, several maintenance professionals reported difficulty wearing a mask and protective eye wear due to the propensity of eye wear to fog. Maintenance professionals also expressed concern over potential skin/eye contamination with harsh chemicals if they were to readjust their mask. Some maintenance professionals were unsure of the chemicals used to clean/disinfect aircraft and the physiological consequences of their exposure to those cleaning agents. As the pandemic elapsed, changing mask technology (including wire nose bridges) as well as new social distancing procedures enabled maintenance technicians to work safely and effectively on aircraft.

- Maintenance technician reported being unable to see while performing required maintenance on an aircraft as his protective eyewear fogged due to mask usage.
- Maintenance technician reported concerns over contaminating eyes/skin with harsh chemicals due to the unusual feeling of wearing a mask and the new procedures around wearing one.
- Maintenance technician reported feeling forced to choose between PPE (either eye protection or a face mask) due to the fact that the face mask frequently caused the eye protection to fog while performing maintenance.

Best Practices

CDC (Center for Disease Control)

Airline Guidance

- Guidance from the CDC for cabin crews in a commercial air carrier environment. However, CDC guidance stresses the importance of universal PPE usage (including face masks) and sanitizing high touch surfaces between flights.

GAMA (General Aviation Manufacturers Association)

COVID-19 Cleaning and Disinfecting Guidance

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NATA (National Air Transportation Association)

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Keep Employees Safe during the COVID-19 Pandemic

- Best practice for keeping employees physically and psychologically healthy including procedures for minimizing the spread of COVID

FSF (Flight Safety Foundation)

New Norms in Air Travel: Hygiene Etiquette

- Guidance for anyone interacting with air travel including passengers, flight crews, cabin crews, and ground crews; details best practices for individual etiquette focusing on the importance of PPE and other mitigation strategies.

Airports/FBOs

Public use spaces such as airport and FBOs reported navigating between keeping employees and visitors safe, minimizing COVID-19 exposure, and maintaining daily operations. Some services at FBOs saw many of the same hazards as maintenance technicians and repair stations regarding the usage of PPE, while other services faced challenges that were similar to other multi-use public space. In addition, airports were also impacted by the fluidity of the airspace around them, including altered control tower operating hours, and construction projects which closed portions of airports.

➤ Altered Operating Hours (including tower closures)

Mitigating the spread of COVID-19 necessitated social distancing and quarantine procedures, and, as a consequence, services at FBOs and airports became more limited as were tower operating hours. These policies enabled airports to remain open to the public through the pandemic, but required revising the daily operating policies. Some examples include:

- Pilot reported taxiing without clearance because he thought Tower was still closed, but it was actually 15 minutes after the Tower had opened.
- Pilot reported departing without a clearance because the pilot believed the tower was closed. Pilot broadcast intentions on CTAF frequency instead of Tower frequency.
- Pilot reported flying the incorrect traffic pattern after the Tower had closed.
- Pilot reported being unable to utilize services due to altered operating hours.

Best Practices and Mitigations

FAA (Federal Aviation Administration)

NOTAM Modernization

- Pre-pandemic FAA initiative to modernize and standardize NOTAMs including a single portal to access current NOTAM information. Implementation is on-going.

AAAE (American Association of Airport Executives)

COVID-19 Planning Resources

- Compendium of resources for Airport Executives to maintain operations in a safe and effective manner throughout the COVID-19 pandemic. Resources include safety for airport personnel, impacts to facilities, and best practices for continued operations.

IATA (International Air Transport Association)

Traffic Management and Airport Operations during COVID-19

- High level guidance for a variety of airport operators on how to ensure safety despite the altered procedures elicited by COVID-19. Guidance includes parking aircraft in ramp areas, unusual taxi patterns, and unfamiliar operating hours.

NATA (National Air Transportation Association)

Transitioning to Normal Operations

- High level guidance for airports and FBOs on how to transition to normal operations following the COVID-19 pandemic including ensuring both health and operational safety.

