Guideline

CRISIS RESPONSE PLANNING MANUAL (CRPM) - Part 4 / Volume 2

Relevance:

PASSENGER AIRLINES - *PANDEMIC* (& similar public health incident) RESPONSE PLANNING

OPERATIONAL and associated CONSIDERATIONS / SOLUTIONS / INFO

Based on Associated Research, Feedback etc. - as gained from / related to:

*The **COVID-19** (SARS-CoV-2 Coronavirus) **PANDEMIC** of (circa) **March 2020** - TBA **2022***

This document is just one of many guideline and guideline / templates we have authored. All are designed to provide a strong, well-researched information framework upon which aircraft operators (predominately [but not exclusively] the larger, ***passenger*** airline) can build reliable and high quality emergency / crisis / incident / contingency etc. response plans, designed to 'deliver'

The latter is, of course, provisional on everyone involved 'doing their part' in the building process of such plans + everything else which follows on e.g. the provision of resources (including personnel and finance / budget), training, exercising, maintenance, review, continual improvement etc.

Aircraft operators wishing to use ***our*** guidelines etc. to assist in the production (original, rewrite / update etc.) of ***their own*** equivalent plans, have complete flexibility in using as much or little of the provided information as is desired / required. A significant advantage here is '***standardisation***' - i.e. minimising the potential difficulties of having as many different plans as there are aircraft operators etc. - which make '***mutual emergency support***' operations between airlines (+ airlines and airports, ground handlers etc.) much more problematic than they ought to be

Note - ***this*** specific ***guideline*** (the one you are reading now) is targeted at ***AIRCRAFT OPERATORS***

Ground Handlers might wish to consider adapting this '***aircraft operator*** pandemic response plan' guideline to suit their own, specific circumstances, requirements etc.

Airports could do likewise, although associated (but limited scope) info can also be found in sub-section **4B** of (***separate*** document) '**Guideline - AEP Volume 1**' ..... The latter can be found at:

https://www.aviationemergencyresponseplan.com/airport-emergency-plan-aep/

For ease of use and (hopefully) a better 'learning' experience - this CRPM Part 4 has been split into **2** ***separate*** volumes (Volumes 1 and 2). **You are reading *Vol 2* right now**

The intention is that the / our ***separate*** ***Volume 1*** provides general (background info) for a * major ***pandemic*** etc. type situation, set (in appropriate places) in a passenger airline context i.e. it 'sets the scene' for what is to come in *Volume 2*

This ***Volume 2*** provides a limited number / amount (i.e. within our pre-decided but hopefully useful scope) of related examples / data which might be of ***REAL*** / ***PRACTICAL*** use in such airline ops, when actually preparing for / responding to a (real; exercised etc.) * ***pandemic*** type situation

* We have used the actual / real ***COVID-19*** pandemic of 2020-2022 as the context of both volumes 1 and 2 - based on the 'reasonable' assumption that this particular pandemic be used (in context) as a 'worst case' scenario upon which future, airline (pandemic) response plans might be based. As such, the results could also be used (with adaptation) to plan for / prepare and respond to 'lesser' public health type crises such as ***epidemic***, ***PHEIC*** (Public Health Emergency of International Concern) etc.

Orientation Notes

Please read the following information before proceeding further

https://aviationemergencyresponseplan.com/airline-pandemic-response-plan/

1 - This document is intended for use as a ***guideline*** - designed to assist 'whoever' - in producing a 'fit for purpose' ***aircraft operator*** (***passenger*** airline) 'Contingency (emergency / crisis / incident etc.) Response Plan' - dealing specifically with '***public health***' type ops - as typically related to a ***projected pandemic*** or broadly equivalent type scenario *(e.g. as in the actual 2020 - * 2022 [SARS-CoV-2 virus - {**coronavirus**}] **COVID-19** pandemic; as in the actual **influenza** virus pandemic [**Swine-flu** {H5N1 virus} pandemic 2009 - 2010]; as in a major public health outbreak / epidemic [e.g. **Ebola** Fever epidemic 2015] etc.)*

The assumption is made herein that the 'airline' etc. concerned has no formalised public health (pandemic etc.) incident response plan yet in place ***OR*** .....that it is desired to review and / or upgrade any such existing plan, by using both 'volumes' of this guideline

Note: It might be useful for the reader to also review the (different) introductory / orientation notes found at the start of our (***separate*** document in this 'airline pandemic response planning' series) CRPM Part 4 / Volume ***1*** - as said notes have ***not*** been included again in ***this*** CRPM Part 4 / Vol ***2.*** CRPM Part 4 / Volume ***1*** can be found on our website at:

* It was '*guesstimated*' (by the author / owner) that COVID-19 would 'exit' pandemic status sometime in 20***22***. When the latter ***actually*** does occur, the appropriate parts (cross references to associated dates etc.) of both volumes of this guideline document will be corrected / updated accordingly

2 - This document generally relates to passenger airlines - typically those operating modern (e.g. having on-board environmental control systems [ECS], including HEPA filters) medium to large sized jet aircraft on international routes. However, no such airlines can operate without a host of services / inputs etc. from other 'entities'- and more particularly (for the purposes of ***this*** guideline document) - we are referring to ***airport operators*** and the various services that they might provide / facilitate e.g. ***Ground Handling***; Air Traffic Services, Customs, Immigration and Quarantine (CIQ); Security; In-flight Catering; Baggage Services; Aircraft Cleaning; Aircraft Refuelling etc.

We ***already*** produce (***separate***) emergency / contingency response planning guideline documents for ***Airports*** and ***GHAs*** (Ground Handling Agents) - which are available via our website

The latter guidelines will also be eventually updated to reflect the 'lessons learned' from the COVID-19 pandemic. In the meantime, the 'interested' reader (of ***this*** guideline document) is respectfully requested to keep in mind that much of what is written herein 'cannot happen' without the provision of such services

3

This CRPM Part 4 / ***Volume 2*** follows-on from the 'background material' etc. provided in our ***separate*** document (in this CRPM Part 4 [two volume] series) - i.e. CRPM Part 4 / ***Volume 1***. It is recommended that the 'serious' reader studies both documents

To recap, CRPM Part 4 (in two volumes) addresses 'passenger airline' planning / response etc. type considerations re a significant public health type outbreak, of the type which devastated the world from around early 2020 to early 2022 i.e. the coronavirus (SARS-CoV-2) COVID-19 ***pandemic***

At time of writing (***end of October 2021***) COVID-19 was still * causing very high numbers of fatalities in much of the world - via associated infections of extremely large numbers of persons

For those surviving COVID-19, a consequential illness (known as 'long-covid)' seriously debilitated many (such survivors) - possibly (for some) - for the rest of their lives

* Various statistical organisations around the world were reporting (up to this same point in time [from a start point of the advent of the pandemic in March 2020]) around ***4.9*** million deaths from almost ***240*** million infections. However, it is distinctly possible (even likely) that e.g. ***India alone*** might have had around ***5*** million+ deaths (up to this same point in time!!!)

A very effective vaccine programme for COVID-19 had started to ramp up in late 2020 - BUT, at time of writing, much of the world's population still remained unvaccinated (only around 35% ***fully*** vaccinated and 47% partially vaccinated) - and were thus still extremely vulnerable to COVID-19 infection and associated consequences

Apart from successfully producing effective COVID-19 vaccines (which was, in itself, a phenomenal achievement in the timescales involved) ** much (possibly the great majority) of the world had done little else to mitigate the impacts of the pandemic, to any significant degree

This then was the situation (at time of writing) in general and also as it applied to ***passenger airline operations in particular*** (**for the purposes of this CRPM Part 4 / Volume 2**)

** There were a very small number of notable exceptions - e.g. ***New Zealand was an outstanding example of 'how to do it the right way'*** - (but strictly from consideration / in the context of public health viewpoints only)

However, on 22 April ***2021*** (USA House of Representatives) Congressmen Peter A. DeFazio and Rick Larsen introduced the ***Healthy Flights Act 'Bill'***

If implemented to completion in US law, this Bill would (amongst other matters) create (in / for the USA) an updated and effective ***aviation related*** pandemic etc. response plan + initiate an in-depth study of disease transmission on airplanes (airliners) - amongst several other (important) related matters

At time of writing it was thought that no other country had done likewise (but it is absolutely clear that they should so do / should have done)

Read on for more details of the above (starts page 7):

Contents:

Note 1: All 'Chapters' (and the Appendices) listed below are based on an ***extreme pandemic type scenario***, similar to that experienced during the ***COVID-19*** Pandemic of 2020 - 20***22***

- This document currently comprises 237 pages - all dated 01 November 2021
- All links herein were checked as working 'correctly' as at latter date

Note 2: For the sake of clarity and simplicity, ***this*** 'public health' related guideline document is typically written in the context etc. of airline passengers generically being 'able-bodied' and / or 'sound of mind' etc.

There will be persons not fitting one or both of these latter descriptions who might wish / be required to fly during a pandemic type situation (latter and other, relevant circumstances [as they might apply to ***all*** potential passengers] so permitting of course)

With regards to the paragraph just above (and assuming that all such persons are medically, physically, psychologically etc. able to so travel by air in the same manner in which they might have done during ***non***-pandemic related circumstances), it is respectfully suggested that airlines study what is contained in ***this*** guideline - and then adapt and document same (if / as required) - to accommodate the air travel of all such persons, accordingly

Note 3: Equivalent considerations as per Note 2 above should also be explored and implemented re the carriage of very young children and infants - and anyone else, as relevant

Before reading further please take note *(and keep in mind)* ***the absolutely factual information shown in the box immediately below***

AIRLINE PASSENGER OPS, WITHOUT DOUBT, CONTRIBUTED VERY SIGNIFICANTLY TO THE RAPID WORLDWIDE SPREAD, AND THUS ONGOING CONSEQUENCES, OF THE COVID-19 PANDEMIC**.....**

..... particularly (but not exclusively) during 2020 (***effective vaccination programmes for COVID-19 only started to take-off*** *[slowly in terms relative to the size of the world's population]* ***in early 2021***)

..... Unfortunately, the human propensity for typically **NOT** learning lessons from the past means that similar could (will?) happen all over again - at some (not too distant) future time!

VERY IMPORTANT NOTE

Due the devastating impacts of the ***COVID-19*** pandemic on commercial ***airline*** passenger operations worldwide, some such airlines might think that they need to produce contingency response plans which will enable them to respond to a catastrophic ***aircraft accident*** type situation ***concurrent with simultaneously*** responding to a major (sometime in the future) ***pandemic*** similar, in relevant aspects / impacts, to e.g. COVID-19

'Best guess' odds (as at 2022) for the catastrophic aircraft accident situation occurring are ***very*** approximately 1 in 30,000,000 (1:30 million). 'Best guess' odds (also as at 2022) for another pandemic on the 'adversity' scale of COVID-19 are ***very*** approximately 1 in 60 years (and e.g. 1 in 400 years for the equivalent impacts of the 1918-1921 influenza [***Spanish Flu***] pandemic)

Whilst we leave it to any 'interested reader' to work out the ***combined*** occurrence odds (catastrophic aircraft accident + a ***simultaneous*** pandemic on the COVID-19 impact scale) - they will be so incredibly small that we consider it to be ***an absolute waste of time and effort to pre-plan for such a situation***. Accordingly, the latter (no such ***combined*** planning envisaged) is the concept that we have applied throughout our entire series of CRPM / Guideline documents and associated procedures - including those related to ***airline*** emergency response planning

Chapter 1

How the USA is making Aviation-sector Preparations for the 'Next' Pandemic

United States of America

Healthy Flights Act 'Bill' of 2021

If implemented to completion (see pages **13** to **26** for how this worked in the USA specifically) the above Bill would create an aviation related crisis response plan for pandemics etc; initiate a study of disease transmission on airplanes - and more

Rep. Peter A. DeFazio (D-Ore.) is chair of the House Transportation Committee

Washington Post / By Lori Aratani - **22 April 2021**

Democratic leaders on the USA's ***House Transportation and Infrastructure Committee*** introduced legislation Thursday (22 April 2021) which (if implemented) would require the USA government's ***Transportation Secretary*** to develop an aviation-sector plan for managing disease outbreaks

The ***Healthy Flights Act of 2021*** - introduced by Rep. Peter A. DeFazio (D-Ore.), the committee's chairman - and Rep. Rick Larsen (D-Wash.), the aviation subcommittee chairman - also makes clear that the Federal Aviation Administration (FAA) would have the authority to impose associated requirements to protect passengers and airline workers, during public health crises

Furthermore, it (the Act) would require people to wear masks on airplanes and in airports - plus airline employees and certain FAA personnel would be provided with personal protective equipment during public health emergencies linked to respiratory diseases. The new requirements would also be incorporated into pre-flight public announcements, as appropriate

DeFazio said the bill would provide "clear, consistent rules and guidelines which give flight and cabin crew (flight attendants) the authority they need to keep themselves and their passengers safe"

"The COVID-19 pandemic exposed serious flaws in the federal government's preparedness to keep airline / airport workers and travellers safe amid a public health emergency," he said. "And with tens of millions of people yet to be vaccinated, Congress still can and must do more to protect those on the frontlines of our aviation system - from future pandemics like COVID-19"

DeFazio also called on President Biden's administration to extend a transportation mask mandate which is due to expire next month

During much of the coronavirus pandemic, the FAA resisted calls by lawmakers to require masks on planes and in airports, saying 'it viewed its role as a regulatory agency overseeing safety, not health'

The FAA's reluctance to act meant individual airlines and airports etc. were left to establish (or not) their own mask policies. However, on his first day in office, President Biden signed an order requiring masks to be worn on aircraft, buses, trains, in airports etc.

DeFazio and Larsen have stated that a national (USA) plan is critical to ensuring that the airline / aviation industry, federal health officials and other potentially involved federal agencies are prepared to deal effectively with any (major) future public health outbreaks, similar in impact to the COVID-19 pandemic

After examining the US government's response to the (2014-16) ***Ebola Fever*** outbreak, the USA's 'Government Accountability Office' ***in 2015*** recommended that such a plan (as referred to above) be developed for the aviation sector. The Transportation Department and the Centers for Disease Control and Prevention agreed with the recommendation, ***BUT*** such a plan was never created, ***as the various agencies involved couldn't agree on which of them should take the lead***

"Keeping the traveling public and frontline aviation workers safe during the COVID-19 pandemic is even more difficult because of the lack of coordinated federal leadership," Larsen said in a statement. "This bill includes common-sense measures to limit the spread of COVID-19 in air travel, ensure the safety of passengers and aviation workers - and better prepare the U.S. aviation industry for future public health crises"

The measure (bill) also calls for ***additional*** study of the transmission of infectious diseases on airplanes and the ***creation*** of an FAA 'Center of Excellence on Infectious Disease Response and Prevention in Aviation'

A study by researchers at Harvard's T.H. Chan School of Public Health, often cited by airlines, found that the risk of contracting the COVID-19 coronavirus on an airplane can be lower than it is for activities such as eating at a restaurant, in part because aircraft ventilation systems constantly circulate and refresh cabin air and because of strategies that include wearing masks and stepped-up cleaning. Researchers say they reached their conclusions independently, ***although the work was funded by the aviation industry!***

This bill is co-sponsored by 15 other Democratic lawmakers and has the support of several industry groups, including Airports Council International (ACI), the Coalition of Air Line Pilots Associations (CAPA) and the Transportation Trades Union (AFL-CIO:TTD)

"Having a common sense, predictable and enforceable set of standards to protect the health and safety of our passengers and crews will be a critical component to ensure the airline industry's recovery and restore our passenger's confidence in air travel" said Larry Rooney, president of CAPA. "We look forward to working with Chairs DeFazio and Larsen in seeing that this legislation is enacted into US law"

Note: The actual 'Bill' itself is shown - starting next page:

Chairman: Peter A DeFazio

"***Healthy Flights Act of 2021***" - Section-by-Section Description - 22 April 2021

Sec 1: Short title…… "**Healthy Flights Act of 2021**"

Sec 2: **Aviation system enhancements during public health emergencies**

This Act codifies new authorities for the Federal Aviation Administration (FAA) - together with specified protections for aviation workers and air travellers (during a national emergency with respects to an infectious disease). Specifically, the bill creates the following authorities and requirements

- **Authority of FAA Administrator**

  With respect to the occurrence of a pandemic or epidemic, authorises the FAA Administrator to impose, by emergency order or otherwise, any requirements necessary related to passenger or cargo air travel, to protect the health and safety of airline workers and passengers and to reduce the spread of an infectious disease through the U.S. aviation system

- **Mask Requirement in Airports and on Airplanes**

  During national emergencies pertaining to a respiratory disease, requires airline passengers to wear a mask or protective face covering whilst on board an airplane. Also requires any individual within the indoor public space of a U.S. airport to wear a mask or protective face covering

- **Protective Masks and Equipment for Airline Workers**

  During national emergencies pertaining to a respiratory disease, mandates that airlines:

  (1) Require flight attendants to wear a mask or face covering and permit the wearing of additional protective equipment

(2) Require pilots to wear a mask or protective face covering while outside the flight deck and permit the wearing of additional protective equipment

(3) Require airline employees and contractors to wear a mask or protective face covering while in airports

(4) Submit to FAA a proposal and safety risk assessment to allow pilots to wear masks or protective face coverings while in the flight deck

(5) Provide pilots, flight attendants and customer-facing employees with masks or protective face coverings, gloves, hand sanitizer, and cleaning products

(6) Ensure aircraft and enclosed facilities are cleaned, disinfected and sanitized frequently in accordance with Centers for Disease Control and Prevention (CDC) guidance

(7) Ensure cleaning workers are provided masks or protective face coverings and gloves; and

(8) Establish guidelines for notifying employees who may have come into physical contact with another employee diagnosed with the infectious disease

- **Protective Masks and Equipment for Certain FAA Employees**

  Mandates that the FAA - during national emergencies pertaining to a respiratory disease:

  - Provides air traffic controllers, aviation safety inspectors and airway transportation systems specialists with masks / protective face coverings, gloves, hand sanitizer and cleaning products
  - Ensures air traffic control facilities are cleaned, disinfected and sanitized frequently in accordance with CDC guidance - and
  - Ensures cleaning workers etc. are provided with masks / protective face coverings and gloves

- **National Aviation System Preparedness Plan**

  Requires the Secretary of Transportation, in coordination with the heads of other, appropriate Federal departments / agencies - and in consultation with aviation industry and labour stakeholders - to develop and regularly update a national plan for the U.S. aviation system (including both government and industry stakeholders) to respond to future epidemics or pandemics of infectious diseases

Sec 3: **Regulations for air carriers to reduce spread of infectious diseases**

Requires the Secretary of Transportation, in coordination with the CDC, to issue regulations requiring passenger airlines to implement appropriate measures on flights - to reduce the spread of an infectious disease (e.g. COVID-19) among airline employees or passengers - during a national public health emergency

Sec 4: **Study on transmission of infectious diseases in airplane cabins**

Requires the FAA to form an agreement with the '***National Academies of Science, Engineering and Medicine***' to study the subject of 'transmission of infectious diseases in passenger airplane cabins.'

The study will consider the extent to which a passenger may be exposed to pathogens spread by another passenger(s) on board an airplane, including through air flow patterns and humidity levels, air conditioning and recirculation fan systems and other variables such as seating location, load factor, type of face covering worn and passenger movement throughout the cabin

Sec 5: **Air carrier practices and airplane design improvements**

Requires the FAA, based on the results of the study required under section 4 above, to identify and evaluate prospective new airline practices / procedures and aircraft design / configuration features in passenger airplanes (such as cabin surfaces and air conditioning systems) which would reduce the extent of transmission of pathogens within such airplane cabins

Requires the FAA to issue regulations requiring airlines to implement such new practices / procedures and manufacturers to include such new design / configuration features in passenger airplanes, if the Administrator determines these measures would reduce the transmission of pathogens by a reasonable degree

Sec 6: **Centre of Excellence for Infectious Disease Response and Prevention in Aviation**

Requires the FAA to establish the "Centre of Excellence for Infectious Disease Response and Prevention in Aviation"- a consortium of higher education institutions - to study and provide educational, technical and analytical assistance to the FAA on the transmissibility of infectious diseases and to report to the FAA on improvements which can be made during air travel to reduce the spread of infectious diseases

Sec 7: **Cabin instruction for public health emergency announcements**

Requires the FAA to initiate a rulemaking to amend the requirements for airline passenger briefings (held during a national emergency pertaining to a respiratory disease) to include:

(1) Announcements of any new passenger requirements such as a mask or protective face covering requirements
(2) A demonstration of proper compliance with such new requirements - and
(3) An announcement of any potential fines for non-compliance e.g. for disobeying a crew member's instruction

Sec 8: **Definitions**

Defines certain terms used throughout the Act (***not*** included here [in this guideline which you are reading right now])

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Actions - H.R.2770 - 117th Cong

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H.R.2770 - Healthy Flights Act of 2021

117th Congress (2021-2022) | Get alerts

BILL Hide Overview

Sponsor: Rep. DeFazio, Peter A. [D-OR-4] (Introduced 04/22/2021)

Committees: House - Transportation and Infrastructure

Latest Action: House - 04/23/2021 Referred to the Subcommittee on Aviation. (All Actions)

Tracker:

Introduced | Passed House | Passed Senate | To President | Became Law

More on This Bill

Constitutional Authority Statement

CBO Cost Estimates [0]

Subject — Policy Area:

Transportation and Public Works

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Actions Overview H.R.2770 — 117th Congress (2021-2022)

All Information (Except Text)

Bill History – Congressional Record References

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Actions Overview [1]

All Actions Except Amendments [3]

Date	Actions Overview
04/22/2021	Introduced in House

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08:54
01/08/2021

Following on from the last page above, the following 12 pages indicate that the next step in the 'due process (passage through the USA's 'House of Representatives') was ***taken on 30 July 2021***

The interested reader might also wish to take a look at the info found at the end of the link below:

https://www.whitehouse.gov/briefing-room/presidential-actions/2021/10/25/a-proclamation-on-advancing-the-safe-resumption-of-global-travel-during-the-covid-19-pandemic/

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Text - H.R.7867 - 116th Congres

https://www.congress.gov/bill/116th-congress/house-bill/7867/text

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H.R.7867 - Healthy Flights Act of 2020

116th Congress (2019-2020)

BILL | Hide Overview

Sponsor: Rep. DeFazio, Peter A. [D-OR-4] (Introduced 07/30/2020)

Committees: House - Transportation and Infrastructure

Latest Action: House - 07/31/2020 Referred to the Subcommittee on Aviation. (All Actions)

Tracker:

Introduced

More on This Bill

Constitutional Authority Statement

CBO Cost Estimates [0]

Subject — Policy Area:

Transportation and Public Works

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Summary (1) | Text (1) | Actions (3) | Titles (2) | Amendments (0) | Cosponsors (31) | Committees (1) | Related Bills (0)

Text: H.R.7867 — 116th Congress (2019-2020)

All Information (Except Text)

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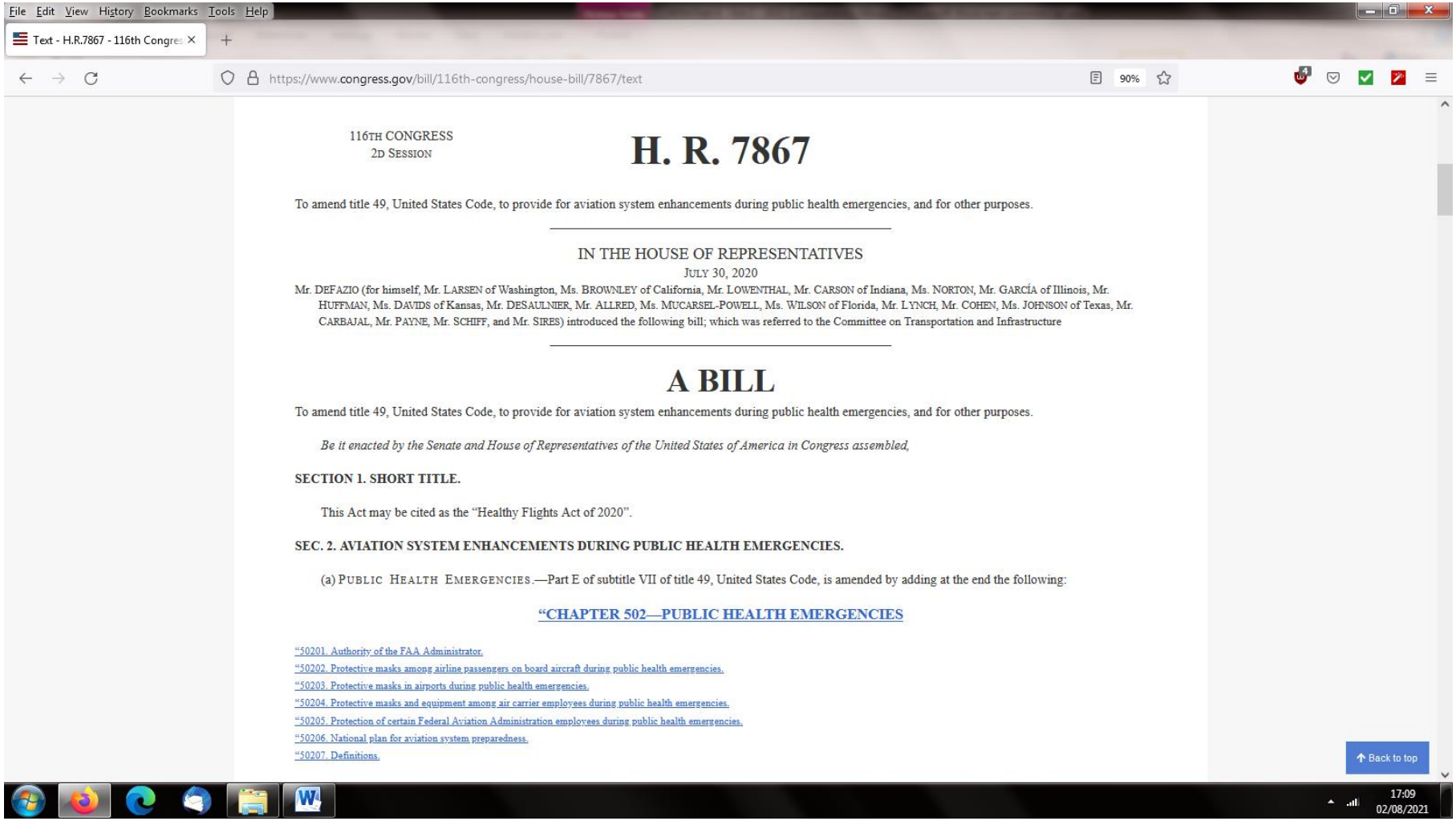
There is one version of the bill.

Text available as: XML/HTML (55KB) | XML/HTML (new window) (46KB) | TXT (32KB) | PDF (331KB) (PDF provides a complete and accurate display of this text.)

Shown Here:
Introduced in House (07/30/2020)

116TH CONGRESS

17:08
02/08/2021



116TH CONGRESS
2D SESSION

H. R. 7867

To amend title 49, United States Code, to provide for aviation system enhancements during public health emergencies, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JULY 30, 2020

Mr. DEFAZIO (for himself, Mr. LARSEN of Washington, Ms. BROWNLEY of California, Mr. LOWENTHAL, Mr. CARSON of Indiana, Ms. NORTON, Mr. GARCÍA of Illinois, Mr. HUFFMAN, Ms. DAVIDS of Kansas, Mr. DESAULNIER, Mr. ALLRED, Ms. MUCARSEL-POWELL, Ms. WILSON of Florida, Mr. LYNCH, Mr. COHEN, Ms. JOHNSON of Texas, Mr. CARBAJAL, Mr. PAYNE, Mr. SCHIFF, and Mr. SIRES) introduced the following bill; which was referred to the Committee on Transportation and Infrastructure

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A BILL

To amend title 49, United States Code, to provide for aviation system enhancements during public health emergencies, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Healthy Flights Act of 2020".

SEC. 2. AVIATION SYSTEM ENHANCEMENTS DURING PUBLIC HEALTH EMERGENCIES.

(a) PUBLIC HEALTH EMERGENCIES.—Part E of subtitle VII of title 49, United States Code, is amended by adding at the end the following:

"CHAPTER 502—PUBLIC HEALTH EMERGENCIES

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Text - H.R.7867 - 116th Congres

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"§50201. Authority of the FAA Administrator

"With respect to the occurrence of a pandemic or epidemic of an infectious disease, the Administrator shall have authority to impose, by emergency order or otherwise, such requirements related to the operation of a passenger or cargo aircraft of an air carrier in air transportation as the Administrator determines are necessary to protect the health and safety of air carrier crewmembers and passengers and to reduce the spread of such infectious disease through the aviation system.

"§50202. Protective masks among airline passengers on board aircraft during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, each air carrier operating under part 121 of title 14, Code of Federal Regulations, shall require each passenger of such air carrier to wear a mask or protective face covering while such passenger is on board an aircraft of such air carrier.

"(b) RESPONSIBILITIES.—

"(1) AIR CARRIER RESPONSIBILITIES.—An air carrier operating under part 121 of title 14, Code of Federal Regulations, shall—

"(A) notify the Administrator within 7 days of each instance in which a passenger violates the requirement of subsection (a) without a valid exception from such requirements under subsection (c) or subsection (d)(3) by providing the Administrator with such information regarding a violation as the Administrator may require;

"(B) designate an appropriate office or department of the air carrier to receive notifications from crewmembers under paragraph (2) and to provide information to the Administrator in accordance with this subsection; and

"(C) provide flight and cabin crewmembers with specific, easily followed instructions for contacting the office or department described in subparagraph (B) with a notification under paragraph (2).

"(2) CREWMEMBER RESPONSIBILITIES.—Not later than the termination of passenger disembarkation from an aircraft described in subsection (a), the flight or cabin crew of such aircraft shall notify an employee of the air carrier office or department designated under paragraph (1) of a violation of the requirements of subsection (a) and shall provide information necessary to identify the passenger who committed such violation. For purposes of this subsection, a notification shall not include removal of a mask or face covering pursuant to an exception under subsection (c) or subsection (d)(3).

"(c) EXCEPTIONS.—An air carrier may allow an individual to temporarily remove a mask or face covering required under subsection (a) only—

"(1) while consuming food or beverage;

"(2) to address a medical need that justifies temporary removal of the mask or face covering;

"(3) to don a supplemental oxygen mask in the event of a reduction in the pressure altitude inside the cabin of an aircraft; or

"(4) for another reason identified by the Administrator in a regulation issued pursuant to this section.

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02/08/2021

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"(d) RESPONSIBILITIES TO INDIVIDUALS WITH DISABILITIES.—

"(1) RELATIONSHIP TO OTHER LAWS.—Nothing in this section shall be construed to abridge any right, or excuse the performance of any duty, arising under section 41705 of this title or regulations promulgated pursuant to such section, including the duty of an air carrier to assist passengers covered under such section.

"(2) ADDITIONAL DUTIES OF AIR CARRIERS.—Each air carrier shall require employees and contractors of such air carrier to provide assistance to an individual described in section 41705(a) who requires such assistance—

"(A) in donning or removing a mask or face covering required under subsection (a);

"(B) in disinfecting or sanitizing an aisle chair, an airport push chair, or personal mobility aid or other device, if such personal mobility aid or other device was tendered to the air carrier for a flight and delivered to the individual after the flight's arrival;

"(C) in taking any other reasonable measures, consistent with any applicable guidelines of the Centers for Disease Control and Prevention, necessary for the individual to reduce the chance of infection with an airborne disease; and

"(D) in complying with any legal, air carrier, or airport requirement intended to reduce the spread of an airborne disease.

"(3) LIMITED EXCEPTION.—With respect to an individual covered under section 41705 who is unable to wear a mask or face covering and objects to such a requirement, an air carrier may deny boarding to such individual for a flight in air transportation only if such air carrier performs the individualized analysis described under section 382.19(c) of title 14, Code of Federal Regulations, and concludes that the individual poses a direct threat pursuant to such analysis. Each air carrier shall develop policies and procedures to ensure that—

"(A) the outcome of such analysis is reliable, including through consultation with a medical consulting or advisory service to determine whether the individual poses a risk to others;

"(B) the individual and the air carrier's employees or contractors are afforded an appropriate amount of time for such analysis before departure of a flight; and

"(C) with respect to any individual who is permitted to board a flight without a mask or protective face covering, other reasonable measures are available to minimize the individual's risk of infection and the risk of the individual spreading the airborne disease.

"(e) SAVINGS PROVISION.—Nothing in this section shall be construed to prioritize any interest over the public interest in aviation safety or the health and safety of air carrier employees or contractors.

"§50203. Protective masks in airports during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, the operator of a covered airport shall require that any individual within any indoor public space on the airport

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"§50203. Protective masks in airports during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, the operator of a covered airport shall require that any individual within any indoor public space on the airport premises and under the control of such operator is wearing a mask or other protective face covering except when such individual—

"(1) is consuming food or beverage;

"(2) is attending to a medical need that justifies temporary removal of the mask or face covering;

"(3) is directed to remove a mask or face covering by an air carrier employee, a law enforcement officer, or a person performing functions governed under chapter 449; or

"(4) has another reason identified by the Administrator in any regulations promulgated under this section.

"(b) RESPONSIBILITIES TO INDIVIDUALS WITH DISABILITIES.—

"(1) RELATIONSHIP TO OTHER LAWS.—Nothing in this section shall be construed to abridge any right, or excuse the performance of any duty, arising under any applicable requirements of chapter 126 of title 42 or, to the extent applicable, section 41705 of this title or regulations issued pursuant to such chapter or section.

"(2) ADDITIONAL DUTIES OF AIRPORT OPERATOR.—If an employee or contractor of an airport operator is providing assistance to an air carrier passenger covered under chapter 126 of title 42 or section 41705 of this title, such employee or contractor shall assist such individual—

"(A) in donning or removing a mask or face covering required under subsection (a);

"(B) in taking any reasonable measures, consistent with any applicable guidelines of the Centers for Disease Control and Prevention, necessary for the individual to reduce the chance of infection with the disease; and

"(C) in complying with any legal, air carrier, or airport requirement intended to reduce the spread of the disease.

"§50204. Protective masks and equipment among air carrier employees during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, each air carrier operating under part 121 of title 14, Code of Federal Regulations, shall—

"(1) require each cabin crewmember to wear a mask or protective face covering and permit such crewmember to wear protective eyewear or a face shield while on board an aircraft or in a vehicle of the air carrier;

"(2) require each flight crewmember to wear a mask or protective face covering and permit such crewmember to wear protective eyewear or a face shield while on board an aircraft but outside the flight deck of the air carrier or in a vehicle of the air carrier;

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"(3) require each employee or contractor of the air carrier to wear a mask or protective face covering while within any indoor public space of a covered airport;

"(4) submit to the Administrator a proposal to permit flight crewmembers of the air carrier to wear a mask or protective face covering while at their stations in the flight deck of an aircraft of the air carrier, including a safety risk assessment with respect to such proposal;

"(5) provide flight and cabin crewmembers, airport customer service agents, and other employees whose job responsibilities involve interaction with passengers with masks or protective face coverings, gloves, and hand sanitizer and wipes with sufficient alcohol content, and provide training on the proper use of such items and equipment;

"(6) ensure aircraft, including the cockpit and cabin, operated by such carrier are cleaned, disinfected, and sanitized by cleaners who are not flight or cabin crewmembers after each use in accordance with Centers for Disease Control and Prevention guidance;

"(7) ensure enclosed facilities owned, operated, or used by such air carrier, including facilities used for flight or cabin crewmember training or performance of indoor maintenance, repair, or overhaul work, are cleaned, disinfected, and sanitized frequently in accordance with Centers for Disease Control and Prevention guidance;

"(8) provide air carrier employees whose job responsibilities involve cleaning, disinfecting, and sanitizing aircraft or enclosed facilities described in paragraphs (6) and (7) with masks or protective face coverings and gloves, and ensure that each contractor of the air carrier provides employees of such contractor with such materials; and

"(9) establish guidelines, or adhere to existing applicable guidelines, for notifying or contacting employees who may have come into physical contact or interaction with an employee who has been diagnosed with such airborne disease.

"(b) LIMITED EXCEPTIONS.—The requirement for cabin and flight crewmembers to wear a mask or protective face covering under subsections (a)(1) and (a)(2) shall not apply while—

"(1) consuming food or beverage;

"(2) addressing a legitimate medical need that justifies temporary removal of the mask or face covering;

"(3) donning a supplemental oxygen mask in the event of a reduction in the pressure altitude inside the cabin;

"(4) assisting another crewmember or passenger in distress; or

"(5) performing another legitimate action identified by the air carrier or Administrator in any regulation issued pursuant to this section.

"§50205. Protection of certain Federal Aviation Administration employees during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, in order to maintain the safe and efficient operation of the air traffic control system, the Administrator shall—

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"§50205. Protection of certain Federal Aviation Administration employees during public health emergencies

"(a) IN GENERAL.—During the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an airborne disease, in order to maintain the safe and efficient operation of the air traffic control system, the Administrator shall—

"(1) provide air traffic controllers, aviation safety inspectors, and airway transportation systems specialists of the Administration with masks or protective face coverings, gloves, and hand sanitizer and wipes with sufficient alcohol content;

"(2) ensure air traffic control facilities are cleaned, disinfected, and sanitized frequently in accordance with Centers for Disease Control and Prevention guidance; and

"(3) provide employees of the Administration whose job responsibilities involve cleaning, disinfecting, and sanitizing facilities described in paragraph (2) with masks or protective face coverings and gloves, and ensure that each contractor of the Administration provides employees of such contractor with such materials.

"(b) SOURCE OF EQUIPMENT.—The items described in subsection (a) may be procured or provided under such subsection through any sources available to the Administrator.

"§50206. National plan for aviation system preparedness

"(a) IN GENERAL.—Not later than 1 year after the date of enactment of this section, the Secretary, in coordination with the Secretary of Health and Human Services, the Secretary of Homeland Security, Director of the Centers for Disease Control and Prevention, and the heads of such other Federal departments or agencies as the Secretary considers appropriate, shall develop and regularly update a national aviation preparedness plan to ensure the aviation system is prepared to respond to epidemics and pandemics of infectious diseases.

"(b) CONTENTS OF PLAN.—A plan developed under subsection (a) shall, at a minimum—

"(1) fully incorporate elements referenced in the recommendation of the Comptroller General of the United States to the Secretary of Transportation titled 'Air Travel and Communicable Diseases: Comprehensive Federal Plan Needed for U.S. Aviation System's Preparedness', dated December 2015 (No. GAO 16–127);

"(2) clearly delineate the responsibilities of the sponsors or operators of covered airports, air carriers, and Federal agencies in responding to an infectious disease epidemic or pandemic; and

"(3) include provisions for improving coordination among air carriers, airport sponsors, United States Customs and Border Protection, the Centers for Disease Control and Prevention, other appropriate Federal stakeholders, labor organizations representing groups listed in subsection (c), and other appropriate stakeholders for the rapid and orderly implementation of measures including health screening, quarantining, and contact-tracing with respect to air carrier passengers.

"(c) CONSULTATION.—When developing a plan under subsection (a), the Secretary shall consult with aviation industry and labor stakeholders, including representatives of—

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"(c) CONSULTATION.—When developing a plan under subsection (a), the Secretary shall consult with aviation industry and labor stakeholders, including representatives of—

"(1) air carriers;

"(2) small, medium, and large hub airports;

"(3) labor organizations that represent flight crewmembers, cabin crewmembers, air carrier airport customer service representatives, and air carrier maintenance, repair, and overhaul workers;

"(4) the labor organization certified under section 7111 of title 5 as the exclusive bargaining representative of air traffic controllers of the Federal Aviation Administration;

"(5) the labor organization certified under such section as the exclusive bargaining representative of airway transportation systems specialists and aviation safety inspectors of the Federal Aviation Administration; and

"(6) other stakeholders as the Secretary considers appropriate.

"(d) REPORT.—Not later than 30 days after the plan is developed under subsection (a), the Secretary shall submit to the appropriate committees of Congress such plan.

"§50207. Definitions

"The definitions in section 40102(a) of this title shall apply to terms in this chapter, except that the following terms have the following meanings:

"(1) ADMINISTRATOR.—The term 'Administrator' means the Administrator of the Federal Aviation Administration.

"(2) AIRBORNE DISEASE.—The term 'airborne disease' means an infectious disease that is, or is reasonably believed to be, caused by a pathogen transmissible by aerosols or respiratory droplets expelled from the nose or mouth.

"(3) COVERED AIRPORT.—The term 'covered airport' means a public-use airport that receives flights of an air carrier operating under the provisions of part 121 of title 14, Code of Federal Regulations.

"(4) SECRETARY.—The term 'Secretary' means the Secretary of Transportation.".

(b) CLERICAL AMENDMENT.—The analysis for subtitle VII of title 49, United States Code, is amended by adding at the end the following:

"502. PUBLIC HEALTH EMERGENCIES 50201".

(c) INTERFERENCE WITH CREWMEMBERS.—Section 46504 of title 49, United States Code, is amended—

(1) by inserting "(a) IN GENERAL.—" before "An individual"; and

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(1) by inserting "(a) IN GENERAL.—" before "An individual"; and

(2) by adding at the end the following:

"(b) FAILURE TO WEAR MASKS DURING PUBLIC HEALTH EMERGENCY.—For purposes of subsection (a), an individual interferes with the performance of the duties of a flight crew member or flight attendant if such individual, without justification, disobeys a flight crew member's or flight attendant's instruction to wear a mask or protective face covering during the period of any national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) with respect to an infectious disease that is, or is reasonably believed to be, caused by a pathogen transmissible by respiratory droplets expelled from the nose or mouth.".

(d) CONFORMING AMENDMENT.—Section 46301 of title 49, United States Code, is amended—

(1) in subsection (a)(5) by inserting "section 50202, section 50203," after "chapter 451,"; and

(2) in subsection (d)(2) by inserting ", section 50202, section 50203," after "of this title".

SEC. 3. REGULATIONS FOR AIR CARRIERS TO REDUCE SPREAD OF INFECTIOUS DISEASES.

(a) IN GENERAL.—In coordination with the Director of the Centers for Disease Control and Prevention, the Secretary shall promulgate regulations requiring each air carrier operating under part 121 of title 14, Code of Federal Regulations, and operating aircraft with a seating capacity of 20 or more to implement appropriate measures on a flight in air transportation for the purpose of reducing the likelihood of any passenger or crewmember contracting an infectious disease. Such regulations shall be effective only during the period of a national emergency declared by the President under the National Emergencies Act (50 U.S.C. 1601 et seq.) relating to a public health emergency.

(b) DEADLINES.—In conducting the rulemaking required under subsection (a), the Secretary shall issue—

(1) a notice of proposed rulemaking not later than 180 days after the date of enactment of this Act; and

(2) a final rule not later than 1 year after the date of enactment of this Act.

(c) CONSULTATION.—In conducting the rulemaking proceeding required under subsection (a), the Secretary may consult with the heads of such other Federal departments or agencies as the Secretary considers appropriate.

SEC. 4. STUDY ON TRANSMISSION OF INFECTIOUS DISEASES IN AIRPLANE CABINS.

(a) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Administrator shall seek to enter into an agreement with the National Academies to conduct a study on the transmission of infectious diseases, including airborne diseases, in the cabins of passenger airplanes.

(b) PARAMETERS OF STUDY.—The study required under subsection (a) shall consider, at a minimum—

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(b) PARAMETERS OF STUDY.—The study required under subsection (a) shall consider, at a minimum—

(1) air flow patterns and humidity levels in the cabins of passenger airplanes and the extent to which such patterns and humidity levels increase or decrease the possibility that a passenger may be exposed to an airborne pathogen communicated by another individual on board an airplane;

(2) how uniformly the cabin air supply is completely exchanged and whether air in certain areas of the cabin is exchanged more quickly or slowly than in other areas of the cabin;

(3) the extent to which various recirculation systems and the respective filtration systems of such recirculation systems increase or decrease the likelihood of exposure to a pathogen;

(4) the extent to which the use of preconditioned air during embarkation and disembarkation changes the likelihood of a passenger's exposure to a pathogen as opposed to the use of air conditioning packs fed by the auxiliary power unit; and

(5) other variables that determine the likelihood of an individual's exposure to a pathogen on a passenger airplane, including the use or location of personal air outlets, seating location, load factor, movement of cabin crewmembers and passengers throughout the cabin during the flight, embarkation, and disembarkation, testing and replacement frequency of air filters, commonly touched surfaces, use or location of lavatories, and such other variables as the National Academies consider relevant.

(c) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, the Administrator shall—

(1) submit to the congressional committees of jurisdiction a report on the results of the study required under this section; and

(2) publish such report on the website of the Federal Aviation Administration.

SEC. 5. AIR CARRIER PRACTICES AND AIRPLANE DESIGN IMPROVEMENTS.

(a) IN GENERAL.—Based on the results of the study required under section 4 and such other information as the Administrator considers relevant, the Administrator shall identify and evaluate prospective air carrier practices or procedures, and prospective features in the design or configuration of cabin surfaces and air conditioning and pressurization systems in passenger airplanes, that would reduce the extent of transmission of pathogens within the cabin.

(b) REPORT.—

(1) FOLLOW-UP REPORT.—Not later than 270 days after the submission of the report under section 4(c), the Administrator shall publish a report that lists each practice, procedure, and feature that the Administrator considered under subsection (a), along with an assessment of the extent to which such practice, procedure, or feature would reduce the transmission of pathogens, irrespective of the cost of such implementing such practice, procedure, or feature.

(2) PUBLICATION OF REPORT.—The Administrator shall—

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(2) PUBLICATION OF REPORT.—The Administrator shall—

(A) transmit the report required under this subsection to the congressional committees of jurisdiction; and

(B) publish such report on the website of the Federal Aviation Administration.

(c) RULEMAKING.—

(1) IN GENERAL.—Not later than 60 days after the issuance of the report required under subsection (b), the Administrator shall initiate one or more rulemaking proceedings to—

(A) amend part 25 of title 14, Code of Federal Regulations, to require that applications for new type certificates (including amended type certificates) for new passenger airplanes must include such features described in subsection (a) as the Administrator determines appropriate; and

(B) require air carriers to implement such air carrier practices and procedures described in subsection (a) as the Administrator determines appropriate.

(2) EXCEPTION.—Notwithstanding paragraph (1), the Administrator may decline to initiate a rulemaking proceeding under paragraph (1) if the Administrator—

(A) determines that the practices, procedures, or features described under paragraph (1) would not reduce the transmission of pathogens on board passenger airplanes by a reasonable degree; and

(B) not later than 60 days after the submission of the report required under subsection (b), submits to the congressional committees of jurisdiction a thorough justification describing in detail the Administrator's rationale for declining to initiate a rulemaking proceeding.

SEC. 6. CENTER OF EXCELLENCE FOR INFECTIOUS DISEASE RESPONSE AND PREVENTION IN AVIATION.

(a) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Administrator shall establish a Center of Excellence for Infectious Disease Response and Prevention in Aviation (in this section referred to as the "Center of Excellence").

(b) FUNCTIONS.—The Center of Excellence established under this section shall—

(1) study, and provide educational, technical, and analytical assistance to the Administrator on, the transmissibility of infectious diseases, including airborne diseases, during air travel and such diseases' effects on the United States aviation system and air commerce;

(2) report to the Administrator on architecture, design, layout, technologies, industry practices, procedures, or policies, and other advancements that can be used by airports, air carriers, aircraft manufacturers, and other aviation stakeholders, as the case may be, to reduce the spread of infectious diseases during air travel; and

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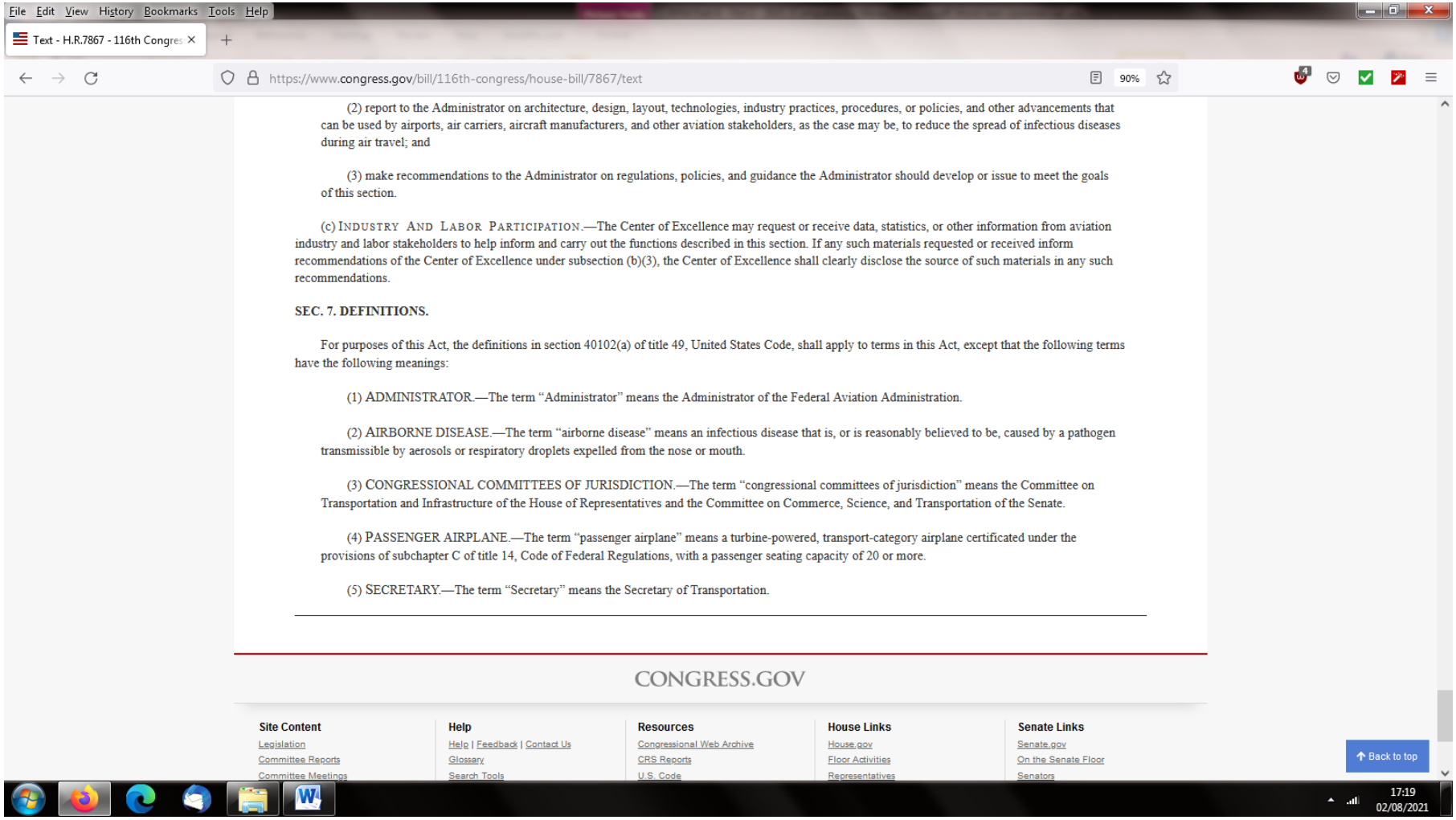

(2) report to the Administrator on architecture, design, layout, technologies, industry practices, procedures, or policies, and other advancements that can be used by airports, air carriers, aircraft manufacturers, and other aviation stakeholders, as the case may be, to reduce the spread of infectious diseases during air travel; and

(3) make recommendations to the Administrator on regulations, policies, and guidance the Administrator should develop or issue to meet the goals of this section.

(c) INDUSTRY AND LABOR PARTICIPATION.—The Center of Excellence may request or receive data, statistics, or other information from aviation industry and labor stakeholders to help inform and carry out the functions described in this section. If any such materials requested or received inform recommendations of the Center of Excellence under subsection (b)(3), the Center of Excellence shall clearly disclose the source of such materials in any such recommendations.

SEC. 7. DEFINITIONS.

For purposes of this Act, the definitions in section 40102(a) of title 49, United States Code, shall apply to terms in this Act, except that the following terms have the following meanings:

(1) ADMINISTRATOR.—The term "Administrator" means the Administrator of the Federal Aviation Administration.

(2) AIRBORNE DISEASE.—The term "airborne disease" means an infectious disease that is, or is reasonably believed to be, caused by a pathogen transmissible by aerosols or respiratory droplets expelled from the nose or mouth.

(3) CONGRESSIONAL COMMITTEES OF JURISDICTION.—The term "congressional committees of jurisdiction" means the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(4) PASSENGER AIRPLANE.—The term "passenger airplane" means a turbine-powered, transport-category airplane certificated under the provisions of subchapter C of title 14, Code of Federal Regulations, with a passenger seating capacity of 20 or more.

(5) SECRETARY.—The term "Secretary" means the Secretary of Transportation.

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Chapter 2 A

PERSONAL PROTECTIVE EQUIPMENT (PPE) - AIRLINE CREW

https://samchui.com/2020/10/01/trip-report-flying-with-etihad-during-pandemic/

Cabin Crew; Ground Services Staff etc.