Internal FAA Guidance:

- Internal FAA guidance regarding perceived congested frequencies included:
 - Guidance on NOTAM construction in the event of ATC-0 operations.
 - Guidance for Air Traffic Controllers on unusual situations arising due to COVID-19 procedures.
 - Human factors guidance on ATC-0 operations.
 - Additional procedures to minimize disruption to air traffic in the event of COVID-19 cleaning.
 - Guidance for Air Traffic Controllers on a return to normal operations and an increase in traffic.

➤ Congested Parking Areas

Airports and FBOs saw an increase in parked aircraft at the height of the Coronavirus pandemic leading to unfamiliar taxi routes for aircraft still in operation and difficulty maneuvering aircraft for ground crews and maintenance personnel. Some examples include:

- Recreational general aviation pilot reported that during taxi another aircraft was blocking entry into the parking area and that parking options were limited due to many parked aircraft since COVID-19 started.
- Ground crew reported that while repositioning an aircraft in a remote parking location, the wing struck an adjacent parked aircraft. The crew reported that the move was done to fit more aircraft into the parking location.
- Ground crew reported a wing-tip collision occurred while they were towing an aircraft to a made-up parking spot that was created due to the COVID-19

pandemic. The crew stated there were no markings to guide the aircraft to the spot.

Best Practices and Mitigations

IATA (International Air Transport Association)

Traffic Management and Airport Operations during COVID-19

- High level guidance for a variety of airport operators on how to ensure safety despite the altered procedures elicited by COVID-19. Guidance includes parking aircraft in ramp areas, unusual taxi patterns, and unfamiliar operating hours.

AAAE (American Association of Airport Executives)

COVID-19 Planning Resources

- Compendium of resources for Airport Executives to maintain operations in a safe and effective manner throughout the COVID-19 pandemic. Resources include safety for airport personnel, impacts to facilities, and best practices for continued operations.

➤ Local COVID-19 Procedures

Like many business throughout the United States, airports were impacted by local, state, and national guidance related to PPE, social distancing, and other COVID-19 mitigating procedures. Navigating the differences and changes between these procedures sometimes proved to be a challenge, especially for pilots and flight crews transiting between unusual city pairings. Airports sought to give standardized guidance on requirements that were consistent with CDC and local requirements. Some examples include:

- Pilot reported being unsure of local procedures at destination due to COVID-19 pandemic guidelines varying by geographic location.

Best Practices

IATA (International Air Transport Association)

Traffic Management and Airport Operations during COVID-19

- High level guidance for a variety of airport operators on how to ensure safety despite the altered procedures elicited by COVID-19. Guidance includes parking aircraft in ramp areas, unusual taxi patterns, and unfamiliar operating hours.

AAAE (American Association of Airport Executives)

COVID-19 Planning Resources

- Compendium of resources for Airport Executives to maintain operations in a safe and effective manner throughout the COVID-19 pandemic. Resources include safety for airport personnel, impacts to facilities, and best practices for continued operations.

NBAA (National Business Aviation Association)

COVID-19 Restrictions by State

- Up-to-date resource to show COVID-19 restrictions by state for use when considering domestic city pairings.

COVID-19 Point of Impact

- Broad resource for COVID-19 procedures to enable operators, airports, and pilots to maintain safety and efficiency despite new procedures and information.

FSF (Flight Safety Foundation)

Managing the COVID-19 Pandemic, webinars

- Series of webinars for a variety of aviation stakeholders to share emerging risks and best practices.

ICAO (International Civil Aviation Organization)

Daily Flights/ New Covid Cases by Origin- Destination Countries

- Up-to-date map showing COVID-19 cases by country for use when considering international city pairings.