Firstly, take a look at the info found in the article at the end of the ***above*** link, dated 1 October 2020

It (said article) demonstrates nicely how certain 'customer facing' airline staff etc. (in this case cabin crew) might better protect themselves and their customers (by ***correct*** use of ***adequate*** [full] PPE [amongst other things e.g. social distancing; hand washing / cleansing and other forms of health 'etiquette']) when operating flights during a major public health type incident

This is particularly important re a worldwide pandemic with high infection, fatality and serious sickness rates - as was the actual situation for the COVID-19 pandemic (prevalent from around early 2020 to around the same time two years later)

Secondly, please read the article found on the next 2 pages (before continuing to 'Flight Crew' on page **31**):

Qatar Airways Requires Passengers to wear Face-shields + Masks on board its Flights

Independent (UK) / Helen Coffey / 9 July 2020

QATAR Airways - B777 ER – A7-BAP / 25 Feb 2019 / by Anna Zvereva, Talinn, Estonia

The 'new rule' is compulsory for passengers in economy class. However, those travelling in first and business can forgo the shield "at their discretion"

The disposable shields, (in two sizes [for adults and children]) are issued to passengers as part of the airline's hygiene kit. They come with hand sanitiser, gloves and a face mask. Passengers are expected to wear the shields at all except when eating or drinking. Children under 2 are exempt

Cabin-crew will wear even more PPE, with face masks, safety glasses, gloves and disposable gowns worn over uniforms

Travellers in economy should be in no doubt that the shields are mandatory: "Anyone refusing to wear the face shield during the boarding process will be not allowed to travel," an airline spokesperson stated

Qatar Airways Group chief executive Akbar Al Baker said of the move: "By introducing these additional on-board safety and hygiene measures, our customers can rely on us and our unparalleled expertise to fly them safely to their destination"

"As the largest international airline flying consistently throughout the pandemic, we have become one of the most experienced in safety and hygiene. We will continue to lead the industry in terms of the services offered to our passengers, so that they can travel with confidence"

Face shields come in two sizes (Qatar Airways)

For further details take a look at the info at the end of the two links - found just below:

https://www.independent.co.uk/travel/news-and-advice/qatar-airways-face-shield-masks-passengers-flights-a9609626.html

https://static.independent.co.uk/s3fs-public/thumbnails/image/2020/07/09/10/qatar-ppe.png?width=1368&auto=webp&quality=75

Note: From author / owner of this guideline document (i.e. the one which you are reading right now):

Ref the last article immediately above, the title makes it clear that masks should also be worn by passengers (in addition to the face shields) - except when eating or drinking. Not mentioned is that masks should be changed when they become so moist etc. that they cannot meet the associated specifications

Very approximately, this point is reached after about 4 hours of fairly constant wearing. So, on a 12 hour 'long-haul' flight at least 3 mask changes (and thus 3 separate masks) would be required. It is likely that the mask referred to here was the ***Certified Type II Surgical*** *(Medical)* ***Face Mask*** (See page **36** for further details of same)

Flight Crew

On the assumption that flight crew remain on the flight deck / in the cockpit throughout the flight (toilet and mandatory rest breaks etc. excepting ***if*** no exclusive flight deck toilet; bunks etc. available) it is suggested that associated, ***minimum*** PPE (for flight crew) means the wearing of an adequate / appropriate face mask ***at all times***, excepting for eating and drinking; during some types of * emergency etc. - together with what is next described just below

> * **NOTE:** Historically, some airline pilots have 'argued' that the wearing of a face mask during flight operations is not conducive to a situation where the rapid / emergency use of an oxygen mask / similar ***might*** be required (i.e. effectively **ALL** flights). As associated removal of a (typical covid etc. type) mask takes just a few seconds, this argument is invalid (To give this some context, pilots do not refuse to eat inflight meals [on trays, on their laps] because of the risk of similarly having to use an oxygen mask in quick time!)

The paragraph above is based on a modern, passenger airliner with a separate flight deck / cockpit compartment (with lockable door) from the rest of the aircraft. (If this does not apply it is suggested that associated and appropriate adaptations are made accordingly)

Should flight crew need to leave the flight-deck / cockpit for a valid reason (e.g. toilet breaks; taking crew rest where the only associated 'facilities' are located in an area of the cabin in which passengers are also present; dealing with emergency / security/ technical etc. type issues which cannot be adequately addressed without leaving the flight deck / cockpit) - then full PPE (as worn by the cabin crew etc. referred to further above) should typically be worn, ***unless actual circumstances prevailing 'on the day'*** dictate otherwise, and always at the absolute discretion of the flight crew member involved

Where a toilet is located outside of but near to the cockpit, that toilet (if other toilets are also available) should (circumstances 'on the day' permitting) be allocated for flight-deck / cockpit crew use only

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Chapter 2 B

New Research explains which Covid-19 Face-masks might be Best Worn in which Specific Situations

Following article taken from 'NS Medical Devices' website

By Peter Littlejohns - **25 Jun 2021**

What are the best Covid-19 face masks to wear in different situations? (nsmedicaldevices.com)

A study from ***Philipps University*** Marburg (Germany)

New research, to be presented at this year's European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) in July, has given further insight into the best face masks to wear in different settings, in order to combat the spread of Covid-19

The data indicates that plastic face shields ***alone*** provides little protection from Covid-19 viral particles , whilst wearing a 'genuine and appropriate' surgical / medical etc. face mask can provide similar protection (to wearing a respirator) against such particles. Dr Christian Sterr and his colleagues (at the above referred to university) compared 32 types of mask intended for hospital use, including cloth masks, surgical masks, respirators and face shields. Sterr said:

"Members of the public should wear reliably ***CERTIFIED surgical / medical face masks*** of good quality, (rather than wearing cloth masks and / or face shields - which performed poorly in our study). Genuine respirators are even better but should typically be reserved for use by medical staff"

"Face shields for medical staff should only be used to keep masks and respirators dry - e.g. when undertaking procedures in which there is a risk of splashes"

The efficacy of personal protective equipment (PPE), including face masks, has been the focus of scientific and public interest since the emergence of the Covid-19 causing virus SARS-CoV-2, which is transmitted via droplets and aerosols - particularly in poorly ventilated settings. In order to contribute to the research in this area, Dr Sterr and his colleagues put certified and non-certified surgical face masks, cloth masks, face shields and medical respirators through three different tests

What did the tests show?

Test 1

The first experiment measured the filtration efficacy of the mask material. Each mask was fixed to an air-collecting tube inside an airtight tank, and an aerosol of the chemical di-ethyl-hexyl-sebacat (DEHS) was pumped into the tank, with the aerosol particles in the collecting tube counted by a particle counter

The average filtration efficacy was lowest for the cloth masks (28%), followed by the ***non-certified*** surgical masks (63%) and the ***certified*** surgical / medical masks (70%). The * KN95 respirator material filtered out 94% of particles and the FFP2 mask material 98%

(* see also amplifying note on ***next*** page re K95 respirator)

Test 2

The second experiment measured the air pressure on either side of the mask. Certified surgical / medical face masks produced the ***lowest*** drop in pressure ***and so would provide the least resistance to breathing***

Certified Type II surgical / medical masks produced a pressure drop of 12.9 Pa/cm² - a measure of air permeability, whilst non-certified surgical masks produced a pressure drop of 16.2 Pa/cm².Respirators produced pressure drops that were two to three times higher (26.8 Pa/cm² for FFP2 and 32.3 Pa/cm² for KN95). The results for the cloth masks ranged between 6.9 and 149.3 Pa/cm²

Test 3

The third experiment measured the filtration efficacy of the masks as worn. It used a similar set-up to the first experiment but the masks were mounted on a dummy head with an artificial trachea or windpipe, instead of being fixed to the air-collecting tube. The artificial head was the size of the average person in the USA and had a skin-like coating, to provide a more realistic mask fit

The cloth masks and the ***non-certified*** surgical masks had the worst 'as-worn' filtration efficacies, filtering out just 11.3% and 14.2% of the particles, respectively

Remarkably, the certified type II surgical / medical face masks had similar 'as-worn' filtration results (47%) to the KN95 respirators (41%) and FFP2 respirators (65%)

What do the results mean?

Experiments 1 and 3 focused on particles of 0.5 µm (micrometre) - a size judged to be realistic for SARS-CoV-2 particles which cluster together. The study's authors say that for the best combination of optimum resistance against Covid-19 particles and ease of breathing, a ***face mask should combine good filtration with a low drop in pressure***

Dr Sterr said: "In our tests, respirators had two to three-fold higher airflow resistances than surgical masks. ***This might lead to lower user adherence*** and, consequently, to a lower overall protection rate. Therefore, it seems reasonable to widely use ***certified surgical*** / ***medical*** face masks in hospitals to prevent the virus from spreading, especially if distancing and quarantining are not possible"

He continued: "In situations where a patient cannot wear a mask (e.g. during intubation), a ***surgical*** / ***medical*** face mask does ***not*** seem sufficient to protect the healthcare worker from SARS-CoV-2. In such cases, ***respirators*** such as ***FFP2*** masks should be considered. ***KN95*** respirators should only be worn if another, suitable respirator (e.g. the FFP2) is not available"

The results of the Philipps University Marburg study matched (at the time) the warnings given by the EU's 'Rapid Exchange of Information System' (RAPEX) against **KN95** masks * ***made in China***

Article ends here

* *Amplifying note from author / owner of this guideline document i.e. the one you are reading right now:*

The KN95 Respirator has received serious criticism from 'experts in the subject' due doubts as to its effectiveness and efficiency (at what it is documented as being 'capable of') - ***if produced in China*** *- and no doubt some other parts of the world*

There are also ***reliable*** *accounts of 'fake' versions of the KN95 being widely available. Whilst correctly and legally certified versions of this respirator probably do meet associated specifications - is it worth taking the risk???*

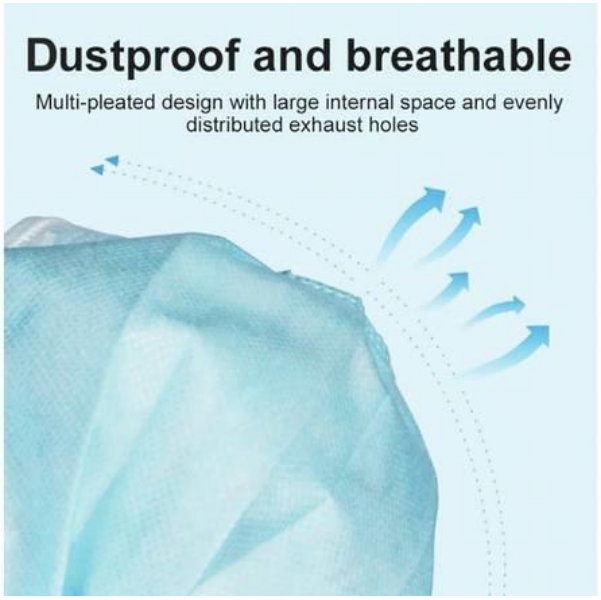
See article starting page ***40*** *for more details re the* ***KN95*** *mask*

See also links shown on pages ***40*** *and* ***41*** *for further information in general on the subject of 'masks'*

Certified Type II Surgical *(Medical)* ***Face Mask***

These masks are 3-ply breathable with an integrated nose clip and have been manufactured with different layer materials and thickness to ensure full compliance with type II EN14683 certification. The integrated (flexible wire) ***nose-bridge*** moulds to the face for better fit. Latex-free elastic band / universal size fits all / easy and comfortable to wear. Complies with BS EN 14683 standard Type II ***certification***; Medical Directive 93/42/EEC; Quality Management ISO 13485 ***certification***

- 3-ply filler construction, type II-filtration exceeds 98% (melt blown filler)
- Bacterial filtration efficiency EN14683 2019 Annex B (BFE) exceeds 98%
- Breathability - EN14683 2019 Annex C 26.7 Pa/cm2
- Microbial cleanliness ENISO11737-2018 <20 cfu/g
- Bio-compatibility -EN ISO10993
- Size 17.5cm x 9.5cm



FFP2 Mask

Respirator masks, also known as 'filtering face piece' or ***FFP*** masks, are closer-fitting (than Certified Type II Surgical [Medical) Face Mask] and are designed to protect the wearer against the inhalation of both larger droplets and fine aerosol particles. They are roughly equivalent to the ***N95*** masks produced in the USA and the (genuine) ***KN95*** masks made in China

These masks need to properly 'fit to the face' to be effective and are considerably more expensive than the type II surgical / medical mask. They also tend to be single use, so aren't very eco-friendly. It's also worth noting that this is PPE which is typically needed by frontline workers - particularly health workers

It might be worth considering this mask if you're in an area with high transmission and are at greater risk of catching coronavirus (Note: Passenger airline cabins might fit this latter description, depending on associated circumstances e.g. boarding and deplaning procedure: full / high PAX load; seat pitch and width; duration of flight; 'rules' for use of PPE; serving [or not] of refreshments [particularly alcohol]; use / rules / cleaning of toilets; hand-hygiene procedures; seat sitting / spacing policy; aircraft not having HEPA filters; passenger co-operation etc.)

Still using cloth masks? It's time to switch to surgical masks - here's why

Your trusty cloth masks have gotten you through more than a year of the COVID-19 pandemic. Heading into the winter, you might want an upgrade. That's because some disposable masks, e.g. ***certified surgical / medical masks*** and ***KN95*** *(and also FFP)* masks, just plain work better, experts say. And plenty of them are available now - a turnaround from the beginning of the pandemic, when the highest-quality masks needed to be reserved for healthcare professionals

In an August 2021 study currently under peer review, a group of researchers from universities including Yale and Stanford found that certified surgical / medical masks ***are 95% effective at filtering out virus particles - compared to just 37% for cloth masks***

That held true even after the surgical masks were washed with soap and water 10 times, though the USA's CDC and the FDA both say you ***shouldn't*** reuse disposable surgical masks under any circumstances.

Public health officials in European countries such as France, Germany and Austria are currently urging people to wear medical or surgical masks instead of homemade cloth masks - but it's not quite as simple as tossing out your cloth masks and buying a replacement stockpile of disposables

Here are the biggest differences, and when you should use one type of mask versus the other:

Why certified medical / surgical masks work better than cloth ones

Assuming they fit properly, cloth masks can do a decent job of removing most of the ***droplets*** etc. which people generate and expel by talking, breathing, coughing or sneezing - says Yang Wang, an assistant professor at the Missouri University of Science and Technology, who runs the Particle Measurement & Technology Laboratory

See again page 35 re warning about some KN95 masks made in China

But, Wang says, you'll be significantly more protected by wearing a higher calibre of disposable mask. Your strongest option is the KN95 mask, which is commonly made in China and filters up to 95% of particles in the air. If you can't find KN95s, go with the medical / surgical mask made from a non-woven plastic material called polypropylene. The material is capable of holding an electric charge, which can attract, intercept and remove foreign particles that might otherwise slip through the cracks of a cloth mask

Medical / Surgical masks and KN95s are relatively inexpensive, so you can probably afford to stockpile them. A quick online search for "surgical masks" shows several 50-pack options ranging from $8-$12. And their quality is relatively consistent, "whereas cloth masks can be quite variable," says Dr. Judith O'Donnell, section chief of Infectious Diseases at the Penn Presbyterian Medical Center and a professor of Infectious Diseases

Why the CDC still recommends cloth masks anyway

You may notice that the above list doesn't include ***N95*** masks. They also provide high-quality protection, but still need to be reserved for medical facilities and people with a very high risk of Covid exposure, says Dr. Lynn Goldman, dean of the Milken Institute School of Public Health at George Washington University - and an epidemiologist by training

That's why, at the start of the pandemic, the CDC recommended cloth masks over all types of medical-grade ones. Today, the CDC maintains that well-fitting cloth masks can still effectively prevent the spread of Covid, though it also recommends surgical masks and KN95s as safe options

"CDC recommends that the best mask is the one that you will wear consistently and correctly," CDC spokesperson Jade Fulce tells CNBC - "CDC continues to learn more about the effectiveness of different types of masks and respirators for preventing Covid-19"

And many Americans have gotten used to their two or more layers of washable, breathable fabric over the past year and a half. Cloth masks are comfortable, affordable, reusable and sometimes even fashionable. Their top strength is also the biggest weakness of surgical masks and KN95s, Goldman says: Cloth masks have "far more durability over time," while disposable ones need to be thrown away as soon as they become dirty

A Massachusetts Institute of Technology study published in July estimated that the Covid-19 pandemic will produce up to 7,200 tons of medical waste per day, mostly from disposable masks

How to tell which type of mask to use

In crowded situations where you can't maintain social distancing for prolonged periods of time - like traveling on a plane or sitting in a classroom or theatre - you should definitely opt for at least a surgical mask. Goldman says she wears KN95 masks while travelling. "Even though I am vaccinated, I feel that I want to do everything I can to avoid becoming infected," she says

In situations where you won't be near anyone else for more than a brief moment or two, like going to the supermarket or dropping off a child at school, a cloth mask is probably fine, says Goldman

You also need to pay attention to how your mask fits, regardless of which ones you choose. "A well-fitting cloth mask could be better than or equivalent to a surgical mask that's poorly fitting," O'Donnell says. Look for something that has a flexible metal bridge to mould over your nose, lies flat across your cheeks and covers your nose down to your chin without gaps along the sides

In the future, surgical masks could become the norm, Goldman says - especially if the CDC encourages them more significantly. "Hopefully they'll do that in a way that's simple, clear and concise," she says

Note **1**: from author / owner of the (this) guideline document (which you are reading right now)

The above / last 2 articles have been included herein in an attempt to describe the differences between the various types of mask (typically available to the 'general public') used throughout the COVID-19 pandemic

For those still not 100% clear, reading the information accessed by following the below link might help???

https://smartairfilters.com/en/blog/whats-the-difference-between-n95-and-kn95-masks/

Note **2**: from author / owner of the guideline document (which you are reading right now)

The interested reader might also find further guidance on the subject of '***masks***' etc. via the following links:

https://www.which.co.uk/reviews/face-masks/article/how-to-buy-the-best-face-mask-or-covering-axi5Y1g35Cat
29 Nov 2021

https://www.which.co.uk/reviews/face-masks/article/best-reusable-face-masks-awLeA3A6XoZD
28 Sep 2021

https://www.which.co.uk/reviews/face-masks/article/disposable-face-mask-buying-guide-aEpLK3I5DMdR
15 Sep 2021

https://www.which.co.uk/reviews/face-masks/article/face-mask-using-guide-how-to-wear-store-and-wash-your-face-covering-properly-aQkvZ8U4ytu7
15 Sep 2021

https://www.which.co.uk/reviews/face-masks/article/how-to-make-your-own-face-covering-aLabv6r09P63
12 July 2021

The info provided above is typically 'UK Centric' but will hopefully be found useful in any world-wide setting with regards to a pandemic event similar to that of COVID-19

Follow link below for more info (differences and similarities) between the **N95** and **FFP** type masks

https://www.wired.co.uk/article/what-are-n95-and-ffp2-face-masks

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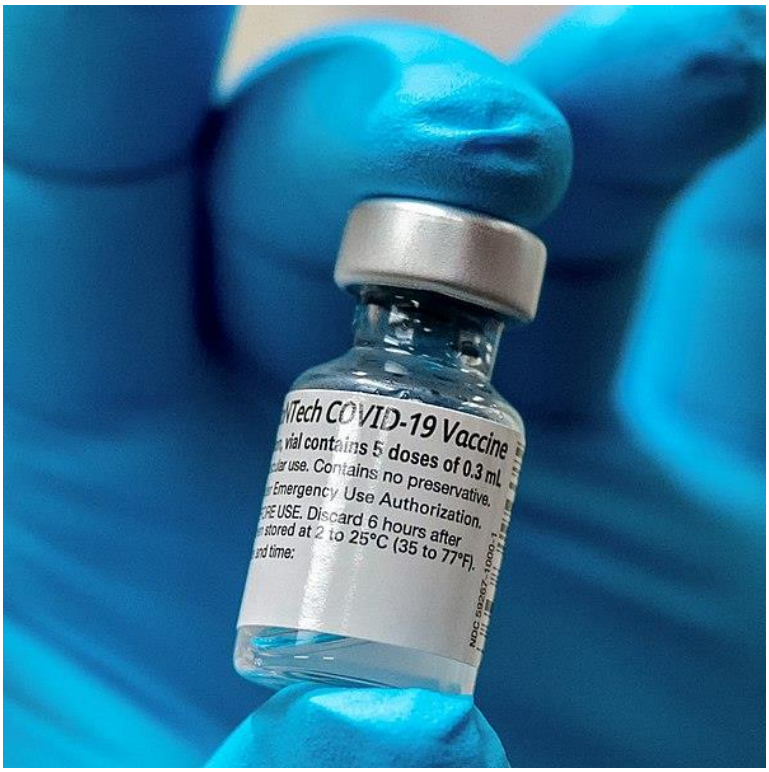
Chapter 2 C

PANDEMIC vs MANDATORY VACCINATIONs for AIRLINE STAFF



Should all airline staff be ***mandatorily*** vaccinated against a major, pandemic disease (such as COVID-19)?

For a 'take' on the above question - see information provided at the end of the below links:

https://www.flightglobal.com/strategy/why-are-airlines-mandating-covid-19-vaccinations-for-crew/145228.article (27 August 2021)

https://news.sky.com/story/covid-19-wizz-air-gives-flight-crews-december-deadline-to-get-vaccinated-12396796 (01 September 2021)

https://www.bbc.co.uk/news/business-58731340 (29 September 2021)

The article found in the last link immediately above is reproduced on the next page - for user convenience / interest:

Nearly 600 United Airlines employees face being fired after failing to comply with the firm's Covid-19 vaccination policy

The vast majority of United's 67,000 US staff has already provided proof of vaccination, which was required by Monday 27 September 2021. "This was an incredibly difficult decision," airline bosses said in a memo to employees. The Chicago-based airline had set out its Covid requirements for staff in August. Its US employees had to upload proof of vaccination, or the first of two jabs, by the 27 September deadline. 593 workers who have so far refused a coronavirus vaccine and have not applied for an exemption on religious or medical grounds, now face losing their jobs

"Our rationale for requiring the vaccine for all United's US-based staff was simple - i.e. to keep our people safe - and the truth is that everyone is safer when everyone is vaccinated, and vaccine requirements work" Chief Executive Scott Kirby and President Brett Hart said on Tuesday. "This was an incredibly difficult decision but keeping our team safe has always been our first priority," they said. Some of those employees could be kept on if they have been jabbed but have simply failed to submit proof of vaccination - or if they were vaccinated before formal meetings on the matter commenced

United said it would follow the rules outlined in union agreements on the dismissals. The process could take weeks or even months. A further 2,000 employees have requested an exemption to the policy.
The airline had previously said that it would put those who are exempt on temporary, unpaid leave from 2 October. But those plans were put on hold after a lawsuit was filed by six employees challenging the policy

Like many companies in the aviation sector, United was severely hit by pandemic-related travel restrictions. At the height of the crisis, it announced that it would need to furlough up to 36,000 staff. It denied, however, that its vaccine policy would affect recruitment going forward, although vaccination will be a condition of hire for new staff. On Tuesday (28 September) it said that it had received more than 20,000 applications for about 2,000 flight attendant jobs

Elsewhere in the US, few airlines have introduced vaccine mandates for its staff. Delta Airlines, for example, has announced a $200 (£148) monthly health insurance surcharge for those who are not jabbed

Fiona Cincotta, market analyst at City Index, told the BBC's Today programme that such a "strict" policy was unlikely to be introduced by UK airlines (Ends)

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Chapter 3

EXAMPLE (Suggested) AIRCRAFT (Airliner etc.) SEATING (Configurations and Assignments) PLANS

*FOR USE IN A * SERIOUS PANDEMIC TYPE SITUATION*

* e.g. - as per the COVID-19 Pandemic of approximately March 2020 to *TBA* 20***22***

Purpose

- To demonstrate (pages 47 - 48) how one actual airline (DELTA) 'accomplished the above' for real - at least to a relatively simple and partially effective degree ……*AND*
- Going forwards(see pages 49 - 62) - what might 'we' be able to ***do better with passenger aircraft seating plans and associated spacing*** etc. (particularly from the viewpoints of maximising revenue generation and profits) - should another pandemic ever eventuate on the scale and 'deadliness' (in all relevant aspects) of COVID-19?

Chapter 3 A

Delta Plans to Continue Blocking Middle-seats through to April 2021 to give Passengers 'Complete Confidence'

Julia Thompson - USA TODAY - 8 Feb 2021

Above image licensed as per the Creative Commons Attribution-Share Alike 2.0 Generic license

Delta Airlines 757-200 / 23 May 2008 / Author - Eddie Maloney

Delta Air Lines stated today (8 Feb 2021) that it would extend its current commitment to blocking (not using) middle seats on its flights through to end of April 2021

Several U.S. airlines blocked seats for a while in the name of social distancing amid the COVID-19 pandemic. However, all but Delta have since ceased this practice. Southwest, JetBlue and Hawaiian stopped doing so in December 2020 and Alaska's seat-blocking policy expired for those in the main cabin in January 2021

Delta extended its policy by one month to block middle seats and limit capacity on all flights through to 30 April 2021, which included the busy spring break travel period and Easter

Mask violations: TSA announces mask fines up to $1,500 for travel on planes, trains, buses

The USA doesn't share details. Canada does: COVID-19 exposure on flights more common than thought

"We want our customers to have complete confidence when travelling with Delta, and they continue to tell us that more space provides more peace of mind," Bill Lentsch, Delta's chief customer experience officer, said in a statement. "We'll continue to reassess seat blocking in relation to case transmission and vaccination rates, while bringing back products and services in ways that instil trust in the health and safety of everyone on board"

United execs have called seat blocking a PR stunt, *and the airline industry has touted the safety of flying regardless of seating limits*

Low Risk or Dicey - Two reports paint different pictures of COVID-19 danger while flying

"United States' airlines have implemented multiple layers of measures aimed at preventing virus transmission on board aircraft, including strict face-covering requirements, enhanced disinfection protocols and hospital-grade ventilation systems" Katherine Estep, a spokeswoman for Airlines for America, the U.S. airline industry's trade group, said in an earlier statement

"We remain confident that this layered approach significantly reduces risk and are encouraged that science continues to confirm there is a very low risk of virus transmission on board aircraft"

Some airlines will let passengers know whether their flight is going to be full and will offer rebooking options. Southwest Airlines CEO Gary Kelly said recently that few passengers have taken the airline up on such offers

'Bye, empty middle seat': Southwest Airlines to start filling planes in December

Note: The above article finishes with the link found just above

The 'interested reader' might also wish to take a look at the separate but associated article, found at the end of the link below:

https://www.businessinsider.com/flying-delta-first-time-since-stopped-blocking-middle-seats-2021-5?r=US&IR=T

Chapter 3 B

PAX Airline Revenue Mitigations (i.e. how to potentially ***still*** make a profit!) by use of:

Specific Seating Configurations / Assignments etc. on PAX Aircraft

During a

Major Pandemic Situation (e.g. as per the COVID-19 Pandemic of approx March 2020 - early 2022)

On the following pages we propose (for a representative selection of different [*example* / *sample*] airliner types and seating configurations) a variety of seating plan assignments and other measures - which might have been considered appropriate (from public health viewpoints [and, more specifically, the prevention / minimisation of cross-infection whilst on board]) for passenger flights during the COVID-19 pandemic - whilst also (with associated pricing adjustments [i.e. increases] by the carrying airlines) targeting an * operating profit - similar to that which might have been achieved during ***broadly equivalent*** 'normal business' (i.e. non-pandemic related) flight operations?

* Note: See page 62 for more details

The above concept would require the provision of increased (whilst still not being absolutely ideal from public health viewpoints) spacing (social distancing) solutions between ***seated*** passengers - and is based on the assumption that ***any associated flight is full*** in e.g. any of the various (selected) seating configurations / assignments so proposed just above - and expanded upon further below (i.e. we are ***100% not*** referring here to '***normal business*** / ***operations***' type seating configurations / assignments)

Combining such increased spacing with ***additional*** 'protective / preventive' on board measures e.g. .....:

- ***ABSOLUTELY no overhead luggage bin etc. use permitted*** (i.e. the only '***carry-on***' items permitted - ** ***must*** easily and quickly be capable of being placed on the floor - under the 'seat in front' [that this is achievable could be ascertained at the check-in stage by e.g. use of an appropriate 'template' / other suitable methods])
- Wearing and correct use of ***appropriate*** masks (including periodic replacements - e.g. on appropriate flights, masks should typically be replaced ***at least*** every 4 hours)
- Using additional PPE e.g. further face (including eyes) protection e.g. by using a face-shield
- Not using / opening individual overhead air-supply nozzles (unless advised otherwise by crew)
- Practising strict 'touching / coughing / sneezing etc.' hygiene and etiquette
- Minimising social interactions and leaving of seats
- Practising adequate social distancing ***if*** leaving seats
- Adequately managing toilet use, etiquette, cleaning / disinfecting etc.
- Regularly cleaning hands; nearby 'touchpoints' (e.g. seat-belt, food tray, seat backs, armrests); toilet door handles / locks / taps / seat etc. An appropriate sanitising gel / liquid / wipes (at least 60% alcohol) should be used (best to 'provide your own' [enough to 'comfortably' last the flight])
- Adequately managing catering operations on board (including a strict 'no alcohol' policy) etc.