ROTORCRAFT OPERATIONS

While many sectors of aviation experienced sharp downturns in operations as the COVID-19 global health emergency increased, most helicopter operations remained stable; some increased in tempo. The helicopter air ambulance (HAA) community reported experiencing a limited increase in operations with patient transfers. Furthermore, enhanced mitigations between flights with patients led to greater time needed to prepare aircraft for those flights. Within the offshore oil & gas flight community, social distancing mitigations allowed for fewer passengers aboard each flight to and from offshore rigs, thus requiring more flights per rig crew-shift rotation. The helicopter air tour community was a notable exception to this trend and experienced a sharp drop off in flight operations. Only now, in summer 2021, is the air tour community beginning to experience a return to flight operations seen in pre-COVID years.

➤ Economic Concerns

The rapid decrease in operations caused by the corresponding dip in travel demand due to the Coronavirus pandemic left many air tour, sightseeing, and other tourist-dependent operators without their necessary customer base. In addition, the close proximity of helicopter passenger cabins and flight decks made social distancing difficult, and in some cases grounded helicopter operations. While the economic concerns were the primary source of stress and pressure affecting pilot, owner/operator, maintenance mental health and well-being. The secondary concerns regarding pilot currency and aircraft storage were no less detrimental to air tour operators and also played a role in economic concerns through the COVID-19 pandemic.

Best Practices and Mitigations

Small Business Administration

Payroll Protection Program

- Government program to support small businesses experiencing a loss of income due to COVID-19. The goal of the program is to ensure employees can be retained through a period of lost income because of a global health crisis.

U.S. Department of the Treasury

CARES Relief

- Government program to provide relief to industries impacted by COVID-19. Grants are allocated at federal, state, and local levels.

IATA (International Air Transport Association)

Human Factors and COVID-19

- Guidance from IATA on best practices regarding human factors and operational considerations during and after the COVID-19 pandemic including the impacts of stress and fatigue, as well as returning to service.

NATA (National Air Transportation Association)

Keep Employees Safe during the COVID-19 Pandemic

- Best practice for keeping employees physically and psychologically healthy including procedures for minimizing the spread of COVID

Transitioning to Normal Operations

- Guidance and best practices for FBO and airport operators on maintaining safety during COVID-19 and for a return to normal operations including detailed cleaning procedures and human factors considerations.

FSF (Flight Safety Foundation)

Human Factors Punch-card

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

➤ Operational Fatigue

The helicopter air ambulance community reported an increase in “operational fatigue” due to the additional safety procedures required by the COVID-19 pandemic. Not only were air ambulance operators flying more frequently, they also had additional procedures to mitigate the spread of COVID-19. Crew members assumed all patients were COVID-19 positive, and so each operation required PPE and additional preflight procedures. The additional time to complete each mission from preflight to post-flight increased crew member feelings of fatigue specifically related to the additional procedures associated with COVID-19 procedures.

Best Practices and Mitigations

AMOA (Air Medical Operators Association)

COVID-19 Resource Guide

- Guide for AMOA members on best practices for COVID-19 from government and industry to include social distancing, PPE, fatigue management, and operational safety.

FSF (Flight Safety Foundation)

Human Factors Punchcard

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

NBAA (National Business Aviation Association)

Aircraft Operational Considerations with the Coronavirus

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

COVID-19 Risk Mitigation for Business Aircraft Operations

- Best practices for operators and pilots pertaining to each stage of flight from preflight to after landing.

Business Flying After COVID-19

- Article discussing the continuation of certain best practices following the COVID-19 pandemic including operational status, cleaning procedures, and human factors considerations.

Fleet Readiness and Maintenance Considerations during COVID-19

- Webinar on safe storage practices including maintenance best practices both for long-term storage and for returning an aircraft to service.

IATA (International Air Transport Association)

Flight Crew and ATCO Interface during Restart

- Updated guidance for flight crews and operators regarding human factors considerations, standardized procedures, and implementing CDC guidance.

NATA (National Air Transportation Association)

Keep Employees Safe during the COVID-19 Pandemic

- Guidance from NATA on physiological and psychological safety during the COVID-19 pandemic, as well as actionable best practices for operators on how to maintain a safe and professional environment.

➤ Social Distancing Concerns

Off-shore oil and gas operators faced social distancing concerns of a different variety. As an operator ferrying employees between offshore duty stations and shore, the requirements of social distancing did not reduce the number of operations. Instead, because of social distancing requirements, more flights were required in order to safely ferry employees between offshore duty stations and the shore. Social distancing for these flight crews led to safety concerns and health mitigation strategies, but it also led to fatigue as more operations needed to be flown.

Best Practices and Mitigations

FSF (Flight Safety Foundation)

Human Factors Punchcard

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

An Aviation Safety Professional's Guide to Well-being

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

NATA (National Air Transportation Association)

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Appendix

AAAE (American Association of Airport Executives)

COVID-19 Planning Resources

- Compendium of resources for Airport Executives to maintain operations in a safe and effective manner throughout the COVID-19 pandemic. Resources include safety for airport personnel, impacts to facilities, and best practices for continued operations.

AMOA (Air Medical Operators Association)

COVID-19 Resource Guide

- Guide for AMOA members on best practices for COVID-19 from government and industry to include social distancing, PPE, fatigue management, and operational safety.

AOPA (Aircraft Owners and Pilots Association)

COVID-19 Flight Operations Guide

- Provides guidance on flight operations during COVID-19 including instructional flights, dual flights, and solo flights across a variety of domains.

Rusty Pilot Program

- Webinars and online instruction to aid general aviation pilots returning to active flying after a period of inactivity.

CDC (Center for Disease Control)

Airline Guidance

- Guidance from the CDC for cabin crews in a commercial air carrier environment. However, CDC guidance stresses the importance of universal PPE usage (including face masks) and sanitizing high touch surfaces between flights.

FAA (Federal Aviation Administration)

Exemption 18685

- FAA Exemption providing relief to business aviation operators by extending the time frame for check airman to conduct a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner from 24 to 36 months.

NOTAM Modernization

- Pre-pandemic FAA initiative to modernize and standardize NOTAMs including a single portal to access current NOTAM information. Implementation is on-going.

[SAFO 20003](#)

- Guidance to flight crews on cleaning and sanitizing flight decks prior to departure to minimize the spread of COVID-19. Guidance should be used in conjunction with specific instructions from manufacturers.

[SAIB NM-20-17](#)

- Guidance from the FAA for cleaning aircraft interiors for owners and operators of aircraft. Guidance should be used in conjunction with specific instructions from manufacturers.

[SFAR 118](#)

- Special regulatory guidance extending the currency of FAA medical requirements as well as some extensions to training due to COVID-19.

FSF (Flight Safety Foundation)

[An Aviation Safety Professional's Guide to Well-being](#)

- Handbook for individual members to assess mental and physical fitness as an on-going check during the COVID-19 pandemic. Focus of the resource is on maintaining well-being during periods of unprecedented stress.

[COVID-19 Punchlists](#)

- Series of checklists on COVID-19 procedures across all phases of flight and industries, including reduced operations, continuing operations, and return to normal status.

[COVID-19 Roadmap](#)

- Comprehensive guide for maintaining safe and effective operations during COVID-19. Revised as additional information and change in operations occurs.

[Human Factors Punchcard](#)

- Checklist for operators and pilots to assess psychological fitness prior to operation. For organizations, a checklist for ensuring pilot and employee health remains a priority.

[Managing the COVID-19 Pandemic, webinars](#)

- Series of webinars for a variety of aviation stakeholders to share emerging risks and best practices.

GAJSC (General Aviation Joint Steering Committee)

[GAJSC SE 8: Flight Training after a Period of Inactivity](#)

- Safety Enhancement focused on providing resources and outreach for pilots returning to active flying after a period of inactivity including courses, webinars, and other online material.