** **1.** Items of clothing (e.g. an overcoat) and similar etc. count for this purpose (i.e. ***they must also not be placed in overhead bins***). **2.** Allowance must be made for any aircraft equipment already located (fixed) under the 'seat in front' e.g. 'in-flight entertainment (IFE) related "electronic boxes" etc.'

3. Passengers must be fully ***pre***-advised of such restrictions ***in an appropriately adequate timescale before the flight commences*** - so that they might 'better organise' their luggage packing etc. accordingly. How this is effectively and efficiently communicated and 'managed' should be the responsibility of the carrying airline / equivalent entity

4. Appropriate bullet point requirements listed on the previous page (as specified before flight by the carrying airline) would need to be made a 'legal' condition of carriage - or equivalent measure (e.g. included in 'mandatory' terms and conditions) - for the specific flights concerned i.e. non-compliance = non-boarding; deplaning etc.

.....together with e.g. the benefits of relevant aircraft 'systems' (e.g. aircraft's air circulation system using HEPA filters), aircraft cleaning etc. - should provide just about the safest way of flying (from pandemic viewpoints) possible, whilst not incurring significant, additional cost by the airline in so doing (read-on for how the latter might be accomplished)

Some (a small number) of airlines went some (very limited) way to achieving what is described on the previous page (see Delta Airlines example pages 47 - 48) and a ***very few*** went further - but typically only temporarily (e.g. used for repatriation of citizens [to parent country] only - where the carrying airline was registered in that same [parent] country e.g. usually being the 'national / home carrier' of same)

Of course, it is important to clearly understand that ***none of the above helps at times during which airlines are grounded and / or banned*** (typically at home base[s] country [countries?] and / or potential destination countries) from operating - as was the case (on and off) for a significant amount of time during the COVID-19 pandemic

Explanation of What Follows *(i.e. next 10 Pages)*:

A reasonably representative selection of different commercial (passenger airline) aircraft seating plans is provided - together with associated, explanatory material of how said seats might be assigned to passengers - in circumstances similar to that of the COVID-19 pandemic, during periods when (at least limited) flight operations were generally being permitted

The objectives are to try to achieve a degree of 'on-board' social distancing (which would, of course, ***not*** be deployed / used during '***normal***' airline ops) whilst also:

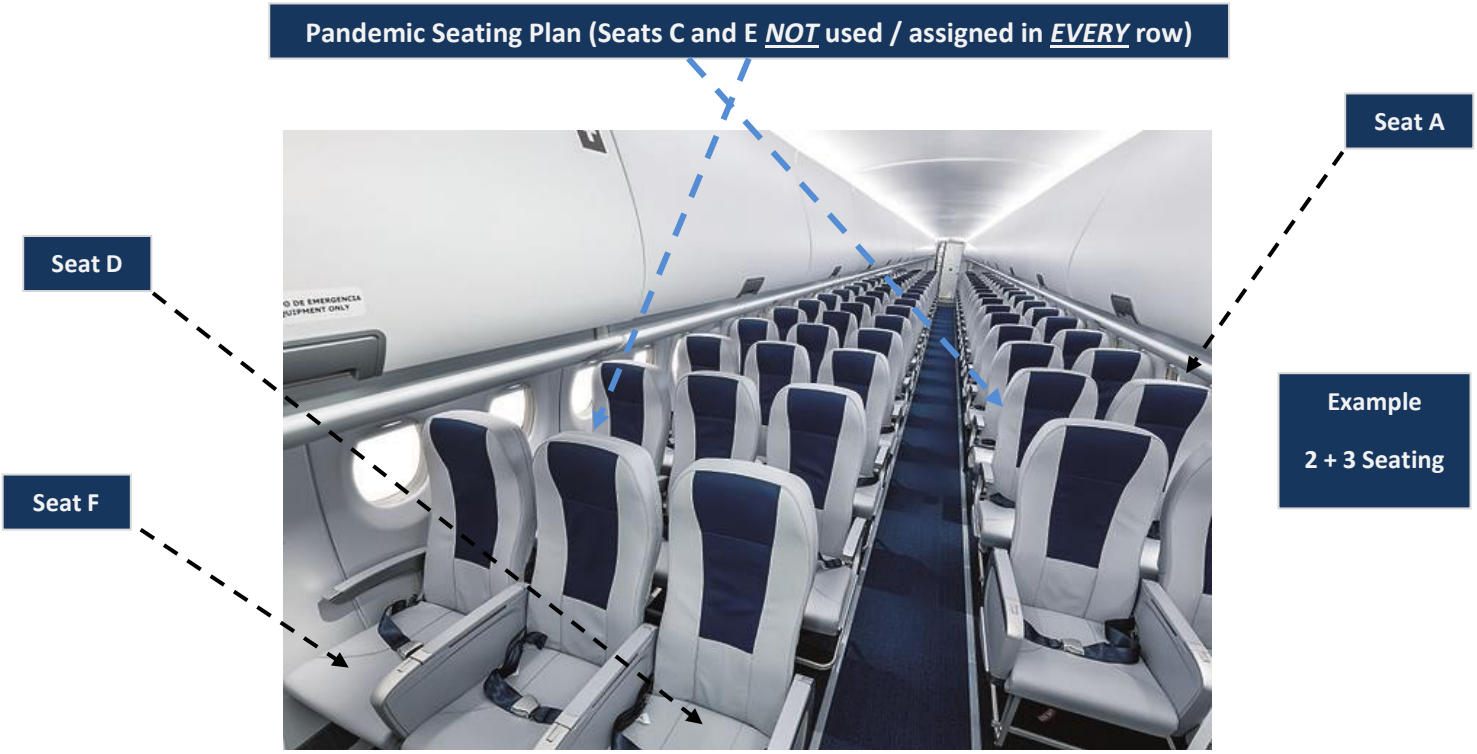
a) minimising use of ***aisle*** seats and
b) minimising assigning seats ***directly behind*** an occupied seat in the 'immediate row in front'

However, do note that in ***some*** of our example configurations / seating assignments (which follow) it will not be possible to fully comply with the a) and b) requirements listed just above - without ***further*** limiting passenger numbers - and thus associated revenue / profit targets as described herein

One health related mitigation here is that the ***seat backs of the rows in front*** act as a barrier (at least to a degree) from persons (seated in the seats behind) expelling droplets / aerosols by e.g. coughing, sneezing and even talking

See also the associated information found on pages 61 for an example of a further, proposed mitigation (i.e. non-use of alternating seat rows)

Sukhoi Superjet 100 (SSJ 100)



By SuperJet International - SSJ100 for Interjet - Interiors, CC BY-SA 2.0, https://commons.wikimedia.org/w/index.php?curid=29394254

Respiratory Related ***Pandemic*** Type Situation - see ***Next*** Page for Suggested Seating Plan:

Sukhoi Superjet 100

Respiratory Related Pandemic (e.g. COVID-19)

Suggested seating allocation:

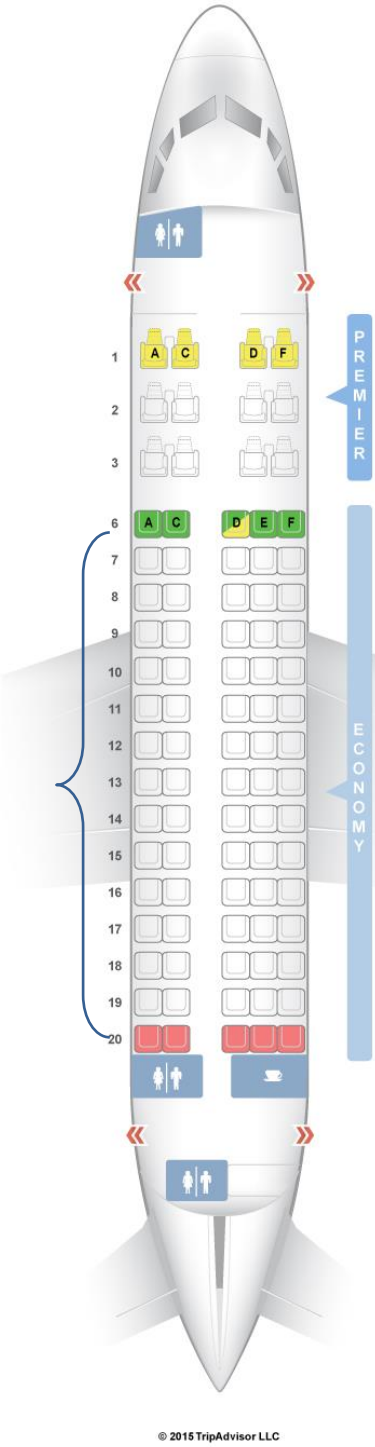
6A + 6D + 6F

7A + 7D + 7F

8A + 8D + 8F

…… And so on to row 20

= 60% occupancy max (if all allocated seats filled) **in Economy**



Premier class not considered in this example

Example

2 + 3 Seating in Economy

SSJ 100

Boeing 737

Respiratory Related Pandemic (e.g. COVID-19)

Suggested seating allocation:

1A + 1C + 1D + 1F

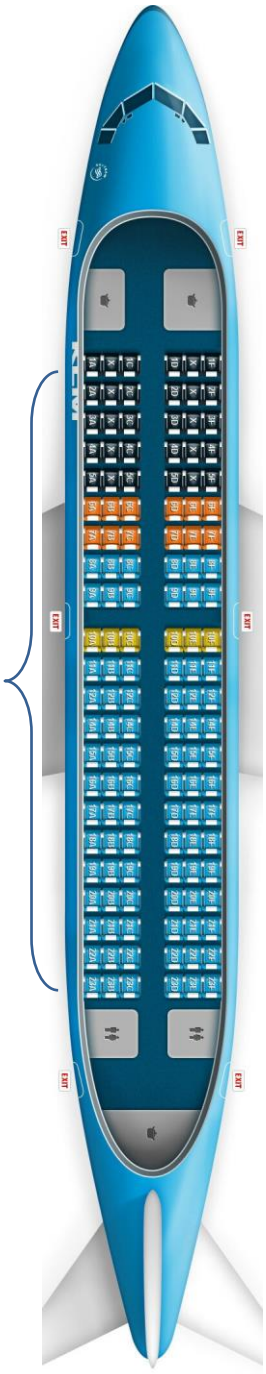
2B + 2E

3A + 3C + 3D + 3F

4B + 4E

And so on to (last) row 22

= **50% occupancy max** (if all allocated seats filled) **in Economy**



Example

3 + 3 Seating - all Economy assumed

Boeing 737

Seat Numbers

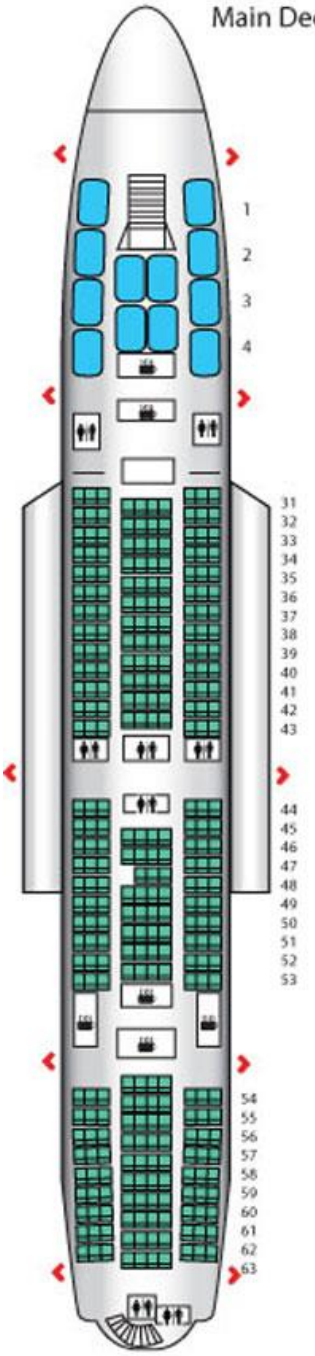
Example A380

1+ 2 + 1
Seating (First - Lower Deck)

Example A380

3 + 4 + 3
Seating
(Economy - Lower Deck)

Main Deck

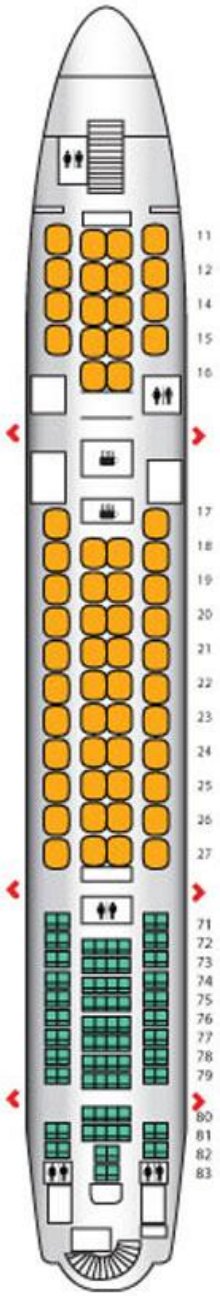


Airbus A380

= 50% occupancy max in *Lower* Deck *Economy*

(See ***next*** page)

Upper Deck



Example A380

1+ 2 + 1
Seating
(Business - Upper Deck)

Example A380

2 + 4 + 2
Seating
(Economy - Upper Deck)

Airbus A380

= 50% occupancy max in *Upper* Deck *Economy*

(See ***next*** page)

Airbus A380 (refer to diagram previous page)

Economy class seating considered only (but the concept should ***ALSO*** be applied [at least to a degree] in Business and First Class seating areas)

Lower Deck / Seating ***3*** + ***4*** + ***3*** configuration

First Row (slight longitudinal [fore & aft] seat staggering [as applicable] ignored here for sake of simplicity)

★ Seats to be occupied = (Most Forward Row 'left to right - Designated **A**, B, C, **E**, F, **G**, H, **J**, K, **L**):

Note: As per standard airline seat numbering, there is no seat labelled 'I'

Second Row (Seats to be occupied = **A**, **C**, **F**, **H**, **L**)

..... and thereafter alternating & so on - front to rear

Forwards

Upper Deck / Economy Seating ***2*** + ***4*** + ***2***

First Row (slight longitudinal [fore & aft] seat staggering [as applicable] ignored here for sake of simplicity)

★ Seats to be occupied (Most Forward Row 'left to right - **A**, B, **D**, E, **F**, G, J, **K**):

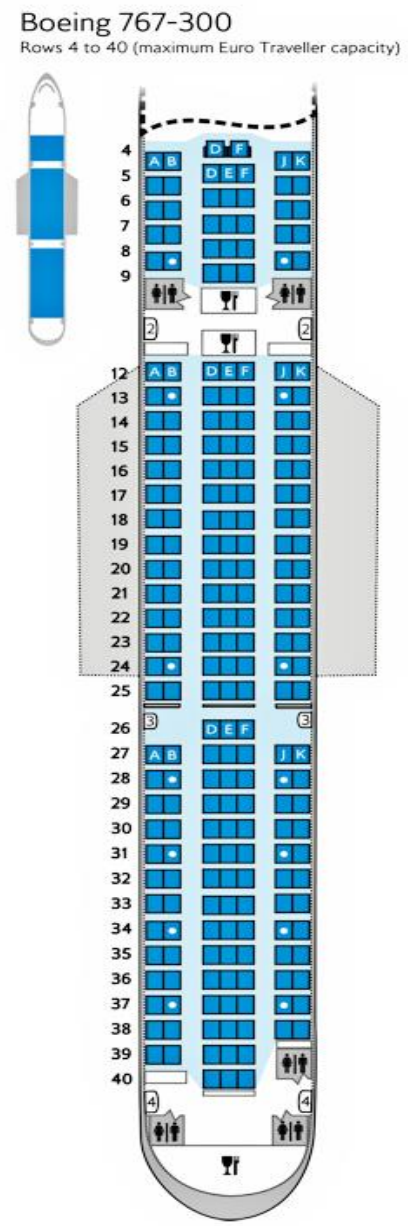
Second Row (Seats to be occupied = **A**, **E**, **G**, **L**)

..... and thereafter alternating & so on - front to rear

Example B767

2+ 3 + 2 Seating

All Economy



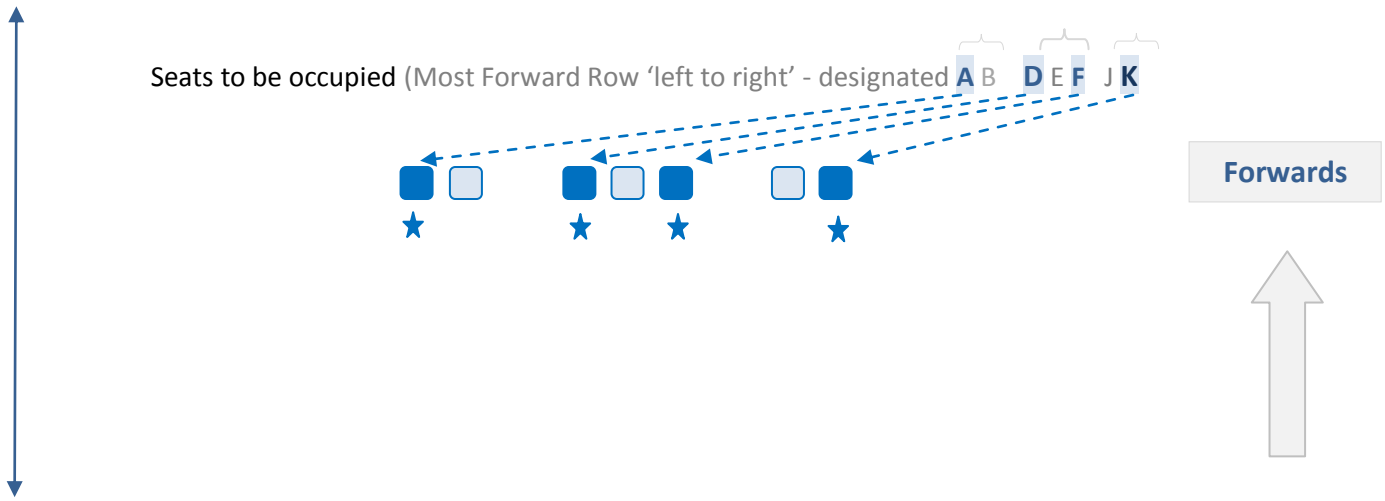
B 767

= 57% occupancy max

See ***next*** page

Boeing 767 (see diagram previous page & note that we use seat lettering as shown on said diagram)

First Row (slight longitudinal [fore & aft] seat staggering [as applicable] ignored here for sake of simplicity)



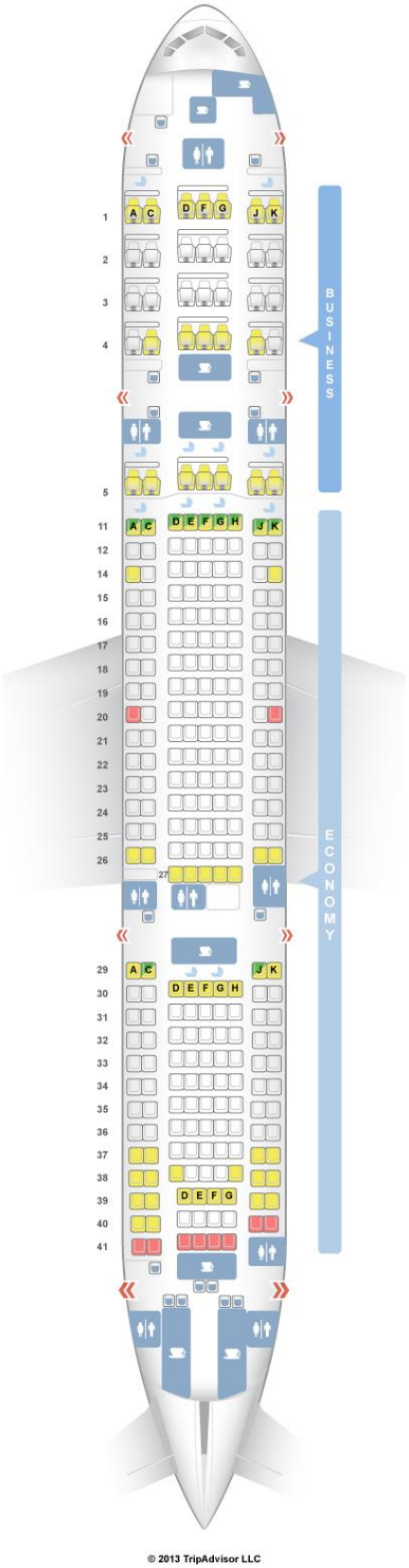
Next Row (Seats to be occupied = **A** B **D** E **F** J **K**) (i.e. ***no change*** from 'most forward' row)

..... and so on - front to rear

Example B777

2+ 5 + 2 Seating in Economy

See next page



B 777

= 56% occupancy max

See ***next*** page

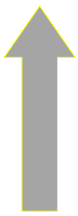
Boeing 777 (see diagram previous page & note that we use seat lettering as shown on said diagram)

Economy class seating considered only (but the concept should ***ALSO*** be applied [at least to a degree] in the First Class seating area)

First Row (slight longitudinal [fore and aft] seat staggering ignored here for sake of simplicity)

☆ Seats to be occupied (Most Forward Row 'left to right' - designated A, C, D, E, F, G, H, J, K):

Forwards



Second Row (Seats to be occupied = A, D, F, H, K) (i.e. ***no change*** from 'most forward' row)

..... and continuing in the same seating pattern - front to rear

* *Even Greater* Social Distancing On-board???

Using the example aircraft shown on pages 52 and 53 (SSJ 100 - but the following principle will also apply to most types of passenger aircraft), it's possible to take the concept of 'social distancing on board' even further, if thought financially viable (see *next* page for how this 'financial viability' might be achieved)

Such (increased social distancing) can be accomplished by ***physically not using every other*** (***longitudinal*** / front to back) ***row of seats*** - whilst still using the ***lateral*** (cross-wise) seating concept (as per image on page 52 and aircraft cabin layout diagram page 53)

The above is probably '*as good as it is practically going to get*' from social distancing (and thus pandemic related) viewpoints (without seeming to become totally 'crazy' by many airline bosses and their financial advisers) - ***BUT*** whilst still (hopefully) being able make a reasonable profit from the operation

For further clarification re this particular example (SSJ 100), seat ***rows 7, 9, 11, 13, 15, 17 and 19 would NOT be used*** (however, they should not be removed from the aircraft due the contribution that seat backs make as physical 'shields' re the spread of e.g. virus etc. droplet and aerosol particles)

The same principle can apply to all passenger aircraft where seating configurations so permit and the concept is considered viable

Consequential 'spin-offs' ref implementing the above might be (slots, ground handling etc. permitting) e.g. quicker turnaround times (quicker boarding / seating / deplaning: less catering; quicker cleaning), reduced fuel burn due lower aircraft weight etc. Furthermore (and subject to any overriding safety / regulatory considerations) less cabin crew might need to be carried

* Why should airlines consider the above option (during a serious pandemic type situation)?

Because historically (***including during the COVID-19 pandemic***) there was reasonable evidence that persons sitting within at least ***two*** seat rows (in front of and behind) an 'infected' passenger(s) are / were at ***increased*** risk of becoming infected themselves - particularly where sneezing / coughing etc. (by said infected person[s]) is / was involved - and even more particularly where masks are / were not worn; adequate social distancing is / was not observed or possible; 'normal business' type airline catering service (on-board) was still in use etc.

Further to the above, the smaller the aircraft, seat pitch, seat width etc. - the greater the risk. So, logically, at least ***two*** complete rows of seats should be left empty going front to back in the passenger cabin

However, provided that other, appropriate (pandemic related) precautions are effectively implemented and complied with on board (e.g. mandatory and correct use of masks; modified catering arrangements; associated health / hygiene etiquettes strictly followed [including cleaning / disinfecting] etc.)..... then leaving every ***other*** seat row empty (instead of every ***two*** rows) would seem to be an acceptable compromise i.e. for the SSJ 100 ***economy cabin row 6 would be occupied*** (as per the diagram) - then rows 8, 10, 12, 14, 16, 18 and 20 (i.e. rows 7, 9, 11, 13, 15, 17 and 19 ***not*** used)

Note 1: The above is written in the context of 'economy class' seating. Same principle could apply (albeit perhaps to a lesser degree) to first and business class seating, as appropriate

Note 2: The proposal outlined just above would be enhanced in circumstances where ***an associated vaccine(s) is available and effective*** - and all potential passengers required to provide '***reliable*** / ***verifiable***' ***proof*** that they had been so vaccinated - before being permitted to travel

How a Profit Might be Realised / Made *(in the circumstances outlined on pages 50 - 61 above)**?***

Note / Reminder: It is important to clearly understand that ***none of what is documented just below would*** *(obviously)* ***be applicable at times during which airlines are grounded / banned from operating*** - as was the case (on and off for most airlines) for a significant amount of time (and for all sorts of reasons) throughout the COVID-19 pandemic

The concept used here is both reasonable and simple. It is based on the following ***assumptions*** (a reminder here that we are considering '***economy***' class seating ***only***. However, the same principle can be applied of course [with modifications as required] to other seating classes / layouts):

- ***All available*** seats (as decided by the marketing; operating etc. airline / whoever - as appropriate) will be sold and commensurately occupied
- Each seat sold is priced such that the total, required profit (for any ***specific*** flight / route / aircraft type etc. concerned) is ***targeted to be the same*** as what would have been statistically / historically achieved ***if the aircraft had been loaded*** *(load factor)* ***so as to make / achieve that same amount of profit during normal operations*** (i.e. 'normal ops' = ***no pandemic*** and ***normal*** seating configurations / assignments for the particular aircraft, route, flight date[s] concerned etc.)

  However, where financial losses have been made by an airline for reasons such as those shown in the 'Note / Reminder' at the top of this page, then the profit targets (as at such time[s] that said airline is able to resume flight operations) referred to in the para just above ***might*** be adjusted even further upwards (at least to a degree) as a 'measure of compensatory revenue'

  It is further proposed that said upwards adjustments be 'capped' at levels which would have been achievable during 'normal' operations, if such flight had been 100% full (assuming that this latter figure is greater than the predicted 'normal ops' load factor for that same flight)
- ***With 8 billion + persons now inhabiting the planet - we suggest that there will*** (should be?) ***enough potential passengers still ready and willing to come forward and fill each and every such flight*** (in the seating configurations and assignments as already referred to further above) ***at the prices asked*** (together with compliance with the associated [pandemic etc.] conditions stipulated by the airline [*the latter would need to be made a 'legal' condition of carriage - or equivalent measure - for all of the specific flights concerned*])

The same ***principle*** would apply to First and Business Class seating assignments (as relevant):

- e.g. in the ***B777*** Business Class area (see diagram page 59) - only seats A, D, J and K might be allocated for use
- In the ***A380*** Business (upper deck) Class area (see diagram page 55) - only the window seats might be allocated. Same applies to the First (lower deck) Class area
- For example, in the ***SSJ100*** Premier Business Class area (see diagram page 53) - only the window seats might be allocated

Note: Further to the above, airline passengers travelling specifically for ***business*** purposes (many travelling 'Business Class' pre COVID-19) contributed disproportionally (in a financially positive way) to commensurately higher income for the carrying airlines. Some now 'argue' that the rapid advent of 'on-line meeting' software (such as Teams, Zoom and Skype) and its use during said pandemic, indicate that business class travel (for business purposes) can no longer be relied upon as an airline 'gift-horse' for making money. The 'jury is out' on this subject i.e. only time will tell!