GAMA (General Aviation Manufacturers Association)

COVID-19 Cleaning and Disinfecting Guidance

- Collected GAMA member guidance on how to safely clean certificated aircraft to maintain airworthiness and avoid damaging avionics. Guidance for both airframes and avionics.

IATA (International Air Transport Association)

COVID-19 Dashboard on State & Airport Restrictions

- COVID-19 Dashboard including current NOTAMs and other guidance regarding travel procedures and airspace operating conditions.

Flight Crew and ATCO Interface during Restart

- Updated guidance for flight crews and operators regarding human factors considerations, standardized procedures, and implementing CDC guidance.

Guidance for Managing Airworthiness for Aircraft Operations During and Post Pandemic

- Overarching guidance for all domains on high-level best practices for aircraft storage and maintenance during the pandemic. Document also includes high level best practices for returning aircraft to service.

Human Factors and COVID-19

- Guidance from IATA on best practices regarding human factors and operational considerations during and after the COVID-19 pandemic including the impacts of stress and fatigue, as well as returning to service.

TESTING AND CROSS-BORDER RISK MANAGEMENT MEASURES MANUAL

- Provides guidance for testing policies and procedures, travel between city pairings with dissimilar procedures, and risk management procedures for operators.

Traffic Management and Airport Operations during COVID-19

- High level guidance for a variety of airport operators on how to ensure safety despite the altered procedures elicited by COVID-19. Guidance includes parking aircraft in ramp areas, unusual taxi patterns, and unfamiliar operating hours.

ICAO (International Civil Aviation Organization)

Daily Flights/ New Covid Cases by Origin- Destination Countries

- Up-to-date map showing COVID-19 cases by country for use when considering international city pairings.

NATA (National Air Transportation Association)

Coronavirus Resource Page

- Resources for NATA members on best practices during COVID-19 including testing requirements for city pairing, operational considerations, and information on FAA exemptions and other relief.

Safety 1st Clean Guidance

- Best practices for COVID-19 cleaning and sanitizing procedures for use on aircraft, FBOs, and other airport areas.

Transitioning to Normal Operations

- Guidance and best practices for FBO and airport operators on maintaining safety during COVID-19 and for a return to normal operations including detailed cleaning procedures and human factors considerations.

NBAA (National Business Aviation Association)

Aircraft Disinfection for the Coronavirus

- Resource for operators and pilots on disinfecting procedures for various airframes and avionics. Includes guidance from manufacturers as well as the CDC and the FAA.

Aircraft Operational Considerations with the Coronavirus

- Compendium of resources for business aviation operators regarding travel resources and restrictions, but also including information and best practices for operators as they aid their pilots returning to service.

Business Flying After COVID-19

- Article discussing the continuation of certain best practices following the COVID-19 pandemic including operational status, cleaning procedures, and human factors considerations.

COVID-19 Point of Impact

- Compendium of resources for NBAA members including news articles and best practices from across the industry.

COVID-19 Restrictions by State

- Real time tracking of COVID-19 restrictions by state (for domestic U.S. use only). Also provides POC for NBAA Regional Representatives.

COVID-19 Risk Mitigation for Business Aircraft Operations

- Best practices for operators and pilots pertaining to each stage of flight from preflight to after landing.

Fleet Readiness and Maintenance Considerations during COVID-19

- Webinar on safe storage practices including maintenance best practices both for long-term storage and for returning an aircraft to service.

Small Business Administration

Payroll Protection Program

- Government program to support small businesses experiencing a loss of income due to COVID-19. The goal of the program is to ensure employees can be retained through a period of lost income because of a global health crisis.

U.S. Department of State

National Interest Exceptions

- Policy affirming pilot training is in the National Interest of the United States. Policy is utilized both for domestic flight training including Part 142, as well as for foreign persons completing flight training in the United States because similar training is unavailable in their home country.

U.S. Department of the Treasury

CARES Relief

- Government program to provide relief to industries impacted by COVID-19. Grants are allocated at federal, state, and local levels.