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Chapter 4 A 1

*CATASTROPHIC **WORLD-WIDE PANDEMIC** TYPE SCENARIO*

(Equivalent of the **SARS-CoV2-Coronavirus** [**COVID-19**] Pandemic of 2020 to 2022)

SAFEST WAY**(s)* (from potential infection / transmission viewpoints) ***to** * **Board Passenger Aircraft

** ..... + 'Deplaning' also of course (in this article we will concentrate on **boarding** and **seating** - but the deplaning process must be similarly planned and provided for)*

Note: For the sake of simplicity. the term 'passenger aircraft' as used in ***this*** section typically relates to 'single deck' airliners with ***minimum*** seating capacities of around 50 passengers and with at least 2 passenger doors - one being at the front of the aircraft and the other at the rear

Assume that a serviceable 'environmental control system - ECS (including HEPA filters) is installed and that the aircraft has a serviceable APU (See 'note' starting *next* page)

The following information ***should be adapted accordingly for other passenger aircraft types*** e.g. from the smallest (say around 6 to 12 PAX) to the largest (e.g. Airbus 380 with around 550+ PAX - on 2 separate decks)

***Note**: Before proceeding further (i.e. to page 69) the 'interested' reader might wish to take a look at the information provided by **ICAO** .....and reproduced (with minor adaptations) on **this** and the **next two pages**:*

Aircraft Module - Air System Operations (COVID-19 Pandemic Context)

Information Source - '**International Civil Aviation Organisation**' (ICAO) - If required see also (ensuring that you use the latest, available edition [for reader info below link was based on 3rd edition - March 2021]):

https://www.icao.int/covid/cart/Pages/CART-Take-off.aspx

Note: Before reading the ICAO article (found at the link immediately above and reproduced [with some adaptations] herein just a little further below [in writing]) - the 'interested' reader ***might*** also wish to take a look at the info found at the end of the following 4 links (the first one is very good if somewhat slightly 'technical'! The other two are videos and might be somewhat easier on the brain to assimilate! The last one is a forum and whilst, [well, reading like a forum!] and perhaps [arguably] a little 'basic / simplistic' in places - still 'does a reasonable job' of what it was intended to do):

https://www.aviationhunt.com/aircraft-air-conditioning-system/

https://www.youtube.com/watch?v=xdRrov9VM8Q

https://www.facebook.com/aircanada/videos/air-canada-clearcare-how-hepa-filters-work-to-keep-you-safe-onboard/957929991310867/

https://aviation.stackexchange.com/questions/84636/hepa-filters-airliner-hvac-and-covid-19

Aircraft manufacturers recommend maximising total cabin airflow - and care should be taken to avoid blocking air vents (particularly along the aircraft floor). These are general recommendations for cabin air considerations and there may be exceptions for specific aircraft models. It is strongly recommended that aircraft operators consult with the appropriate aircraft ***OEM*** (original equipment manufacturer [a company which produces parts and equipment that may be marketed / used by another manufacturer / user]) for questions specific to any particular aircraft type

Considerations

Ground Operations (* typically performed ***before*** an aircraft 'chocks-off / out' and ***after*** it 'chocks-in / on')

* But not always e.g. aircraft (with passengers on board) are fairly regularly held 'somewhere' on airport (sometimes for a considerable period of time) before getting to the arrival gates / after leaving the departure gates

GROUND ops (with passengers on board) ***without*** availability / use of an aircraft's internal ECS (environmental control system [if it has one and it is working?]) OR externally (ground) sourced pre-conditioned air supply (PCA - typically provided by an associated airport) should be avoided if possible, particularly where the 'outside' environment might be too hot or cold for reasonable passenger comfort

A maximum of 30 minutes (before taking appropriate action) might be used as a guide

Where necessary, use of the aircraft's APU *(auxiliary power unit [if it has one and is working])* ***should be permitted at the gate etc.*** (even if this is **not** permissible during e.g. non-pandemic type situations) thus permitting operation of the aircraft's air conditioning system / ECS..... ***in circumstances where an equivalent level of environmental control and ** filtration - via an associated and available PCA / equivalent - is not available***

Note:
If an APU is not available / is unserviceable, the aircraft's engine(s) might be run instead (if appropriate) - but an associated risk here is (unacceptable) induction levels of engine exhaust fumes into the aircraft cockpit and cabin. Furthermore maximum APU airflow output (same applies to engine output as said engine(s) would necessarily be required to run at low power on the ground) might be insufficient to provide adequate airflow, heating, cooling, filtering etc.

Most ***basic*** (i.e. ***non-PCA***) types of ***external*** / ***ground*** air supply sources *(i.e. in contrast to a modern airliner's own,* ***internal*** *system - e.g. environmental control system [ECS] if fitted - which typically provides conditioned [warmed / cooled* ***and*** *'filtered' etc.] air inside the aircraft)* are typically ***not*** capable of being processed / filtered through an aircraft's high-efficiency particulate air (HEPA) filters. *(HEPA filters are capable of filtering out minute particles from circulating cabin and cockpit air ([including COVID-19 coronavirus droplet and aerosol particles])*

** Filtration - If the aircraft has an air recirculation system, but does not have HEPA filters installed or serviceable, reference should be made to OEM published documents or the OEM contacted to determine the most appropriate recirculation system setting. In such circumstances (and as / if available and possible) consideration might also be given to using an appropriate PCA (as available and provided that it is capable of re-circulating cabin air to 'a better measure' than using the aircraft's own recirculation system)

Such contingencies should be pre-researched (by all concerned), documented and publicised by the associated airport / service provider to all appropriate / potential (user) aircraft operators

It is recommended that any available fresh air and recirculation systems be operated to exchange the volume of cabin air ***before*** boarding and in consideration of the following:

For aircraft ***with*** self-contained air conditioning, run the air conditioning ***packs*** (with bleed air provided by APU or engines) for at least 10 minutes prior to the boarding process commencing, throughout boarding and during disembarkation. If such aircraft also have HEPA filters, run the associated recirculation (fan) system to permit and maximise flow through said filters. If the above is not possible but an external PCA source is available - treat it the same way (if possible) as bleed air from the APU or engines i.e. the recirculated portion is filtered through HEPA filters (as available) - provided that the aircraft 'systems' and PCA are compatible so to do. For aircraft ***without*** an (internal or ground provided) air conditioning system, keep appropriate aircraft doors open (weather / other [relevant] external conditions permitting) during turnaround / waiting times, to better facilitate cabin air exchange

Flight Operations

Operate the ECS etc. (as available) with all air conditioning packs in AUTO and recirculation fans on. (Valid only if HEPA recirculation air filters are installed / serviceable. If not, contact the aircraft OEM for recommendations on recirculation settings). If an aircraft's in-flight operating procedure calls for packs to be ***off*** for take-off, they should be switched back ***on*** as soon as take-off etc. performance parameters allow

Minimum Equipment List (MEL) Dispatch

Fully operational air conditioning packs and recirculation fans (if fitted / available / used) provide the best overall cabin ventilation performance. It is recommended to minimise dispatch with air conditioning packs inoperative and likewise with recirculation fans inoperative for aircraft equipped with HEPA filters

Some aircraft have better airflow performance with all outflow valves operational. The OEM should be contacted about ventilation performance of the aircraft with outflow valves inoperative and the limitations associated with dispatch in such situation

High Flow (Max Bleed) Switch

If an aircraft is capable of high flow ventilation operation, contact OEM for setting recommendations e.g.

*'……Boeing recommends that airlines select High Flow Mode for 747-8, MD-80 and MD-90 aircraft, as this will maximize total ventilation rate in the cabin. (Note - the latter will increase fuel burn). However, for the B747-400 and 737, High Flow Mode should **NOT** be selected as this does not result in an increase in total ventilation rate. For all models, recirculation fans should remain on……'*

Individual Overhead Air-supply Nozzles

Reduce use of individual seat overhead air-supply nozzles to maximum extent possible, unless otherwise recommended by the aircraft manufacturer

Note: From author / owner of this guideline document (i.e. the one you are reading right now)

'……Re last sentence above, it is not clear why this should be done - but e.g. (and ***very*** simplistically) it might be because expelled air from said nozzles (no matter where they are fixed in position above their associated seats) generally has an element of lateral (sideways / fore and aft - and anywhere in between) flow - together with a stronger element of vertical (downwards) flow (the air is extracted through the cabin floor)

(In this 'note' we are only considering an airliner having a modern and fully fit for purpose ECS - including air conditioning together with cabin air recirculation via HEPA filters, before being dumped overboard)

Such lateral airflow is 'not good' as expelled air from the associated passengers mouths / noses can thus also be 'blown / projected' laterally - and (if said air is carrying [e.g. COVID-19 type] infected droplets / aerosols) has the possibility of infecting others sitting laterally (adjacent seats; seats in front and behind etc.) nearby (e.g. up to 2 metres / 6 feet and considerably further for a very strong and non-blocked sneeze) - particularly if said air is expelled explosively (e.g. a strong cough or a sneeze) and even more particularly if the source person is not wearing a 'fit for purpose' mask and / or likewise for any 'recipients' breathing in said expelled air……'

For the ***very*** interested reader - the two separate articles linked to just below might provide further clarification (or possibly further confusion!!!)

https://www.sciencedirect.com/science/article/pii/S001393512100623X

https://www.researchgate.net/publication/345892076_Navigating_the_Risks_of_Flying_During_COVID-19_A_Review_for_Safe_Air_Travel

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Chapter 4 A 2

Major Pandemic

SAFEST WAYS (from potential infection / transmission viewpoints) *to Board Passenger Aircraft*

As at third quarter of 2021 there were several, different 'theories' as to the 'safest / best etc.' way of boarding (more correctly embarkation / seating / disembarkation procedures) a typical passenger airliner (from viewpoints of avoiding infection / passing on infection) - in circumstances where a 'highly dangerous' pandemic was prevalent (see full title page 64) over most of the world

In such circumstances it is proposed that aircraft operators (passenger airlines etc. - again as described on page 64), in coordination with associated airport operators and other relevant service providers / suppliers (e.g. Ground Handling agents - GHA; Security / AVSEC [Aviation Security] etc.), adopt the most appropriate boarding, seating and deplaning processes, with regards to minimising 'opportunities' for potential infection

From the documented scientific and other 'informed' (some more than others!) studies / articles (see 'links' pages 71 - 73) which have been conducted / produced on the subject up to time of writing - there would appear to be a relatively clear 'concept in general' which might work best overall (more on this later - see page 75) - and should thus be a prime consideration for passenger airline adoption going forwards

Be that as it may (and considering that much of the info re said 'concept in general' was only gradually becoming available throughout the developing period of the ***real*** COVID-19 pandemic), many airlines (with some notable exceptions) operating during said pandemic - appeared to be 'making it up as they went' i.e. by deploying various ad hoc approaches to the risk (some useful but most otherwise) - and, for many, making minimal or even no changes from their 'normal operations' boarding / seating / deplaning procedures

Whilst not in strict context here, it is also worth mentioning that airports, (including ground handling agents, security etc.) must also 'do their part' in minimising chances of infection and, of course, (and back in context) so should crew and passengers. Unfortunately, the COVID-19 pandemic clearly indicated that what is written in this paragraph (re airlines, airports etc.) was ignored and / or mismanaged (deliberately or otherwise for the former) by too many of those involved

Note also that when ground transport (e.g. bus; rail [or similar] transit system etc.) is used as part of an aircraft boarding process (and vice versa) - an increased number / frequency of same should be considered in order to better provide for associated physical / social distancing. Waiting time spent in such transport should be kept to the absolute minimum required for operational reasons - and precautions similar to those required on board the aircraft (read on) similarly applied / provided e.g. mask wearing; hand sanitation; social distancing; maximum airflow throughput etc.

When boarding aircraft via an air-bridge and / or by walking to a parked aircraft on an apron, enhanced boarding procedures (which ensure physical distancing to the maximum extent possible; prevent queuing etc.) should be pre-worked out, trialled and adopted - as required. Again, these are primarily airport / GHA / security etc. type accountabilities (but, for context purposes, we will take a brief look at them later on in ***this*** article)

If embarkation / disembarkation / seating procedures are adapted as described herein, the aircraft operator should give due consideration to aircraft weight and balance matters, as appropriate

Before we go any further, it is strongly recommended that the 'interested' reader takes a look at some of the associated 'literature' etc. that was available up to the time (third quarter of 2021) of completing the document you are reading right now. The associated links to a selection of such material are documented on the next 4 pages:

Image of a Hawaiian Airlines flight taken at Pago Pago Airport in American Samoa/ 19 Jun 18 / by 'Eddy 23'

Note that picture indicates that boarding / deplaning on this particular aircraft used at least the front and middle left (looking forwards) doors. It is possible that the rear left door might also have been used

If the reader finds that any of the following links have ceased working, an internet search using the appropriate title words might still (hopefully) find what is being looked for!

MythBusters episode reveals fastest way to board passenger planes | Daily Mail Online

(Comparing various boarding methods - ***2014***)

What is the quickest way to board an airplane? | Simul8 Blog

(Back to front method of boarding proved to be slowest of all methods / ***2015***)

Revealed: the fastest way to board a plane – Travel Weekly

("It's certainly no worse than what's being done now, and quite a bit better than most." / Dr Jason Steffan / ***2018***)

Airlines Won't Dare Use the Fastest Way to Board Planes | WIRED

(Re 'Steffan Process' again - ***2018***)

Letting slower passengers board airplane first really is faster, study finds | Ars Technica

(Re Steffan process again + a 'boarding 'slower / potentially problematic' PAX first concept - Jan ***2020***)

How the aircraft boarding process could be transformed post-COVID-19 (futuretravelexperience.com)

(July ***2020***)

(In this article it might be worth noting some potential innovations to more effectively, efficiently and safely board passengers - particularly during a 'COVID-19' pandemic type situation. See sections on 'BINGO boarding at Gatwick in conjunction with easyjet'; Delta Airlines 'Virtual Queueing app' and 'Touchless / Biometric Boarding')

Evaluation of Aircraft Boarding Scenarios Considering Reduced Transmissions Risks
https://www.mdpi.com/2071-1050/12/13/5329 (See particularly the conclusions in Section 5 of this study)

(01 July ***2020)***

Airplane Boarding Methods that Reduce Risk from COVID-19
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7586953/#b0085

(26 October ***2020)***

Air travel and COVID-19 prevention in the pandemic and peri-pandemic period: A narrative review
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7655026/

(10 November ***2020***)

The Art and Science of Boarding an Airplane in a Pandemic | WIRED

(22 January ***2021)***

https://www.traveller.com.au/plane-boarding-during-covid19-pandemic-will-coronavirus-kill-off-the-queue-h1u5jh

(Feb ***2021***)

From bad to worse: airline boarding changes in response to COVID-19 | Royal Society Open Science (royalsocietypublishing.org)

(A scientific study which might be somewhat difficult to follow for some - but which basically confirms the Steffan process + also promotes ***no use of 'overhead luggage bins'***)

If above link does not work - try this one: https://doi.org/10.1098/rsos.201019

(28 April ***2021***)

Back-to-Front Plane Boarding Doubles COVID Exposure Risk: Study (businessinsider.com)

(28 April ***2021***)

https://www.which.co.uk/reviews/airports/article/covid-19-how-to-stay-safe-on-a-plane-and-at-the-airport-a4bdp4j5qkU5

*(12 July **2021**)*

(An article by UK consumer organisation 'Which')

There are two particular points of interest in the above article (amongst other useful information provided). The 'essence' of these points is reproduced just below - along with some associated comment (in orange font) given by the author / owner of the guideline document - which you are reading right now:

- ***Ryanair 1***

  Luggage

  '…… Additionally the ***UK government*** is advising passengers to check-in as much luggage as possible ***into the aircraft's hold***, to limit undue movement up and down the cabin during boarding, whilst in-flight and when deplaning

  Ryanair, however, is encouraging customers to bring carry-on bags *(only)*. A spokesperson for Ryanair said hold luggage would 'significantly increase the risk of COVID-19 'as it has to pass through eight different sets of hands, from check-in to the boarding gate. The 'jury is out' as to which approach is best ……'

  'Note: Ref the last para above [Ryanair], the fact is that the handling of luggage into and out of passenger aircraft ***holds*** [via airport baggage loading systems etc. - invariably where an element of 'human' handling is also required] is relatively (repeat - 'relatively') ***much safer*** [from the spreading of infectious disease viewpoints] than passenger self-loading of hand luggage into the aircraft cabin's overhead bins and, in so doing, breathing / coughing / sneezing / talking [loudly is even worse and shouting worst of all] over all those nearby; increased touching of surfaces (e.g. aircraft seat tops and backs) etc.'

- ***Ryanair 2***

Take your own Sanitising Products

'……. Whilst e.g. Emirates [airline] is disinfecting after ***every*** flight, Ryanair - * whose planes are used much more frequently - relies on just one clean (presumably at the start of each working day?)

* On average a typical Ryanair aircraft operates approximately 5 flights per 24 hours - with turnaround target times of 45 minutes or less. If such flights are almost full (which many are) this means that up to around 1,000 passengers might use each such aircraft between cleans (if associated cleaning is only scheduled every 24 hours???)

It (Ryanair) says that the chemicals used ***provide 24 hours protection***. But Greg Towers, a virologist at UCL, says: 'More cleaning equals less risk. I don't know what cleaning Ryanair is doing, but I doubt there's a way of killing viruses on surfaces throughout a 24 hour period [i.e. with just one application of the 'protecting' substance at the start of said 24 hour period - and in the context of a passenger aircraft cabin in high occupancy use)…….'

Reliable advice is for passengers to use their own, appropriate alcohol wipes (e.g. of an adequate strength) to clean e.g. tray tables and other potentially high-risk areas, including toilet door handles, seat backs, overhead luggage bin handles etc. It is also suggested that they take their own hand sanitiser - since those (in public use) which aren't 'touchless' - may (probably will) have accumulated infectious material on the pump plunger (and other parts) of the sanitiser container itself!

Conclusion

From the information provided above (last 6 pages) there would appear to be a relatively clear 'concept in general' which might work best overall with regards to * airliner boarding etc. processes for passengers during a major / highly dangerous pandemic type situation (the objective, of course, being to minimise [to the greatest extent possible in the circumstances] associated exposure, infection and further transmission)

* Assuming that associated airlines are operating in the first place of course. During the COVID-19 pandemic many (if not most) airlines were grounded (on and off) for considerable periods of time (many never to operate again!)

We refer again above to the 'Dr Jason Steffen' method, combined with further / additional enhancements

For the former, see again (as required) the information provided at the end of the below link:

Revealed: the fastest way to board a plane – Travel Weekly

For the 'further / additional enhancements', the info on pages 50 and 61 of this guideline document (with regards respectively to ***cabin baggage overhead lockers NOT being used*** and ***only using alternate*** [every other] ***seat rows***) - refers

As mentioned on page 51, such requirement should temporarily be included in the carrying airlines 'conditions of carriage' (and / or equivalent legal / regulatory requirement) and any passenger(s) refusing compliance with same should typically be refused boarding

The 'lawyers' would, of course, need to be consulted beforehand on how the above might best be 'legally' accomplished, documented, promulgated etc. to all concerned (particularly to potential passengers)

Furthermore, allowances would need to be made, published etc. for special categories of passengers such as infants (with carer[s]), the infirm, the disabled etc. This would typically involve boarding same (in some generally acceptable way, shape or form) ***before*** other passengers and, exceptionally (but for such special categories only), might permit use of associated overhead lockers. Disembarking would require equivalent considerations

Note: - All information provided in this Chapter 4 should be adapted accordingly so as to account adequately (as required) for the ***different types*** of passenger airline (***and thus differing doors / seating / aisle etc. configurations***) which might be in use by any particular airline, at any particular time, at any particular airport etc.

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Chapter 5

On-board Airline Catering Services vs PANDEMIC Infection Risk

LIMITED FOOD & DRINK SERVICES ONLY

NO ALCOHOL SERVED

Firstly, it is suggested that the 'interested' reader might wish to take a look at the information found in the article accessed via the below link:

https://samchui.com/2020/06/15/covid-19-significant-downgrade-of-airline-catering/

Note 1: How in-flight catering food is prepared / stored / protected from contamination etc. ***before*** arriving on board the aircraft is ***beyond the scope*** of ***this*** guideline document

Note 2: This Chapter 5 is targeted at 'normal' scheduled, passenger airline operations where food and beverage services are typically included as part of the cost of paying for the flight i.e. where such ops do not come under the headings of e.g. 'charter'; 'tour operator'; 'low-cost'; 'budget' etc. - where food and beverage is typically (but not always) purchased on board. For the latter airlines and others as applicable, what follows below should be adapted accordingly

Introduction

On-board airline catering services typically ***do not***, ***in themselves***, significantly facilitate the spread of infection on board aircraft (the particular infection we are referring to here / herein being the SARS-CoV-2 coronavirus [which caused the devastating COVID-19 pandemic of 2020 - 2022])

What ***does*** facilitate such infection spread (amongst other matters) in this context is:

- The 'unavoidable' combinations of a large number of persons (passengers and crew) confined in a significantly 'crowded' environment (try sitting in economy class on most airlines today! - and [relatively speaking - and in the same context of infection spread only - first and business class, if available - are not much better!!])
- For anything up to around 19 hours
- Combined with the various attitudes, behaviours etc. of all such persons - re what they 'think and do etc.' (good, bad or otherwise) etc. re mitigating or exacerbating such spread etc.

General mitigations concerning the above situation can be found in our Chapter 2 section (see bullet-point list page 50). In this Chapter 5 we concentrate on how on-board food and drink service might typically be 'managed' - with ***specific*** regard to mitigating the associated, potential spread of the COVID-19 infection etc.

We are ***only*** referring here to on-board food and beverage services and related matters - and ***not*** to other on-board infection protection mitigations - such as (again) those listed on page 50 (all of which are ***still*** valid and relevant of course - and should ***additionally*** be complied with e.g. mask wearing; hand hygiene; social distancing [insofar as is practicable] etc.)

The ultimate mitigation would see the complete elimination of all food services / consumption on board. Drinks would, however, still need to be provided / permitted as required (to prevent dehydration etc.) - but with a strict 'no-alcohol' policy in place and enforced (we will explain why [i.e. no alcohol] later in this Chapter 5). However (in the 'real world'), the cessation of most on-board 'food services' would be an absolute non-starter for all sorts of valid reasons (a reminder again that some airlines today are operating flight sectors of up to around 19 hours non-stop)

Consequently, how might such on-board ***food*** services be best managed in - the context of 'pandemic / serious public health infectious disease' etc. viewpoints? (We will come to '***drinks***' a little further on)

Note: A reminder here that we are using relevant aspects of the ***COVID-19 pandemic*** as background / context

- Firstly, airlines should acknowledge and accept (as the vast majority do / did) that there remains (current as at October 2021) a small but relatively significant COVID-19 infection ***risk*** when travelling on board * most modern, passenger airliners (i.e. [for latter] those having ***appropriate*** and ***serviceable*** environmental control systems - ECS [e.g. relatively rapid and conditioned air recirculation {via HEPA filters} and air replacement / exchange] which contribute to keeping this risk relatively low) when they operate

  * Said risk is more significant in aircraft types which do ***not*** have such systems (for whatever reason)

- 'Normal business / operations' type food and beverage services (with no associated infection precautions in place) will typically add to this infection ***risk*** to a greater or lesser degree (for various reasons not expanded upon here)

- Consequently, the 'normal business' ***FOOD*** service should be 'modified' to reduce said risk as much as might be practicable and acceptable in the pandemic etc. related circumstances prevailing 'on the day'. Said modifications might (should) typically include:

  - Cabin-crew / Flight-attendants keeping as much distance (as possible / practicable) from / minimising contact with passengers, commensurate with their duties and 'actual circumstances on the day'

  - Cabin-crew / Flight-attendants wearing the appropriate PPE

  - Food types and packaging be similar in principle to that found in the 'linked to' information at the top of the previous page (i.e. all being ***pre***-boxed / ***pre***-bagged / ***pre***-wrapped etc.). This concept should be applied to all classes of food service provided on board and includes circumstances (with suitable adjustments and associated communication) which permit passengers to carry on (board the aircraft) their own food and drink

  - A staggered (by time) food service be established such that only pre-defined and pre-communicated (to passengers when they book + again before they board + again just before an associated meal service commences) sections (by seat number) of the passenger cabin are served / take food at the same time

    If we take the Boeing 737 cabin as an example (see page 54) - then it might have been pre-decided by the operating airline etc. that all window seats would eat first; followed by all middle seats and lastly aisle seats

- Further to the last bullet point above, all passengers eating first would be given a time by which they must have finished their meals (fully eaten or otherwise). At this latter time food trays would be cleared and mask re-application by said diners 'requested'

  Once done, the same process (as described just above) would take place for the middle seat passengers and, in due course, those in aisle seats

  The 'time periods' allocated for ***each*** meal completion referred to further above would deliberately be ***significantly shorter*** than that which might apply during 'normal business' type operations. It is suggested here that all 3 sets of meal service described be fully completed in around the same total time period which would have been allocated for the (entire) same food service, during normal operations

- Further to the last 2 bullet points info above, all passengers would be 'requested' (in good time) to take any toilet etc. breaks required ***before*** such meal services commence - the principle being that no passenger should leave their seats during the period of the ***entire*** meal service

- Further to the last 3 bullet points info above, all passengers ***not*** taking food services (for whatever reason) should also be 'requested' to stay in their seats, continue to wear their masks and to observe any other 'social etiquette' etc. rules (as pre-briefed to them by the crew) required on board. Same applies to all passengers who have finished their meals. This situation should apply until the entire meal service has been completed

- 'Normal business' ***DRINKS*** service should be 'modified' such that absolutely ***no ALCOHOLIC beverages whatsoever*** are served - and, furthermore, as follows:

  - Where possible, a cold drink should be provided to passengers in the same 'pre-packed box' in which their food was provided at meal times (again, follow the link at top of page 78 for images of some examples). In 'economy class' it is likely that the 'drink' will simply be a bottle of water. Extra drinks ***might*** be available upon request - depending on airline policy
  - Outside of meal times it is likely that a variety of cold drinks will be available upon request
  - Similarly, hot beverages (tea; coffee etc.) might typically be available
  - ***All*** drinks ***must*** be consumed in a manner commensurate with keeping the 'mask on the face' ***for the great majority of time*** during such consumption e.g. masks must be replaced in between drink 'sips' etc. - as appropriate
  - Parents / guardians / cabin-crew etc. should ensure that any accompanying young children, unaccompanied minors, the infirm / disabled etc. are 'managed' such that the general intent of what is written in the above bullet points is followed - as appropriate / insofar as is reasonable

- Take a look at the articles found at the end of the below links for why it is ***definitely not advisable*** to serve alcoholic beverages on board (***and even for an appropriate period prior to flight*** [e.g. at the departure airport prior to boarding] - but the latter is, of course, outside of the typical airline's control)

  https://www.bbc.com/worklife/article/20210629-whats-driving-the-us-air-rage-spike

  https://www.addictioncenter.com/news/2021/06/airlines-ban-alcohol-violent-incidents/

  https://www.politico.com/news/2021/11/24/justice-department-lawyers-unruly-passengers-holiday-523361

- No duty free or other non-essential product sales permitted on board
- Exceptionally, when some form of passenger payment ***is*** required on board, this should be on a 'contactless' credit / debit card etc. basis
- etc.

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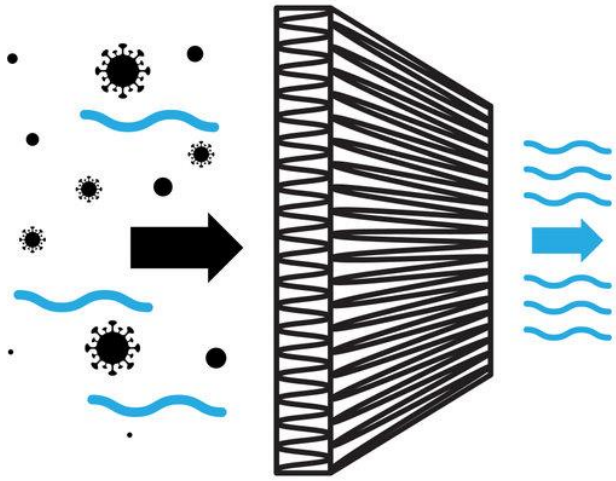
Chapter 6 A

American Airlines Newsroom / 26 June 2020

ASSOCIATED TECHNOLOGIES

How HEPA Filters Have Been Purifying Aircraft Cabin Air since the 1990s



As face coverings, hand sanitizer and personal protective equipment have become part of our daily routine (during the COVID-19 pandemic), one safeguard has kept American's (American Airlines) customers and team members breathing clean air at 30,000 feet. High-efficiency particulate air (commonly known as HEPA) filters have purified the air on American's entire mainline fleet and most regional jets, since the late 1990s

HEPA technology is also used in hospitals and medical facilities around the world, helping keep medical environments clear of bacteria and viruses while providing clean air

The HEPA filters in use on American's fleet capture at least 99.97% of airborne microbes via circulating cabin air about once every 2 to 4 minutes. As the filters purify the air on the inside of the aircraft, ***fresh*** air enters the engine compressor on the outside

Next, it (fresh air) makes its way into the air conditioning system and is mixed with the recirculated, filtered air. This mixture results in a higher level of humidity in the cabin, providing a more comfortable experience for customers. This mixing process also helps the environment, as mixing fresh air with recirculated air results in a lower overall fuel burn

For example, on American's Airbus A320 and Boeing 737 families of aircraft, air is filtered through two HEPA filters located near the forward cargo compartment. On our larger * Boeing 787 family of aircraft, air is filtered through three HEPA filters - one located towards the center of the aircraft's celling and two near the forward cargo compartment. On our largest aircraft, the Boeing 777 family, there are eight HEPA filters - four near the forward cargo compartment and two over each aisle near the middle of the aircraft cabin.

* Uniquely for airliners the Boeing ***787*** system actually takes its 'fresh' air source directly from ducts in the aircraft's fuselage - rather than via an aircraft's jet engine compressors

Filters are changed regularly to ensure the uninterrupted flow of clean, fresh air into the cabin. American also periodically tests removed filters to ensure they're meeting performance requirements and adjusts our change intervals if necessary

We also take extra steps to ensure customers and team members breathe clean air on board our aircraft.

"*Over the past several years, American has been further improving our HEPA filters by adding a layer of activated carbon to them - thus providing additional removal of fumes, odours and volatile organic compounds*" said Ben Thiesse, American's Senior Engineer for the Airbus A320 Family. "*Today, these carbon HEPA filters are installed on all of American's A320 and 787 aircraft*"

Cabin air is filtered from the top down, so ** be sure to open the overhead vent to let the filtered air flow on your next flight. As air is pushed downward, it re-enters the filtration system along the walls of the aircraft and repeats the filtration process, mixing outside air with filtered air. The image (***next*** page) demonstrates how this all comes together on an Airbus A321 aircraft

** Note 1 from author / owner of this guideline document - which you are reading right now:

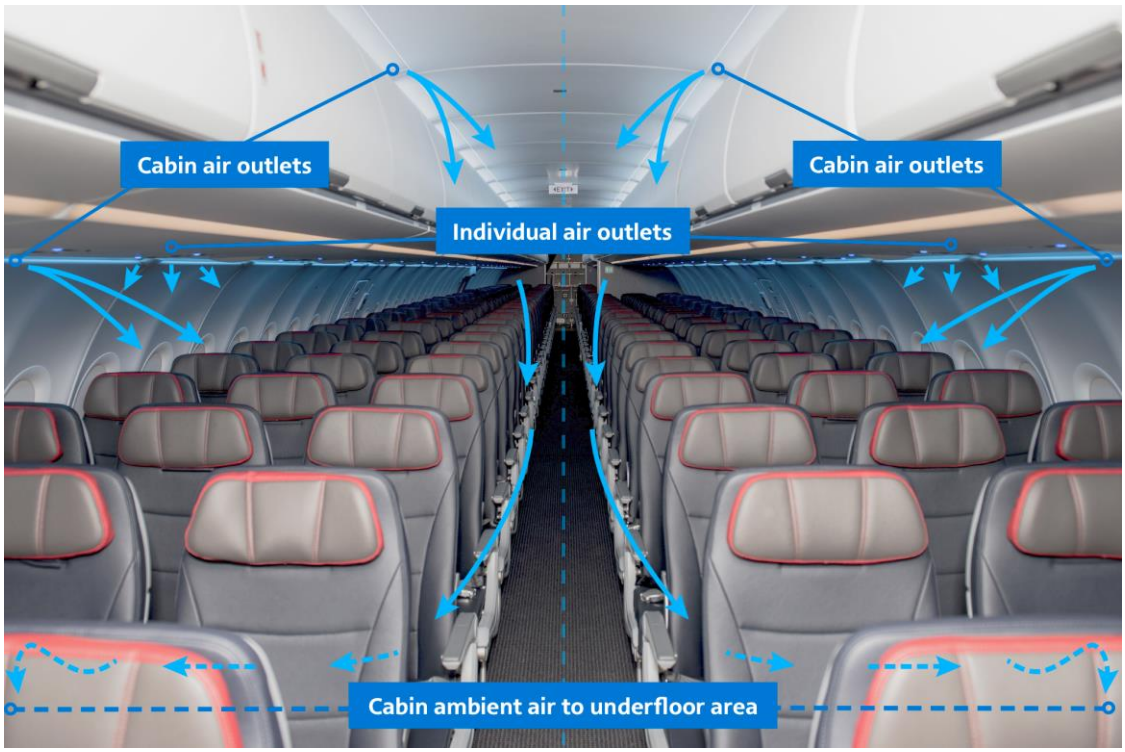
See our own comment (lower half of page 67) re possibly changing this advice ('opening the overhead vent'- as stated just above) in circumstances such as those encountered in the 2020 - 2022 COVID-19 pandemic

According to the International Air Transport Association, air filters can remove very small particles, such as bacteria and viruses. Virtually all viruses and bacteria are removed - even the most difficult particles in the range of 0.1 to 0.3 micron are filtered out with an efficiency level of 99.995%

Note 2 from author / owner of the guideline document - which you are reading right now:

'.....Typical aircraft HEPA filters are capable of 'filtering out' the coronavirus (by blocking the droplet and / or aerosol particles in which they are contained) which caused the COVID-19 pandemic of 2020-2022. See info provided at end of below link for further information.....'

https://www.nature.com/articles/d41586-021-02669-2



For further information see also the details found at the end of the below link:

https://thepointsguy.co.uk/news/aircraft-keep-cabin-air-fresher-than-you-think/

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Chapter 6 B

Technologies in Development

The heat is on: High temps tested for killing viruses in the flight deck. Boeing engineers and university partners prove thermal disinfection sanitizes flight decks

'Some may like it hot - but viruses don't!'

Boeing - 15 December 2020

Boeing engineers together with ***experts*** from the ***University of Arizona*** have determined that ***thermal disinfection*** (applying heat to sanitize surfaces) ***effectively kills viruses on hard-to-clean flight deck equipment***

Boeing completed the testing as part of its '*Confident Travel Initiative*' (CTI) to support customers and enhance the safety and well-being of passengers and crews during the COVID-19 pandemic

Testing was conducted in a protected laboratory environment at the university - using flight deck parts and SARS-CoV-2 - the virus which causes COVID-19. Results from the test revealed that after three hours, the virus was reduced by more than 99.9% at temperatures of 104 degrees F (40 degrees C) and reduced by more than 99.99% at temperatures of 120 degrees F (50 degrees C)

"Heat does a really good job at getting around corners and into multiple surfaces," said Colin Hart, Boeing Commercial Airplanes engineer and Environmental Control Systems manager. "It also doesn't require direct contact with chemicals or other substances"

The flight deck is one of the most challenging areas to sanitize using traditional chemical disinfectants. In areas with sensitive electronic equipment, heat has the ability to disinfect with no risk of adverse effects such as those resulting from liquid and / or aerosol cleaners. The flight deck is designed to withstand temperatures up to 160 degrees F, which makes thermal disinfection a safe, practical and effective sanitization method

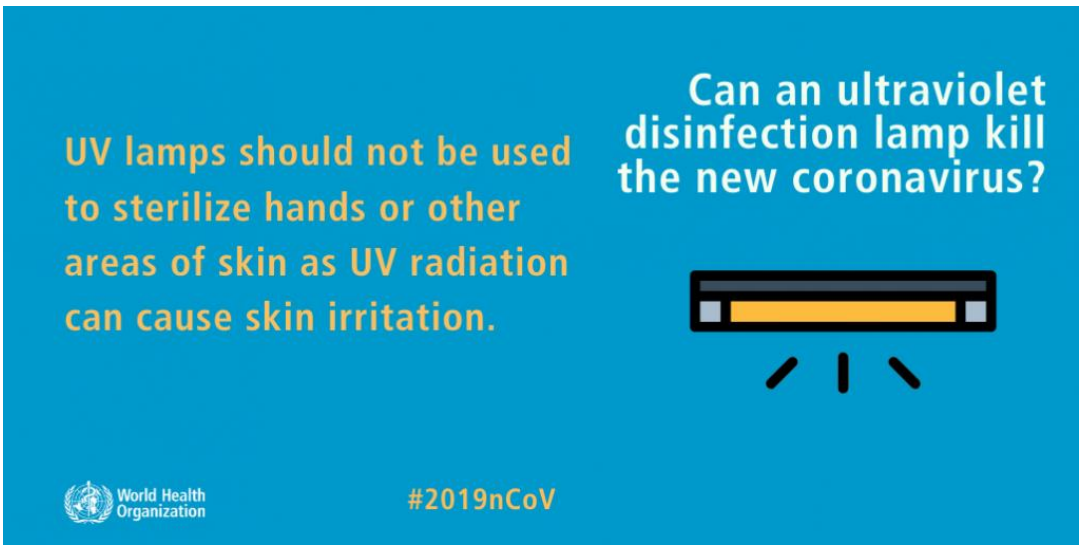
"We're basically cooking the virus," Dr. Charles Gerba (University of Arizona Microbiologist) said. "Thermal disinfection is one of the oldest ways to kill disease-causing microorganisms. It's used by microbiologists in our laboratory every day"

Chapter 6 C 1

Technologies in Development

US Food & Drug Administration - FDA - 01 February 2021

Ultraviolet Radiation and SARS-CoV-2 Coronavirus (Background Info)



Given the current outbreak of Coronavirus Disease 2019 (COVID-19) disease, caused by the novel coronavirus SARS-CoV-2, consumers may be interested in purchasing ultraviolet-C (UVC) lamps to disinfect surfaces in the home or similar spaces. The FDA is providing answers to consumers' questions about the use of these lamps for disinfection during the COVID-19 pandemic

Q: Can UVC lamps inactivate the SARS-CoV-2 coronavirus?

A: UVC radiation is a known disinfectant for air, water and nonporous surfaces and has been effectively used for decades to reduce the spread of bacteria, such as tuberculosis. For this reason, UVC lamps are often called "germicidal" lamps. UVC radiation has been shown to destroy the outer protein coating of the SARS-Coronavirus, which is a ***different*** virus from the current SARS-CoV-2 virus. Such destruction ultimately leads to inactivation of the virus

UVC radiation ***may*** also be effective in inactivating the SARS-CoV-2 virus (causes the Coronavirus Disease 2019 [COVID-19]). For more information see "Q: Where can I read more about UV radiation and disinfection?" (The latter can be found further below in this article)

However, there is currently only limited published data about the wavelength, dose and duration of UVC radiation required to inactivate the SARS-CoV-2 virus. There are also limitations as to how effective UVC radiation can be at inactivating viruses in general i.e.

- **Direct exposure**: UVC radiation can only inactivate a virus if latter is directly exposed to same

Consequently, inactivation of viruses on surfaces may not be effective due e.g. to blocking of the UV radiation by soil, dust, bodily fluids, objects etc.

- **Dose and duration**: Many UVC lamps sold for home use are of low dose, so it may require a longer exposure to a given surface area to potentially provide effective inactivation of a bacteria or virus

  UVC radiation is commonly used inside air ducts to disinfect the air. This is the safest way to employ it as direct UVC exposure to human skin or eyes may cause injuries - whereas installation of UVC within e.g. an air duct is much less likely to cause exposure to skin and eyes. Note that there have been reports of skin and eye burns resulting from improper installation of UVC lamps in rooms occupied by humans

Q: Can UVB or UVA radiation inactivate the SARS-CoV-2 coronavirus?

A: UVB and UVA radiation is expected to be less effective than UVC radiation at inactivating the SARS-CoV-2 coronavirus:

- **UVB**: There is some evidence that UVB radiation is effective at inactivating other SARS viruses (but not necessarily SARS-CoV-2). However, it is less effective than UVC at doing so and is more hazardous to humans as it can penetrate deeper into the skin and eyes. UVB is known to cause DNA damage and is a risk factor in developing skin cancer and cataracts
- **UVA**: UVA radiation is less hazardous than UVB radiation but is also significantly (approximately 1000 times) less effective than either UVB or UVC radiation at inactivating other SARS viruses. UVA is also implicated in skin aging and risk of skin cancer

Q: Is it safe to use a UVC lamp for disinfection purposes at home?

A: Let's consider both the risks and effectiveness of UVC lamps to people and objects and the risk of incomplete inactivation of viruses

Risks: UVC lamps used for disinfection purposes may pose potential health and safety risks depending on the UVC wavelength, dose and duration of radiation exposure. The risk may increase if the unit is not installed properly or used by untrained individuals - for example:

- Direct exposure of skin and eyes to UVC radiation from some UVC lamps may cause painful eye injury and burn-like skin reactions. Never look directly at a UVC lamp source, even briefly
- Some UVC lamps generate ozone. Ozone inhalation can be irritating to the airway
- UVC can degrade certain materials, such as plastic, polymers and dyed textiles
- Some UVC lamps contain mercury. As the latter is toxic, even in small amounts, extreme caution is needed in cleaning a lamp that has broken and in disposing of the lamp

Effectiveness: The effectiveness of UVC lamps in inactivating the SARS-CoV-2 virus is questionable as there is currently limited published data about the wavelength, dose and duration of UVC radiation required for same. It is important to remember that, generally speaking, UVC cannot inactivate a virus or bacterium if they are not directly exposed to the associated radiation i.e. the virus / bacterium will not be inactivated if it is covered by e.g. dust or soil, embedded in a porous surface, on the underside of a surface etc.

To learn more about any specific type of UVC lamp, you may want to:

- Ask the manufacturer about the product's health and safety risks and about the availability of instructions for use / training information
- Ask whether the product generates ozone
- Ask what kind of materials are compatible with UVC disinfection
- Ask whether the lamp contains mercury. This information may be helpful if the lamp is damaged and you need to know how to clean up and / or dispose of the lamp

Q: Are all lamps that produce UVC radiation the same?

A: Not all UVC lamps are the same. Lamps may emit very specific UVC wavelengths (e.g. 254 nm or 222 nm) - or they may emit a broad range of UV wavelengths. Some lamps also emit visible and infrared radiation

The wavelengths emitted may affect the lamp's effectiveness at inactivating viruses etc. and may also impact on the associated health and safety risks. Testing of the lamp (or studying the manufacturer's specifications) can determine whether and what wavelengths are transmitted

There is some evidence that excimer lamps, with peak wavelength of 222-nm, may cause less damage (to the skin, eyes and DNA) than the 254 nm wavelength, but long-term safety data is lacking. For more information see "Q: Where can I read more about UV radiation and disinfection?" - found further below

Q: What are the different types of lamps that can produce UVC radiation?

A: Low-pressure mercury lamp: Historically, the most common type of lamp used to produce UVC radiation was the low-pressure mercury lamp, which has its main (>90%) emission at 254 nm. Other wavelengths can also be produced by this type of lamp. There are other lamps available that emit a broad range of UV wavelengths plus visible and infrared radiation:

Excimer lamp or Far-UVC lamp: Has a peak emission of around 222 nm

Pulsed xenon lamps: Emits a short pulse of broad spectrum (including UV, visible and infrared) radiations - having been filtered to emit mainly UVC radiation. Such lamps are sometimes employed in hospital settings to treat environmental surfaces e.g. operating rooms - typically used when no humans are present

Light-emitting diodes (LEDs): LEDs which produce UV radiation are becoming more commonly available. They typically emit a very narrow wavelength band of radiation. Currently available UV LEDs have peak wavelengths at 265 nm, 273 nm and 280 nm - amongst others

One advantage of LEDs is that they contain no mercury. However, the small surface area and higher directionality of LEDs may make them less effective for germicidal applications

Q: Where can I read more about UV radiation and disinfection?

A: For additional general information re UV radiation see Ultraviolet (UV) Radiation

For more technical details, see the following:

- Germicidal Efficacy and Mammalian Skin Safety of 222-nm UV Light (Radiation Research: 187(4); 483–491)
- The effect of 222-nm UVC phototesting on healthy volunteer skin: a pilot studyExternal Link Disclaimer (Photodermatology Photoimmunology Photomedicine: 31; 159–166)
- Far-UVC light (222 nm) efficiently and safely inactivates airborne human coronavirusesExternal Link Disclaimer (Scientific Reports: 10; 10285)

Chapter 6 C 2

Technologies in Development

APEX (Airline Passenger Experience Association) - 24 Sep 2020 | Written by Emma Kelly

Boeing's UV Sanitisation Wand Will Soon Be Available for Airline Use

Boeing's handheld ultraviolet (UV) wand, which was developed to sanitize aircraft interiors, will be manufactured for commercial use by US sanitization technology company Healthe. The wand was successfully tested as part of Boeing's latest ecoDemonstrator programme on board an Etihad Airways Boeing 787-10 aircraft

Boeing designed and developed a handheld UV wand as part of its Confident Travel Initiative, aimed at enhancing the safety and wellbeing of passengers and crew during the COVID-19 pandemic

The wand, which is a self-contained unit resembling a carry-on suitcase, allows crews to pass UV light over high-touch surfaces to eliminate germs, using 222-nanometer UVC light to inactivate pathogens. Under a patent and technology license, 'Healthe' will manufacture the wand for commercial use - with Boeing anticipating it could be available to airlines as soon as late fall (autumn) 2020

"On board an Etihad Airways 787-10 aircraft, the handheld device disinfected the flight deck in 15 minutes without the use of harsh liquid disinfectants" said Doug Christensen, Boeing technical fellow and technical leader of the ecoDemonstrator Program

"The latest ecoDemonstrator program, which was completed earlier this month, also included tests of an anti-microbial coating, with the emerging technology showing promise for sanitization of high-touch areas on board" Christensen explained

Development of the UV wand came from technology tested on an earlier ecoDemonstrator testbed as part of Boeing's 'Fresh Lav' concept - which used UV light in the (aircraft) lavatory to eliminate 99.9% of germs after each use

"When the COVID-19 pandemic struck, we were ready to modify the technology for the UV handheld wand as the requirement was already in the pipeline," said Mike Sinnett, Boeing's vice-president and general manager - BCA Product Development

Etihad Airways' senior vice-president of Technical, Paul Kear, said the carrier takes on-board cleanliness very seriously and is open-minded when it comes to the use of such new technology. Etihad was also keen to participate in tests of technology that offer sustainability benefits

Chapter 6 C 3

Technologies in Development

Boeing - 3 March 2016 - *Technology / Commercial* - By Bret Jensen and Jordan Longacre

The Airplane Bathroom That Cleans Itself

(Ultraviolet lights that zap germs - to delight the flying public)

*Boeing engineers and designers have built a prototype lavatory / toilet which uses ultraviolet (UV) light to very quickly kill 99.99% of pathogens, typically sanitizing toilet surfaces in around 3 second**s.** Combined with touchless faucets (taps), soap dispensers and more - the aircraft toilet of the future could make for a more hygienic, less worrisome experience*

Engineers in Commercial Airplanes Product Development and Boeing Research & Technology (BR&T) are working on the lavatory and other concepts to make the overall cabin cleaner

Principal investigator Teresa King (Product Development) and her cross-functional team have shown (via testing on their prototype) that these innovations can minimise the growth and potential transmission of disease-causing microorganisms

Boeing has filed for a patent on this concept

The lavatory uses ‘far’ UV light, which is different from the ultraviolet A or B light used in tanning beds or grow lights, so it’s not harmful to humans. It ***is*** harmful to ***bacteria and pathogens*** and ***DESTROYS*** those organisms that are left on the ***surfaces*** of the lavatory

“The UV light destroys all known microbes by literally making them explode,” said Jamie Childress, Associate Technical Fellow and a BR&T engineer. “It matches the resonant frequency of the molecular bonds on the outside of the microbes”

“We believe that using far UV is the key to making those surfaces cleaner,” King said. “We position the lights throughout the lavatory so that it floods the touch surfaces like the toilet seat, sink, countertops, etc. with the UV light. This sanitizing even eliminates odours from bacteria so that passengers can have a more pleasant experience”

The UV lights could automatically clean the lavatory during flight when the door is closed and the lavatory is unoccupied, to minimise human exposure to the UV light as an extra precaution. The cleaning system even lifts and closes the toilet seat by itself so that more surfaces are exposed. The cleaning cycle takes less than three seconds

The design also incorporates hands-free faucets, a soap dispenser, trash flap, the toilet lid and seat, as well as a hand dryer to reduce the waste of paper towels. The team is also studying a hands-free door latch and a vacuum-vent system for the floor, all to keep the lavatory as hygienic as possible between usage and also scheduled cleanings

“Some of the touchless features are in use on our airplanes today,” King said. “But we feel these, combined with the UV sanitizing, will make for a great, clean package - which passengers and airlines will love”

Boeing’s Clean Lavatory concept is on the short list for being a Crystal Cabin Award finalist. The international Crystal Cabin Awards honour innovative cabin designs and ideas in seven categories

If Boeing's concept is one of the top three finalists in its category, the company will be presented the award on April 5 in Hamburg, Germany

https://www.youtube.com/watch?v=cxKdl0xaeE8

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Chapter 6 D

Miscellaneous

Philadelphia Inquirer - By Marie McCullough - Published – 23 March 2021

Coronavirus - Are Temperature Checks to Screen for COVID-19 Worth Doing?

Temperature checks may be barely helpful in the pandemic - but they can't hurt

Image: CC BY-SA 3.0 / Hedwig Storch

Everywhere from airports to Zumba classes, ***infrared*** thermometers have been embraced as an easy and cheap way to screen for COVID-19. The devices, which are little bigger than a glue-gun, can measure a person's temperature simply by being pointed at the forehead and activated. No touching, no discomfort and no waiting for results. But do they really work? Can 'temperature guns' ***reliably*** act as an aid to the detection of COVID-19??

The answer, as year two of the pandemic unfolds, is that the value of checking body temperature is limited. Here's why:

A 'normal' *abnormal* temperature

Fever (higher body temperature than normal) ***can*** be a COVID-19 symptom - however, separate studies have found that (very approximately) 60% of those so infected did ***not*** have high temperatures

Furthermore, the "normal" body temperature standard of 98.6 F / 37C may be outdated. The latter temperature comes from research published in 1868 by the German physician Carl Reinhold August Wunderlich. But Stanford University researchers determined that the body temperature of men born in the early to mid-1990s is on average 1.06 degrees F (i.e. 97.5F / 36.4C) lower than that of men born in the early 1800s. This may reflect improvements in public health, hygiene and standards of living that have reduced the metabolic rate of modern humans - researchers speculated

Consequently, the implication is that temperature guns are aiming at a 'moving target' e.g. "My wife's normal temperature is 97, so when she has a temperature of 98.6, she actually has a fever," said Michael Cohen, president of the Institute for Safe Medication Practices in Horsham. Infrared thermometers can also be thrown off by drafts, direct sunlight, radiant heat, hats, sweat and incorrect positioning 'of the beam' on the forehead - according to the USA's Food and Drug Administration

Uncertain Accuracy

Some studies have found that, when properly used, the accuracy of infrared thermometers is on a par with digital thermometers. But overall, "evidence for the accuracy of infrared skin thermometers is equivocal," concludes a review of the medical literature

A COVID-19 screening study in Brazil - one of the few real-life studies - compared the use of infrared thermometer checks with a scratch-and-sniff test that assessed ***loss of smell*** (another COVID symptom)

"Our results suggest that temperature checking failed to ***reliably*** detect COVID-19 infection, while an olfactory test may be useful," researchers concluded

On the upside, a thermometer gun is completely safe, contrary to false stories on social media that claim the device exposes the brain's pineal gland to harmful radiation. In fact, the thermometer doesn't emit radiation at all - but uses a detector, called a thermopile, to absorb infrared radiation coming from the person being checked - and turn it into heat

The bottom line, medical experts say, is that temperature checks can't hurt, but, in context, they are just one small weapon in the arsenal of pandemic precautions

"Whilst better than nothing, they (temperature checks) do not replace other critical interventions like hand washing, social distancing, using a mask etc.

It might give some people a sense of reassurance to have their head temperatures scanned, but it does ***not*** in any way guarantee that they are not infectious"

Note - from Author / Owner of this guideline document (the one you are reading right now)

For passenger airlines in particular the above article is provided herein for information purposes only

Where temperature scanning ***might*** be typically used in an aviation context - it is at ***airports*** - particularly during associated check-in and boarding / departure procedures and for arrivals also

Consequently (and as related to said check-in and boarding / departures procedures) - it is just one more 'weapon' in the 'detecting covid-19 infection' arsenal and, obviously, one of which ***passenger airlines*** should be aware (***particularly with regards to its limitations***, as described further above)

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Chapter 6 E

Animal Related

Covid-19 Coronavirus: Sniffer dogs can detect virus with 'up to 94% accuracy'

ITV News (UK) - Monday 24 May 2021

Image by Gilberto Reyes

Dogs can identify Covid-19's distinct smell with an accuracy of up to 94%, according to new UK research. The study, led by the London School of Hygiene & Tropical Medicine, in collaboration with Durham University, is based on six dogs that tested (sniffed) more than 3,500 odour samples donated by the public and UK National Health Service staff

Both the dogs and researchers were unaware of whether the samples were positive or negative.
The research showed that the dogs were able to quickly detect coronavirus-infected samples with up to 94.3% sensitivity

The dogs were able to sniff out samples from people who were infected with coronavirus but were asymptomatic, as well as those who had low viral loads. They were also able to identify infections caused by the coronavirus strain that was dominant in the UK last summer as well as the UK (Kent [Alpha]) version

Professor James Logan, head of the department of disease control at London School of Hygiene and Tropical Medicine (LSHTM), who led the project, said: "What was great was that dogs trained on the original variant transferred this 'capability' to the 'new' (Kent) variant. He said that "they could detect the new variant without any additional training. So this gives us real hope and really suggests that dogs are able to detect different variants of Covid-19"

Six dogs - Asher, Kyp, Lexie, Tala, Millie, and Marlow - from the charity Medical Detection Dogs took part in the double-blind trial. The scientists said the next phase of the trial will test whether these "super sniffers" are able to detect coronavirus on real people in real-world settings such as airports and sports events

Meanwhile, preliminary analysis using mathematical modelling suggests two dogs could screen 300 plane passengers in 30 minutes

The researchers said that by using a rapid screen and test strategy, individuals who are identified by the dogs would then be required to take a relevant test to confirm diagnosis. They believe a combination of specially trained dogs, along with such a confirmatory test, could help detect more than twice as many cases and halt onward transmission, as compared to isolating symptomatic individuals only

Professor Steve Lindsay, from the department of biosciences at Durham University, said: "This is a very exciting result - showing that there is a distinct smell associated with Covid-19 and, more importantly, that trained dogs can detect this with a high degree of accuracy. Dogs could be a great way to screen a large number of people quickly and prevent Covid-19 from being reintroduced into the UK. Trained dogs could potentially act as a fast screening tool for travellers, with those identified as infective confirmed with an appropriate test. This could make testing faster and save money"

Other Articles on the Same Subject:

https://unric.org/en/finland-first-in-europe-to-use-dogs-to-detect-covid-19/ (01 December 2020)

https://www.openaccessgovernment.org/dogs-can-sniff-out-coronavirus-with-96-accuracy/108633/ (01 June 2021)

Note - from Author / Owner of this guideline document (i.e. the one you are reading right now)

For passenger airlines in particular the above article is provided herein for information purposes only

Where 'sniffer dogs' are typically used in the aviation context - it is at ***airports*** - particularly during associated check-in and boarding / departure procedures and for arrivals also

Consequently (and as related to said check-in and boarding / departures procedures) - it is just one more 'weapon' in the 'detecting covid-19 infection' arsenal and, obviously, one of which ***passenger airlines*** should be aware

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Chapter 7

Europe's Stored Aircraft Reach a Pandemic Era Record Low

Simply Flying Limited - By Emily Derrick - 22 June 2021

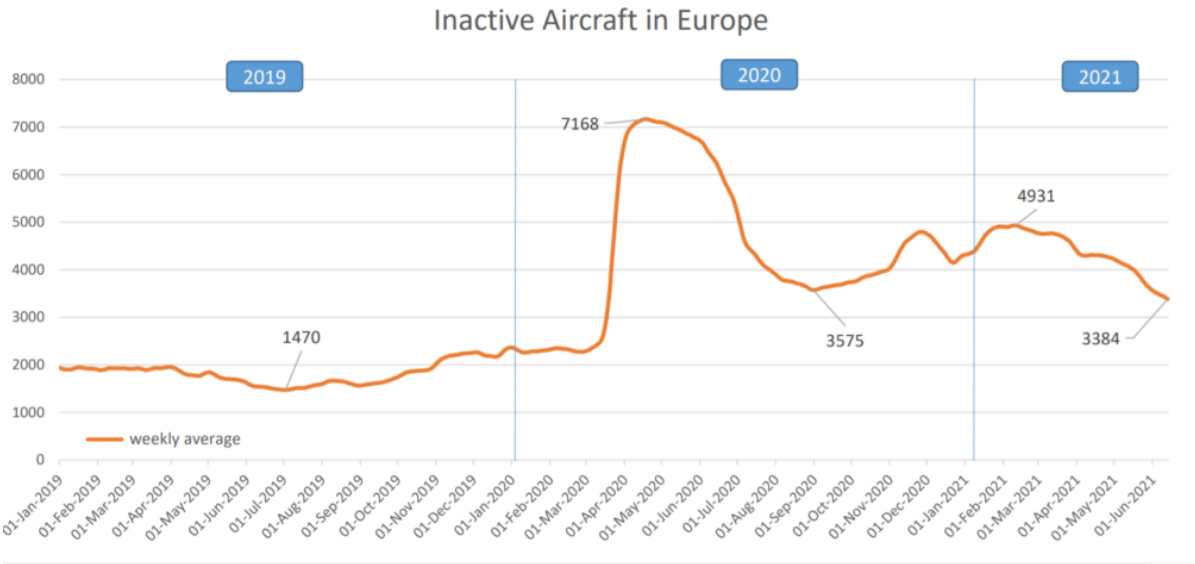
Recent data suggests that there are now fewer aircraft in storage across ***Europe*** than at any other point ***during the COVID-19 pandemic***. At the latter's peak (to date), over 7,000 aircraft were stored at airport runways and aprons. Now, this figure has dropped to around 3,400

This past year has seen a larger number of aircraft "put to sleep" (placed into storage) than at any other point in history. Even other significant events such as the impact of 9/11 did not see so many aircraft go into long-term storage

According to data collected by Eurocontrol, a weekly average of 7,168 aircraft were stored in European airports at the peak mentioned above

Before the pandemic, the average number hovered at around 2,000 per week. This number fluctuated as low as 1,470 at some points in 2019 and changed seasonally as the northern hemisphere summer is much busier than the winter months. Generally, more aircraft are stored and undergo maintenance during the winter months

New analysis by Eurocontrol shows that, currently, around 3,384 aircraft are parked across Europe. This is the lowest number since the pandemic began last year. Numbers did improve to similar levels in September of last year (2020) with just 3,575 aircraft parked, but the second and third waves of the pandemic across Europe saw numbers increase again



At the peak of the pandemic, over 7,000 aircraft were stored at airports across Europe. Graphic: Eurocontrol

Grounded Aircraft

The peak number of grounded aircraft actually occurred fairly early on in the pandemic. Data shows that it was around May of 2020 when most aircraft were parked. There are several reasons for this:

Firstly, as summer approached, more aircraft were needed to aid continued repatriation efforts, as well as some summer routes opening up to tourists and leisure travellers

Secondly, it became obvious that the aviation industry had drastically altered for the foreseeable future within the first few months of the COVID-19 outbreak. This led to many airlines deciding to speed up retirement programs. Aircraft like Boeing 747s and Airbus A380s were retired en masse

Once aircraft have been retired or scrapped and are sent to overseas desert locations in the US and Australia, they are no longer counted in European data

Positive signs for European Airlines

As most people are aware, aircraft are only making money for airlines when they are flying

Stored aircraft are surprisingly expensive. Aircraft need ongoing maintenance to ensure they aren't damaged by adverse weather conditions, either too cold or too wet. This means aircraft are carefully cleaned and covered before storage. This takes time and money

There are also the additional costs of maintenance and fees for the airport storing the plane. Then there are additional fees to take an aircraft out of storage

So, as well as not ***making*** money, storing planes ***costs*** money

With more and more planes coming out of storage, this is a good sign of things to come. It shows that demand is increasing and becoming more regular

It's now 'worth it for airlines to bring their aircraft out of storage. According to the data, more than 800 aircraft have left storage since May 2021, showing that the summer 2021 season is looking positive

Note: Image / links (see next page) are related to - but are ***not*** part of the article shown just above:

Summary: A 2014 view of some of the stored aircraft at Pinal Air Park, Arizona. Source: https://www.flickr.com/photos/ajw1970/13876180674/. Author: Alan Wilson. The above file is licensed under the Creative Commons Attribution-Share Alike 2.0 Generic license

Inside Victorville Airport, 400 Pandemic-Stricken Airliners Face an Uncertain Future – AirlineGeeks.com

Note - from Author / Owner of this guideline document (i.e. the one you are reading right now)

The above articles are provided herein to remind airlines that such contingency should be ***pre***-planned, agreed, contracted (with the appropriate 'storage' facilities) and documented i.e. a pro-active rather than reactive procedure (the latter [reactive situation] being the one that some airlines found themselves in during the COVID-19 pandemic - meaning that 'difficulties' were encountered in obtaining such storage)

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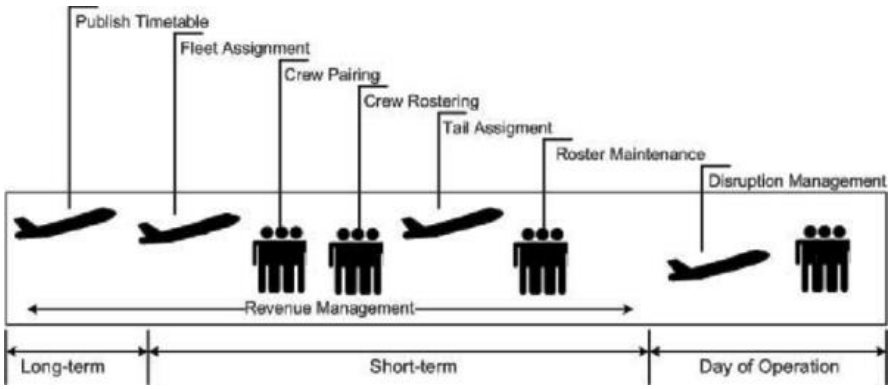
Chapter 8

(Airline) *Crew Control Ops during Major Pandemic*

Note: Following text based on fictional, passenger airline 'ABCX Airways'



The Problem

The Covid-19 pandemic adversely affected the (operational amongst other) activities of passenger airlines (and other types of aircraft operation) - including the functioning of associated airline crew control etc. operations

Before the pandemic, crew rosters / schedules etc. (and associated matters) were typically published (by most airlines) ***monthly***. However, due to the 'knock-on' consequences of said pandemic (flight cancellations, sickness, quarantine / isolating, other associated uncertainties etc.) it typically became necessary for same to be revised / updated e.g. ***weekly*** - and sometimes even ***daily***

The knock-on consequences meant that the workload experienced by Crew Control etc. increased considerably - but typically with negligible, associated 'manpower' augmentation possible / available

As the numbers of flights operated reduced drastically (due the pandemic), crews often failed to achieve the minimum number of operational flights etc. required to maintain legal 'currency' (without said currency being valid crews could not operate). Furthermore, there were also problems in providing / maintaining associated crew training requirements e.g. an airline pilot must (to maintain legal currency) fly at least a specified, minimum number of flight hours in a specified number of days. In cases where he / she cannot achieve this (for whatever reason), additional training is typically required - often in a simulator. ***The associated currency and training requirements (including demand for simulator resources in itself) caused further problems for crew control***

The number of crew in hospital / isolation / quarantine (due COVID-19) also ***added to crew control 'overload'.*** But crew control problems didn't stop there:

- ***Pre-pandemic*** aircraft cleaning / replenishing etc. times etc. on the ground (for 'turnaround' flights) take a certain amount of time - typically from around 40 minutes or so for most low-cost operators - up to several hours for others

Operating with the pandemic typically increased such times significantly (e.g. due much enhanced interior cleaning requirements of the aircraft [amongst other factors]). Thus the time that such aircraft (and crew) could spend in the air (in a given period) decreased (see next para for reasons)

Due mandatory (legal) 'flight time limitations' placed on crews (generally speaking), said limitations are reached at relatively earlier points in time in the situation described just above i.e. crews were flying less hours 'in the air' before they reached the point where it was (legally) necessary to take time off / down-time (due the additional hours spent on the ground ***which generally still counted as duty time***). ***Thus one more significant problem for Crew Control to 'manage'***

- Crew Control facilitates accommodation reservations for crews (e.g. where the latters' duties require them to 'overnight' - typically away from home base) - usually at hotels with which the airline's 'purchasing / procurement department' had pre-negotiated an agreement / contract for same. However, many such hotels were closed by the pandemic - resulting in significant problems finding alternatives, ***piling even more workload on crew control***

- Crew Control typically organises airline or road travel / transfers for crews in accordance with operational needs e.g. positioning crew to other airports in order to operate; airport / hotel / airport transport; home / airport / home transport etc.

  Due pandemic restrictions (particularly the need for 'social distancing') such travel / transfers were required to be carried out with more vehicles per persons carried (in contrast with 'normal' operations) in order to permit social distancing etc. to be achieved. ***Again, a further task which was typically required of crew control***

Whilst the major problem areas faced by airline crew control departments during much of the COVID-19 pandemic have been outlined just above - there were undoubtedly many more which, for the sake of brevity, have not been documented here

The Solution

Quite simply, there is typically no 'easy' solution to the associated 'crew control' pandemic related problems highlighted above - which would also be cost-effective (let alone possible)

However, it is suggested that other, ***appropriate*** airline staff (***not being current crew controllers*** e.g. crew rostering staff [if rostering not also done by crew control]; ops controllers; flight dispatchers; duty maintenance control engineers; duty pilot and cabin crew staff ; airports services staff etc. [all typically based {when on airline 'ops' duties} in the airline's ops control centre - typically {again} alongside their crew control colleagues]) be ***voluntarily cross-trained*** to a pre-defined / workable level in crew control procedures - and occasionally rostered to undertake actual crew control duties during normal operations - under appropriate supervision

If the parent airline can afford it and so agrees, some financial incentive (or equivalent e.g. extra leave / holiday) might assist in making the above work. Furthermore, a ***crew control specific pandemic response plan*** should be produced, maintained, reviewed, trained for and exercised (by all concerned) on an initial and recurrent basis

Of course, what has been proposed in the last 2 paras above would need to be accomplished, maintained, exercised (and periodically re-exercised) 'pre-crisis'

For a little more insight (typically for those not familiar) into what the job of an airline 'crew controller' involves - take a look at the article (written by a 'real' crew controller) - starting just below:

Q&A with an 'ABCX Airways' Crew Controller

Coordinating the schedules etc. of more than 5,000 crew-members on a daily basis and helping to keep 1,800 flights on schedule are just a few of the responsibilities of people like xxxx xxxxxx, an ABCX Airways crew controller / scheduler. Check out what he / she had to say about this unique job - and then put it (in your mind) in the context of what has been written on the last 2 pages above:

What is your favourite part about being a crew controller?

I like that this job is not the same thing every day. There are always new challenges and situations to deal with, so it fully engages your mind in trying to get everything pieced together

Why is crew control such an important part of the airline's operation?

While flight attendants and pilots are often the face of our operation, Crew Control is part of the 'glue behind the scenes'. It is our job to make sure that our aircraft have legally compliant crews - if we don't, the flight concerned can't operate. We also field calls from crewmembers e.g. unable to come to work due to being sick, missing their commuting flight etc. - and then it is our responsibility to find a replacement

What would you say to someone who is interested in working in crew control?

If you like to be challenged at work, do puzzles, piece together schedules and flying - then this is for you. It is also a great job if you have never worked in the airline industry before because you learn about a lot of different departments, answer all sorts of questions, work closely with Flight Operations, In-Flight (Cabin Crew), Ops Control / Dispatch and Training - to name just a few - and you really have the chance to dip your fingers in a little bit of everything

What qualities would be good for someone who is interested in being a crew controller?

You need to be able to multi-task and be creative in the way you problem solve. Often we are trying to cover (roster) a flight when we don't really have any (scheduled) reserve crew available for it. Accordingly, creativity and lateral thinking is vital. You also need to be willing to ask questions, as well as continuing to learn, no matter how long you have been here

Note - from Author / Owner of this guideline document (i.e. the one you are reading right now)

Passenger airline 'crew control' departments / business units typically cover crew control duties specifically (i.e. ***only***) in ***larger*** airlines

For smaller passenger airlines they might ***also*** (additionally) be required to undertake 'crew rostering / scheduling' duties - and for the smallest of airlines might additionally undertake 'operations control' and 'flight despatch / flight following' etc. type duties

(That is to say, in ***larger*** airlines all / most of the duties outlined just above are carried out by specific specialists)

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Chapter 9

AIRPORT SLOTS versus COVID-19

https://www.iata.org/en/policy/slots/

In this Chapter 9 we explore a little into the world of 'airport slots' and the associated impacts on same (from airline, airport etc. viewpoints) of the COVID-19 pandemic of 2020 - 2022. The intention is that 'lessons learned' should be agreed, documented, trained, exercised, reviewed etc. in order that 'next time' we (airlines; airports etc.) are as 'best prepared as we might be' for a similar situation

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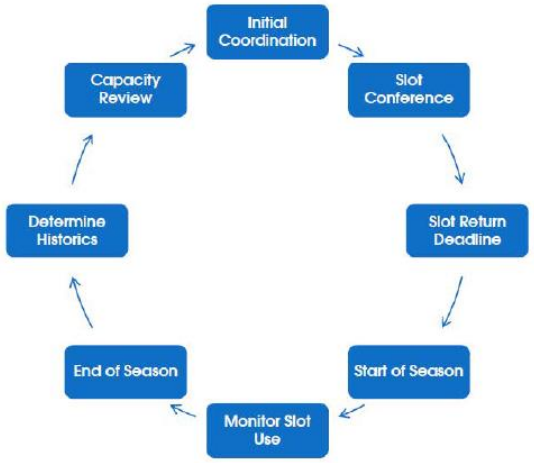
1.5 How are slots allocated?

'.....per.....

Slots are initially allocated twice year, once for the summer season and then for the winter season. However, outside of this initial allocation, slots can be returned to the coordinator and reallocated, sometimes at very short notice.

The graphic below shows the annual slot allocation cycle.[21]



	Summer	Winter
Initial Coordination	October	May
Slot Conference	November	June
Slot Return Deadline	January	August
Monitor Slot Use	End March to End Oct	End Oct to End March
Determine Historics	September	April
Capacity Review	September	April

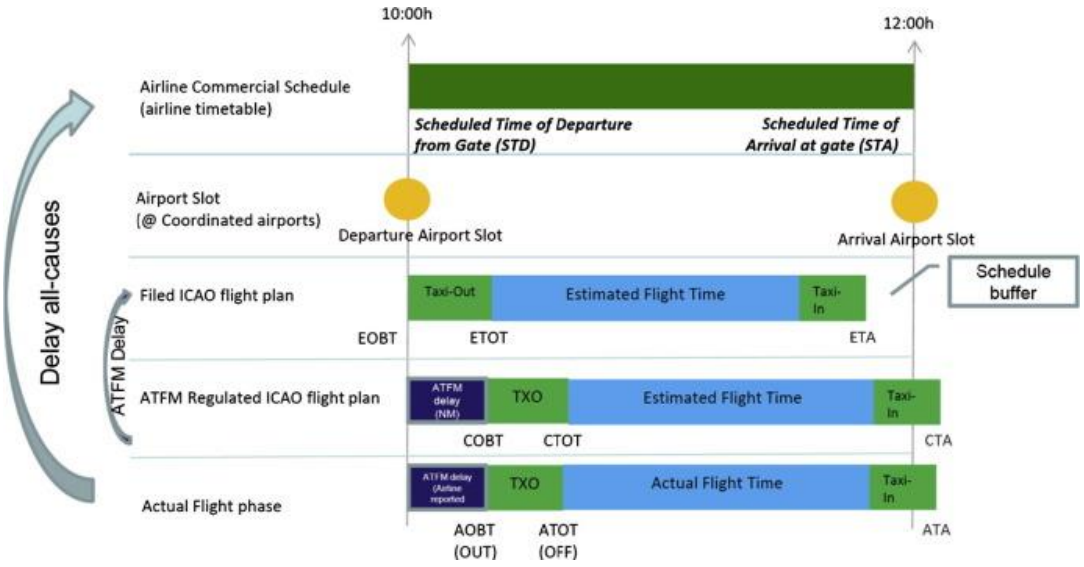
11:37 14/09/2021

*FAA Confirms Slot Waiver Extension over * LCC objections*

* = 'Low Cost Carrier'

Short Version

CH Aviation / News - 21 January 2021



The USA's Federal Aviation Administration (FAA [the 'regulator']) confirmed its tentative proposal to extend a slot usage waiver at seven airports across the United States, through to end of summer season 2021

The regulator had initially proposed to extend the waiver on 17 December 2020. Under the new (final) determination, slot usage requirements will be waived at three Level 1 airports - New York ***JFK***, New York La Guardia and Washington National - while slot rules at four Level 2 airports - Chicago O'Hare, New York Newark, Los Angeles Int'l, and San Francisco, CA - will be relaxed using operational baseline calculations

The extended rules are largely on the same terms as the current waiver in force through to 26 March 2021

Whilst the vast majority of airlines and industry bodies supported the slot waiver extension (although many requested modifications, mostly in the interests of the global harmonisation of waivers), Southwest Airlines (WN, Dallas Love Field) suggested that the relief at Washington National and La Guardia be extended only through to 27 June 2021

Allegiant Air, Spirit Airlines, Polar Air Cargo and several industry bodies opposed any extension of the relief, although Allegiant said it would be willing to support Southwest's position as a middle ground

DOT ISSUES NOTICE OF PROPOSED EXTENSION FOR MINIMUM SLOT USAGE REQUIREMENT WAIVER

A More Detailed Look at the Subject referred to on Previous Page

5 January 2021

On 22 December 2020 the FAA published a Notice in the Federal Register, seeking comment on a proposed extension of its waiver of the slot usage requirements at slot controlled high density ***Level 3*** airports (JFK, LGA, DCA) as well as designated IATA Level 2 airports (ORD, LAX, EWR, SFO) in the United States

By way of background, before an air carrier can operate scheduled service to a ***Level 3*** slot controlled airport, it must first obtain specific time slots (for its proposed schedule) from the FAA

Slot times are re-issued with priority by the FAA each season (the FAA divides the each year into summer and winter seasons) to carriers that have operated them during the previous season. However, if a carrier does not use its slots at a rate of at least 80%, it will lose its right to use such slots in the future (the FAA will not reissue the slots to the carrier the following season)

Minimum slot usage requirements do ***not*** apply at ***Level 2*** airports, and whilst voluntary, carriers are expected to seek and obtain schedule approval in the Level 2 process. Additionally, instead of submitting historic slot data as per Level 3 airport requirements, carriers submit a proposed schedule which is analysed for the possibility of causing potential, consequential delays

Since the COVID-19 pandemic has dramatically disrupted the schedules of foreign and domestic carriers, the FAA created a path for carriers to seek a waiver of the usage requirements for their slot times at ***Level 3*** airports. Carriers are able to notify the FAA that due to issues related to the COVID-19 pandemic, they will not be able use / operate their slots. Subsequently, the FAA will allow the carrier to maintain their right to the slot times for use in future seasons

In addition, at designated IATA ***Level 2 airports***, the FAA determined that it would prioritize flights cancelled due to COVID-19 for purposes of establishing a carrier's operational baseline in the next corresponding season

The initial waiver order was issued in March 2020 and lasted until 31 May 2020. It was then extended to 24 October - and further extended until 27 March 2021. The FAA is now considering extending the Order to 30 October 2021 and is seeking comments on whether to extend the waiver through the full duration of summer 2021 scheduling season, as well as on two separate option proposals for the waiver structure:

- The first, proposed option would be to maintain the status quo, by which a carrier may seek a waiver from the slot usage requirements simply by informing the FAA which slots it will not use due to COVID-19 related issues, subject to the following conditions:
    - (1) Carriers must return the slots they do not intend to use to the FAA four weeks prior to start of the FAA approved operation

- (2) The waiver does not apply to newly allocated slots
- (3) The waiver does not apply to slots that have been leased to another carrier

- The second, proposed option is a set of conditions proposed by the Worldwide Airport Slot Board (WASB) including:
  - Carriers holding slots may return those they will not use to the FAA on or before 8 February 2021 (approximately 7 weeks before the start of the season) and will be able to retain them for future use. Similar to the current rules, newly allocated slots are not eligible for the waiver, nor are slots leased to another carrier
  - For slots that are not returned before 8 February 2021, the usage threshold will be reduced from 80% to 50%; and……
  - There will also be an exception to the 50% usage requirement for circumstances that may prevent airlines from operating scheduled flights for reasons other than commercial cancellations

The comment period closed on 29 December 2020 with a number of entities so commenting, including the Star Alliance, which believes that the FAA should extend the exemption in its current form, as a "continuation would avoid drastic schedule adjustments that would have ramifications throughout the system and disruptions to air connectivity"

Whilst the Star Alliance prefers an extension of the current requirements, it recognised the WASB proposal as "an important industry compromise and [give their] support as a fall-back option"

Authors / Evelyn D Sahr; Drew M Derco and Andrew P Orr / ECKERT SEAMANS USA

COVID-19: The Unintended Impacts of Slot Waivers

By Angela Gittens | Director General, ACI World - 25 Jun 2020

Airport Slots vs COVID-19

Suspending slot usage requirements could weaken choices for the travelling public and the competitive landscape among airlines

ACI World established the Expert Group (EGS) on Slots in 2015 to provide strategic and technical guidance on the development of policy on ***airport*** slot allocations. EGS membership reflects the global nature of slot allocation, with representatives from all ACI regions. The main policy that the EGS has followed since its inception is that the development of slot allocation policies should be data-driven and evidence-based

The latter remains of prime importance as the entire aviation ecosystem is planning for the upcoming winter season (2020 - 21) in the context of the COVID-19 pandemic crisis. As such, it becomes critical that regulators worldwide consider the needs of travellers and of the overall aviation ecosystem, before deciding to extend airport slots waivers into said winter season

Waivers protect market access for incumbents whether or not they operate flights

Noting that several airlines have already made public announcements regarding exiting certain airports and about fleet reductions, there is a growing concern that waivers could be used as a mechanism to insulate slots from market realities during the recovery period. For the benefit of the flying public and communities at large, capacity needs to be available for airlines that are willing and able to fly

Webinar: Airport slot allocation in the recovery: Enhancing connectivity and fostering choices for the travelling public. Watch now

Data-driven and Evidence-based Approach to Assess the Relevance of Waivers

As recovery will occur at different rates in different places, regulators should follow a data-driven / evidence-based approach to assess ***whether waivers are the appropriate response*** to re-establish local, regional and global connectivity

In consultation with airport operators and airlines locally, regulators should consider the following evidence:

- Recommendations from international and national public health authorities
- Travel restrictions imposed by relevant aviation markets
- Actual traffic and forward bookings with a ring-fenced approach for: a) domestic traffic; b) medium-haul regional traffic; and c) long-haul international services

Decisions on whether airport slot waivers should be extended in the winter should not be taken far in advance of mid-August, as there is still considerable uncertainty about the pace and shape of the pandemic recovery in air transport demand and the winter season is still months away. Where waivers are deemed relevant, strict conditions must be attached to avoid unintended impacts on the competitive landscape and ensure that consumers are protected from last-minute cancellations

Worldwide Airport Slot Guidelines (WASG) - Download

ACI recommends that, where appropriate, waivers must come with conditions along the following lines:

- First, it is necessary to incentivise airlines to return slots they will not use to enable airports to safely plan operations, comply with physical distancing requirements and encourage efficient reallocation when possible

  In the interest of passengers, commercial cancellations should be made at least four weeks before the scheduled departure date - and slots returned accordingly within 3 business days of same. Slots not handed back in a timely manner must not be eligible for the waived slot usage requirements

- Second, slots must not be covered by waivers when an airline publicly announces that it will cease or significantly reduce services at an associated airport. Considering the fleet reductions announced by several carriers, it is unrealistic to assume that all services at co-ordinated airports will resume during the recovery period

  Airlines that are ready and able to operate to support the recovery must not be blocked from entering airports by the 'anti-competitive' holding of slots by airlines exiting these markets. Similarly, slots held by airlines being liquidated must not be covered by slot waivers

- Finally, slots allocated in response to new requests must not be eligible to qualify for waivers. This is to avoid the possibility of airlines building up 'historics' for the post-COVID-19 future simply by submitting an administrative request, thus blocking access from others who may be able to operate sooner

  Slot allocation is implemented as a result of scarce infrastructure and implies that other flights were refused to keep the infrastructure available for airlines who were awarded slots. In this context, airports and unsuccessful airlines want to make sure that this capacity does not go to waste. The latter would be unfair to everyone, especially the flying public and the communities served by the airport

MOBILITY AND TRANSPORT

European Commission

Aviation: Slot Relief Rules for Airlines - Amended and Extended

26 July 2021

On 23 July 2021 the European Commission proposed to amend the Slot Regulation and also extended the slot relief rules adopted in February 2021

As the aviation industry starts to recover from the impact of the COVID-19 crisis, the Commission remains committed to continuing relief from normal slot allocation rules for airlines. Relief will therefore be extended to the coming winter scheduling season, running from 31 October 2021 - 27 March 2022

Instead of the normal requirement to use at least 80% of a given slot series to retain historic rights (in those slots), ***airlines will only need to use 50%*** of a given slot series

Commissioner for Transport, Adina Vălean, said: "I am confident that a 50% slot use rate is adequate for all stakeholders - to ensure the efficient use of airport capacity, while benefiting consumers. We still face uncertainties in the COVID-19 crisis - and the 'justified non-use of slots' exception when state-imposed measures severely impede passengers' ability to travel - remains in place to address future unforeseen circumstances, without unduly blocking airport capacity"

Instead of the normal requirement to use at least 80% of a given slot series to obtain historic rights in those slots, airlines will only have to use 50% of a given slot series. Furthermore, the use requirement will not apply at all when state-imposed measures severely impede passengers' ability to travel on routes for which the slots were intended (the so-called '***justified non-use of slots***' exception)

In light of persistent low air traffic, the EU amended the Slot Regulation in February 2021 to provide relief from the normal rules for the summer 2021 scheduling season which ends on 30 October 2021

Airlines could fully protect up to 50% of their slots, provided they were handed back for possible ad-hoc reallocation before the start of the summer 2021 season. All other retained slots needed to be operated at a 50% use rate

Extensive data collection and exchanges with stakeholders shows that air traffic is still low compared to 2019, due to the COVID-19 crisis, and is likely to remain that way. Therefore, further relief from the slot rules is necessary in winter 2021/2022

On the slot use rate (Eurocontrol forecasts) - progress in vaccination campaigns and the 'COVID-19 certificate / passport' (which is already facilitating travel) mean that the Commission can reasonably expect that, during the winter season, traffic will be 70% of 2019 levels

Associated relief must be targeted to the actual needs of the sector as a whole, in light of the current and expected circumstances. The Commission must also ensure the efficient use of airport capacity and take into account the interests of airports - and ultimately consumers - who benefit from more stable operations and greater choice

For the efficient allocation of slots, it is important that the slot use rate reflects the structural changes that may have occurred on the market, whether due to decreases or increases in fleet size and operations - or changing consumer preferences. Accordingly, the Commission set the slot use rate at 50%

With many questions still open on the COVID-19 crisis, the 'justified non-use of slots' exception is an appropriate tool to address future unforeseen circumstances without unduly blocking airport capacity (where circumstances on the day so permit) for the latter

Background Information

In case of unexpected COVID-19 related measures affecting air traffic, airlines are exempted from the slot use requirement for associated slots used on impacted routes. The Commission has acquired (delegated) powers until 21 February 2022, which allows it to extend the relief period and to adapt the use rate between a range of 30 and 70%, depending on air traffic and other indicators

The measure allowing airlines to protect slots handed back for temporary reallocation before the start of the season cannot be extended

Last updated: 18 August 2021

IATA

COVID-19 vs Airline Slots

Relevant extracts (selected pages only) from the associated IATA website (current as at mid-September 2021 and as originally found at the end of the below * link) are provided on the next 8 pages

https://www.iata.org/en/policy/slots/covid-19-slots

* It is likely that (with the passage of time) the above link will either be removed or updated. It is for the 'interested' reader to account for this accordingly - if so required (e.g. conduct an on-line search for the latest details [if any])

Note: For an April 2022 update on the subject of 'slots' and the eventual 'fall-out' (from the adverse impacts on same of the COVID-19 pandemic) - follow the below link:

https://edition.cnn.com/travel/article/ghost-flights-pandemic-greenpeace-cmd/index.html

covid-19 airline runwat slots - Bi | IATA - COVID-19 Slots

https://www.iata.org/en/policy/slots/covid-19-slots/

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POLICY

- Worldwide Airport Slots
  - Worldwide Airport Slot Guidelines
  - SlotLink
  - Slot Conference
  - COVID-19 Slots
- Consumer & Passenger Issues
- Taxation
- Environment Policy
- Infrastructure
- Smarter Regulation
- Business of Freedom
- Future of Industry

COVID-19: Slots

The airline industry has entered a period that has never been experienced before. The retraction in demand due to the COVID-19 coronavirus outbreak, travel restrictions, border closures, corporation travel bans, and economic decline have resulted in airlines being able to offer skeleton services, if at all. On this page you will find information, guidance and resources related to COVID-19, restart and airport slots.

NORTHERN WINTER 2021: Aviation industry agrees on a global recommendation for airport slot relief in Winter 2021

Considering the continued lack of predictability, certainty or stability in the global aviation network, the Worldwide Airport Slot Board (WASB) is proposing a continuation of slot alleviation measures for the NW21 season (pdf). The three industry groups encourage Regulators worldwide to adopt this complete package in full, as quickly as possible, to support the industry's planning.

Need Help?

Contact us

Webinar

Watch the Scheduling for Restart webinar!

Related Links

Worldwide Airport Slots

Worldwide Airport Slot Guidelines

Events

19:16
17/08/2021

covid-19 airline runwat slots - Bi | IATA - COVID-19 Slots

https://www.iata.org/en/policy/slots/covid-19-slots/

Smarter Regulation

Business of Freedom

Future of Industry

NORTHERN WINTER 2021: Aviation industry agrees on a global recommendation for airport slot relief in Winter 2021

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Guidelines

Events

149th Slot Conference
16 - 19 November
Rome, Italy

The associated document (dated May 2021) **at the end of this link has been reproduced on next 5 pages directly following below**

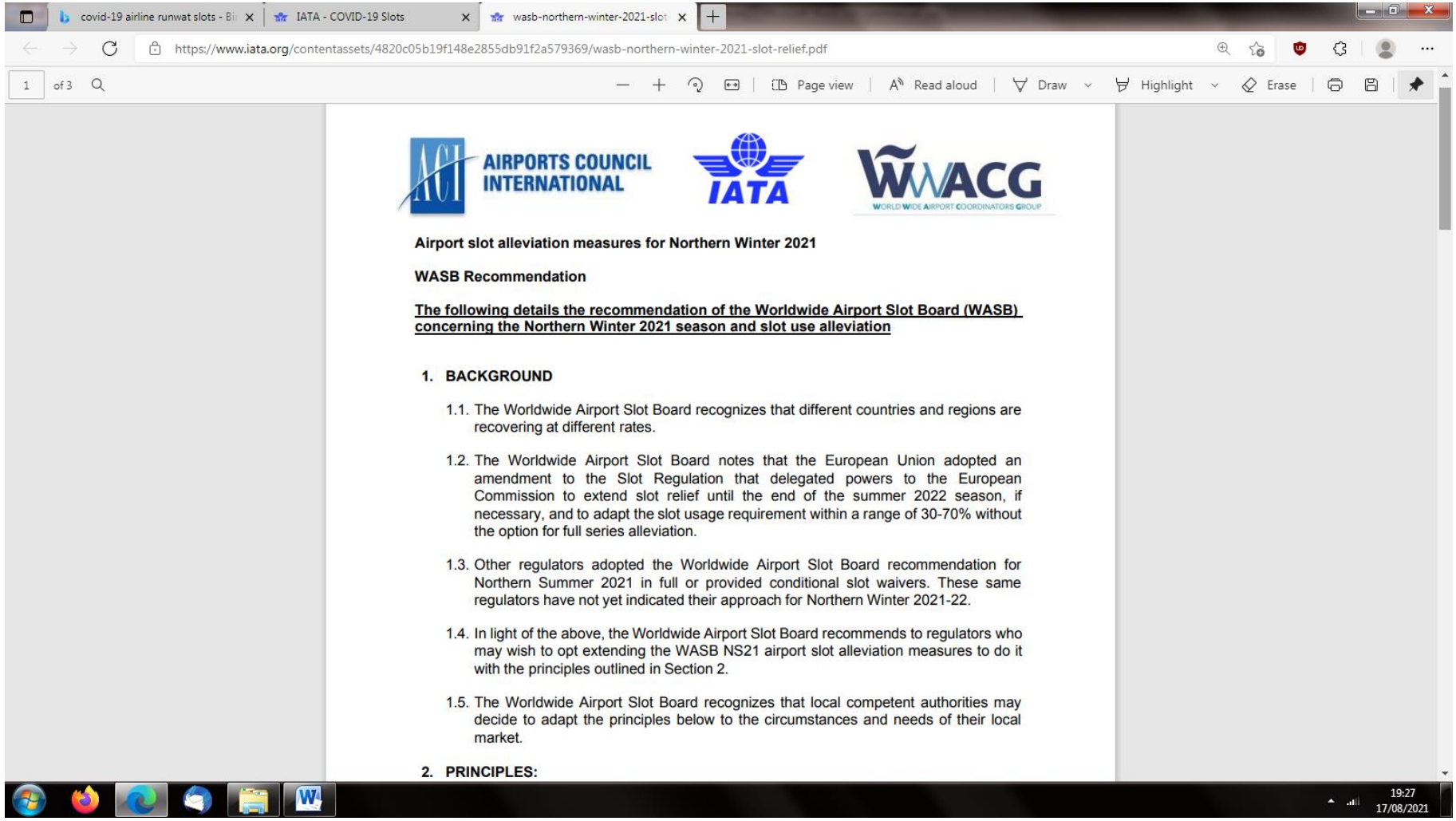
COVID-19 and Global Suspension of Slot Rules

Northern Winter 2021

Please find below a continuously updated list of the status of slot use relief measures at level 3 airports for the Northern Winter 2021 season:

Level 3 - Slot coordinated airports: Northern Winter 2021 slot use relief status

19:22
17/08/2021



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AIRPORTS COUNCIL INTERNATIONAL | IATA | WWACG WORLD WIDE AIRPORT COORDINATORS GROUP

Airport slot alleviation measures for Northern Winter 2021

WASB Recommendation

The following details the recommendation of the Worldwide Airport Slot Board (WASB) concerning the Northern Winter 2021 season and slot use alleviation

1. **BACKGROUND**

1.1. The Worldwide Airport Slot Board recognizes that different countries and regions are recovering at different rates.

1.2. The Worldwide Airport Slot Board notes that the European Union adopted an amendment to the Slot Regulation that delegated powers to the European Commission to extend slot relief until the end of the summer 2022 season, if necessary, and to adapt the slot usage requirement within a range of 30-70% without the option for full series alleviation.

1.3. Other regulators adopted the Worldwide Airport Slot Board recommendation for Northern Summer 2021 in full or provided conditional slot waivers. These same regulators have not yet indicated their approach for Northern Winter 2021-22.

1.4. In light of the above, the Worldwide Airport Slot Board recommends to regulators who may wish to opt extending the WASB NS21 airport slot alleviation measures to do it with the principles outlined in Section 2.

1.5. The Worldwide Airport Slot Board recognizes that local competent authorities may decide to adapt the principles below to the circumstances and needs of their local market.

2. **PRINCIPLES:**

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2. PRINCIPLES:

2.1. The following principles should be attached to the WASB recommendation:

2.1.1. Full series of slots (other than newly allocated series) for which a carrier wishesto claim full season alleviation should be returned between the Historic Baseline Date (HBD) and HBD+7days. The coordinator will alleviate the series and place them in the slot pool for reallocation and use on a non-historic basis only.

2.1.2. Series of slots held at HBD that are not returned or are only partially returned at the deadline of HBD+7 days will be subject to the utilization requirement set for that season to secure the historic entitlement in the subsequent equivalent season.

2.1.3. The utilization rate should be set at 50:50; and WASG art. 8.7.2.2 shall be suspended.

2.1.4. Slot series returned between HBD and HBD +7 should not be reallocated to the same carrier for the same use within four weeks of HBD +7, unless there is a valid reason confirmed by the slot coordinator for reallocating these slots for use.

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2.1.5. Airlines must hand back slots not intended for utilization as soon as possible, but not later than four weeks prior to planned operation. Retiming and repurposing of slots within the four-week period is allowed.

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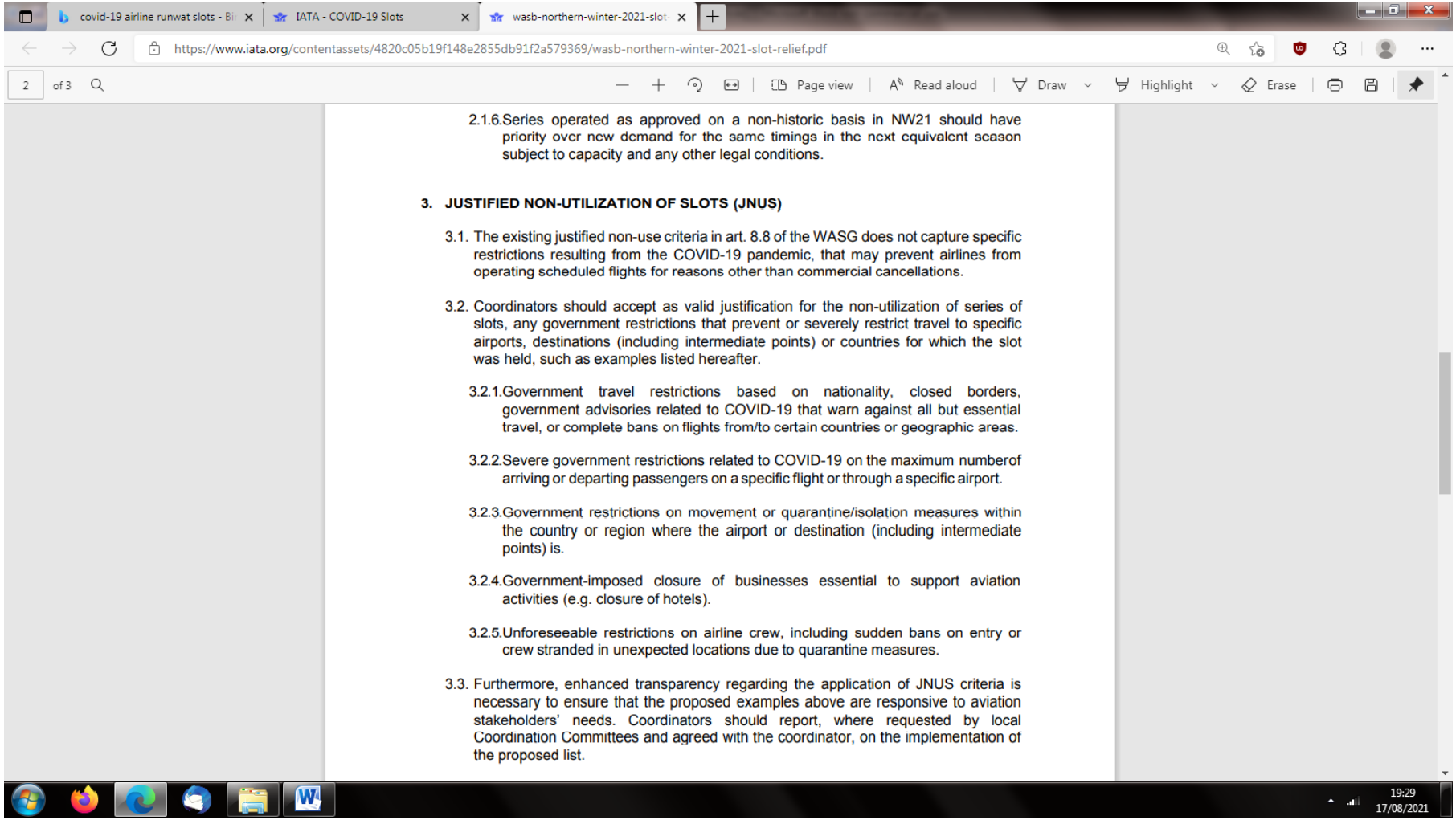

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2.1.6. Series operated as approved on a non-historic basis in NW21 should have priority over new demand for the same timings in the next equivalent season subject to capacity and any other legal conditions.

3. JUSTIFIED NON-UTILIZATION OF SLOTS (JNUS)

3.1. The existing justified non-use criteria in art. 8.8 of the WASG does not capture specific restrictions resulting from the COVID-19 pandemic, that may prevent airlines from operating scheduled flights for reasons other than commercial cancellations.

3.2. Coordinators should accept as valid justification for the non-utilization of series of slots, any government restrictions that prevent or severely restrict travel to specific airports, destinations (including intermediate points) or countries for which the slot was held, such as examples listed hereafter.

3.2.1. Government travel restrictions based on nationality, closed borders, government advisories related to COVID-19 that warn against all but essential travel, or complete bans on flights from/to certain countries or geographic areas.

3.2.2. Severe government restrictions related to COVID-19 on the maximum numberof arriving or departing passengers on a specific flight or through a specific airport.

3.2.3. Government restrictions on movement or quarantine/isolation measures within the country or region where the airport or destination (including intermediate points) is.

3.2.4. Government-imposed closure of businesses essential to support aviation activities (e.g. closure of hotels).

3.2.5. Unforeseeable restrictions on airline crew, including sudden bans on entry or crew stranded in unexpected locations due to quarantine measures.

3.3. Furthermore, enhanced transparency regarding the application of JNUS criteria is necessary to ensure that the proposed examples above are responsive to aviation stakeholders' needs. Coordinators should report, where requested by local Coordination Committees and agreed with the coordinator, on the implementation of the proposed list.

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3.4. Coordinators are encouraged to grant alleviation during a recovery period of up to 6 weeks following the announcement of the ending of any relevant restrictions which lead to alleviation under 3.2.

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3.5. In the event of airport capacity reduction as a result of health measures being imposed, regards should be given to the WASB Best Practice Paper on Capacity Reductions and the JNUS provisions contained therein.

4. CONDITIONS:

4.1. Alleviation measures shall not apply to a series of slots of an airline that permanently ceases operations at the airport.

4.2. Exchanges and transfers currently allowed will continue where they are not prohibited by the laws of the relevant country WASG art. 8.11.5.

4.3. New slot trade arrangements are not eligible for full season alleviation (this does not include continuation or unwinding of existing slot trade arrangements) but are eligible

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4.3. New slot trade arrangements are not eligible for full season alleviation (this does not include continuation or unwinding of existing slot trade arrangements) but are eligible for other slot relief measures mentioned in point 2.1.3.

4.4. Implementation of a recommendation agreed in the WASB must be legally approved by the competent authority of the country where the coordinated/scheduled facilitated airport is located. In some jurisdictions, it requires the entering into force of a new legislation or the modification of an existing legislation.

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IATA - COVID-19 Slots

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Presentations

- Please see our video where we explain why a slot waiver before the end of July is essential for airlines to plan a realistic schedule for Northern Winter 2020.
- Northern Winter 2020/2021 slot usage alleviation summary - Level 3 airports (pdf)
- COVID-19: Flexibility will be critical to success in the first year of restart (pdf)
- COVID-19: Flexibility will be critical to success in the first year of the restart, CHINESE TRANSLATION (pdf)
- Northern Summer 2020 Slot usage alleviation summary (pdf)
- Northern Winter 2020 waiver - a matter of urgency (pdf)

Other COVID-19 resources on iata.org

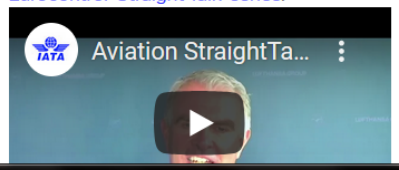
- Action Cargo: COVID-19
- COVID-19: Resources for Airlines & Air Transport Professionals
- IATA Webinars

https://youtu.be/i5EJvSZOVOQ

Lara Maughan, IATA Head of Worldwide airport slots, on the need to suspend the slot usage rules.

Lufthansa Group CEO (and recent IATA Chairman) Carsten Spohr gave an excellent summary of the vital need for slot use relief – either a full waiver or implementing the full recommendation of the World Airport Slots Board - in a recent interview in the Eurocontrol 'Straight Talk' series.

https://youtu.be/Sx6dkNZAuPU



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Chapter 10

Overflight Clearance Permissions versus COVID-19

1. INTRODUCTION

1.1. The recent Middle East DGCA Teleconference (23 April 2020) underlined the importance of taking all necessary measures to facilitate a collaborative approach for restarting commercial passenger flights. Also to establish a MID Region 'Recovery Plan Task Force' (RPTF) to provide necessary guidance and facilitate an harmonised restart of operations in a sustainable, safe, secure and orderly manner as soon as practicable - ***taking into primary consideration the ongoing evolution of the COVID-19 pandemic and associated decisions made by appropriate International and National Public Health Authorities***

1.2. The RPTF consists of 4 work streams:

- ***Public Health Requirements***
- Operational Safety Measures
- Airport & Passengers Facilitation
- Air Navigation Services (ANS) / Air Traffic Management (ATM)

1.3. As part of the ANS work stream, this ACAO / IATA / ICAO - ***Overflight Clearance*** (OVFC) Permissions Teleconference / Meeting was held accordingly

1.4. Attendees comprised 53 participants from 13 States (Bahrain, Comoros, Egypt, Iran, Iraq, Jordan, Kuwait, Saudi Arabia, Somalia, Sudan, Tunisia, UAE and Yemen) + 2 Airlines + 4 Organisations (ACAO, IATA, ICAO and IFATCA). The list of participants can be found at xxxxxxx

1.5. The main objectives of the teleconference were to:

a. Present the Collaborative Solution, RPTF introduction and work-streams 'WS4 ANS' and 'ATM' high level focus areas + specific activities associated with Overflight Clearance (OVFC) Permissions
b. Provide an overview of the challenges surrounding OVFC Permissions
c. Agree on necessary actions to ensure granting of speedy OVFC Permissions - in line with the Chicago Convention of 1944 and the basic principles of International Law

2. OPENING

2.1 Mr. Mohamed Rejeb, ANS and Safety Expert at ACAO, welcomed all participants and thanked them for accepting the invitation to join the teleconference

He highlighted (***re the COVID-19 pandemic situation***) that the restart of flight operations in a safe, secure, sustainable and orderly manner could only result from collective efforts. A closer and continuous collaboration would be beneficial for information sharing and a harmonised global response - suitable for all States, regions and stakeholders

The conference would thus be important and useful in enabling Airlines (many of which are represented by IATA) to highlight the current challenges and emerging issues surrounding OVFC Permissions - and propose concrete recommendations with associated actions

3. DISCUSSION

3.1 The meeting was updated on the establishment of the RPTF and its four technical work streams

3.2 The meeting was also updated re the objectives of 'OVFC Permissions' key activities under the ANS work stream, so as to ensure adequate facilitation / flexibility, relief of OVFC permissions and the work plan of key activities. In particular:

- Communication with States for relief from OVFC permissions during the pandemic crisis and restart recovery phases
- Identify OVFC permission constraints / difficulties and initiate proposed resolution interventions
- Develop the "File n Fly" concept (or alternative, simplified / standardised process(es) for facilitating, granting and management of OVFC permissions)
- Co-ordinate with concerned States to facilitate implementations of 'File n Fly' OVFC permissions / alternative simplified processes

3.3 Mr. Protus Seda (Assistant Director Safety & Flight Operations AFI [IATA]) provided a presentation covering the OVFC permission challenges faced by airlines etc. and highlighted the following:

- Lack of reliable access to OVFC offices' 'Points of Contact'
- Limited OVFC hours of operations
- Approval delays & turn-around times from application to permit grant

- Problematic 'lead time' requirements
- Duplication of information
- Lack of standardisation in 'OVFC Permission Request' publications e.g. in State 'Aeronautical Information Publications' (AIP)
- Permit validity periods not long enough
- Airline staff constraints (e.g. 24H availability not always possible)

3.4 IATA presented a potential solution to the above challenges (via the use of ICAO flight plans in the concept of '***File n Fly***')

The ICAO flight plan (FPL) can be used as an alternative means of compliance for State overflight permit requirements. FPLs contain adequate information as required by States (i.e. are 'fit for purpose') - re satisfying associated OVFC permit requirements. 'File n Fly' concept is not new, and has been successfully applied elsewhere - thereby providing the aviation industry with an overall, favourable solution

3.5 Mr. Mohamed Rejeb (ANS and Safety Expert at ACAO) also provided an analysis and recommendations re OVFC permission processes - in term of parameters such as documentation requirements, operating hours, permit request lead times, permit validity, focal points and contact details

3.6 After the presentation, a round table discussion took place to address some pertinent questions. Participants were asked:

- Do you support 'File n Fly' concept and what is your opinion and comments on same?
- With regards to the COVID-19 pandemic - what are the most difficult challenges faced by the 'OVFC Permission' concept?
- What suggestions might you have for improving this concept?

4. STATE VIEWS AND COMMENTS ON 'FILE N FLY' CONCEPT

4.1 States views were ultimately supporting the concept but there is now a need to establish internal coordination within States (e.g. with appropriate authorities in Civil Aviation, the Military etc.) to decide on said concept in detail

4.2 A proposal was tabled by some members' states relating to the concept of CDM (collaborative decision making) being applied to AOVP - whereby states share their associated processes with other States and Airlines. It also proposed to set up an automatic system for processing overflight authorization requests which could be adopted by States.

4.3 It was noted that some members' states have already implemented the (4.2) process under other names and have been doing it for some years

4.4 States proposed to make available a kind of platform where they can share the best practices. In this regard the RPTF platform under ICAO MID webpage can be used as the sharing platform.

4.5 Recognising the diversity of Member States in term of volume of traffic number of airports and "one size fits all" solution may not respond to States' requirements.

4.6 Billing issues and payment of overflight fees linked with file and fly concept and the need to find a solution before moving much further. To address these issues a proposal of sort of registry for File and fly system requirement for airline to take advantage of this concept was also highlighted.

5. NEXT STEPS

5.1 The meeting recognized the importance of working together CAAs, International organisations and Airlines to deal with OVFC Permissions issues, in a coordinated and coherent manner with a view to support the standardization of submitting and granting OVFC.

5.2 Therefore, the meeting has agreed that:

- Each State to discuss the way ahead internally on the 'File n Fly' concept, in particular enhance engagement in the Civil-Military coordination on OVFC process efficiencies
- Establish an OVFC CDM and conduct continuous meetings to address operational challenges associated with OVFC and share States best practices on facilitating and granting speedy approvals
- To have continued coordination, collaboration and dialog between States, Airlines and international organizations.

6. AOB AND CLOSING

6.3 All States were invited to share their views on the 'File n Fly' concept and their best practices on the authorization procedures during the next teleconference which will be scheduled in the last yearly quarter of 2020

ENDS

Further Explanatory Information:

- An **overflight permit** is an authorisation to enter the sovereign airspace (12 nm coastal limit if applicable) of a given country, overfly and then exit it. The issuing of an overflight permit confirms that there is no political or security objection to your airline, aircraft or country of origin / destination, and that there are no outstanding navigation fees due to the appropriate authority. Under the Chicago Convention on International Civil Aviation all contracting states permit overflight by other states, but for most national aviation authorities, prior approval is required in the form of an overflight permit. Each country has its own, associated requirements in terms of documents to be submitted, times to apply and fees to be paid

- A **landing permit** is an authorization to land at a given airport, and in addition to the above, confirms there are no safety or noise objections to your aircraft type and no commercial objection if you are operating the flight for revenue. A **special permit** is required where the aircraft is not being operated on a normal certificate of airworthiness and requires approval from the appropriate authority Ministry of Transport, this usually happens for ferry flights or flight delivery

- A **diplomatic permit** is required where the aircraft concerned is government or military. The Ministry of Foreign Affairs of the country for which you are overflying generally issues diplomatic permits.

Most countries accept applications directly from operators and/or their appointed agents. The charges for overflying, landing etc. are typically billed (to operators etc.) by the respective national aviation authority responsible for same

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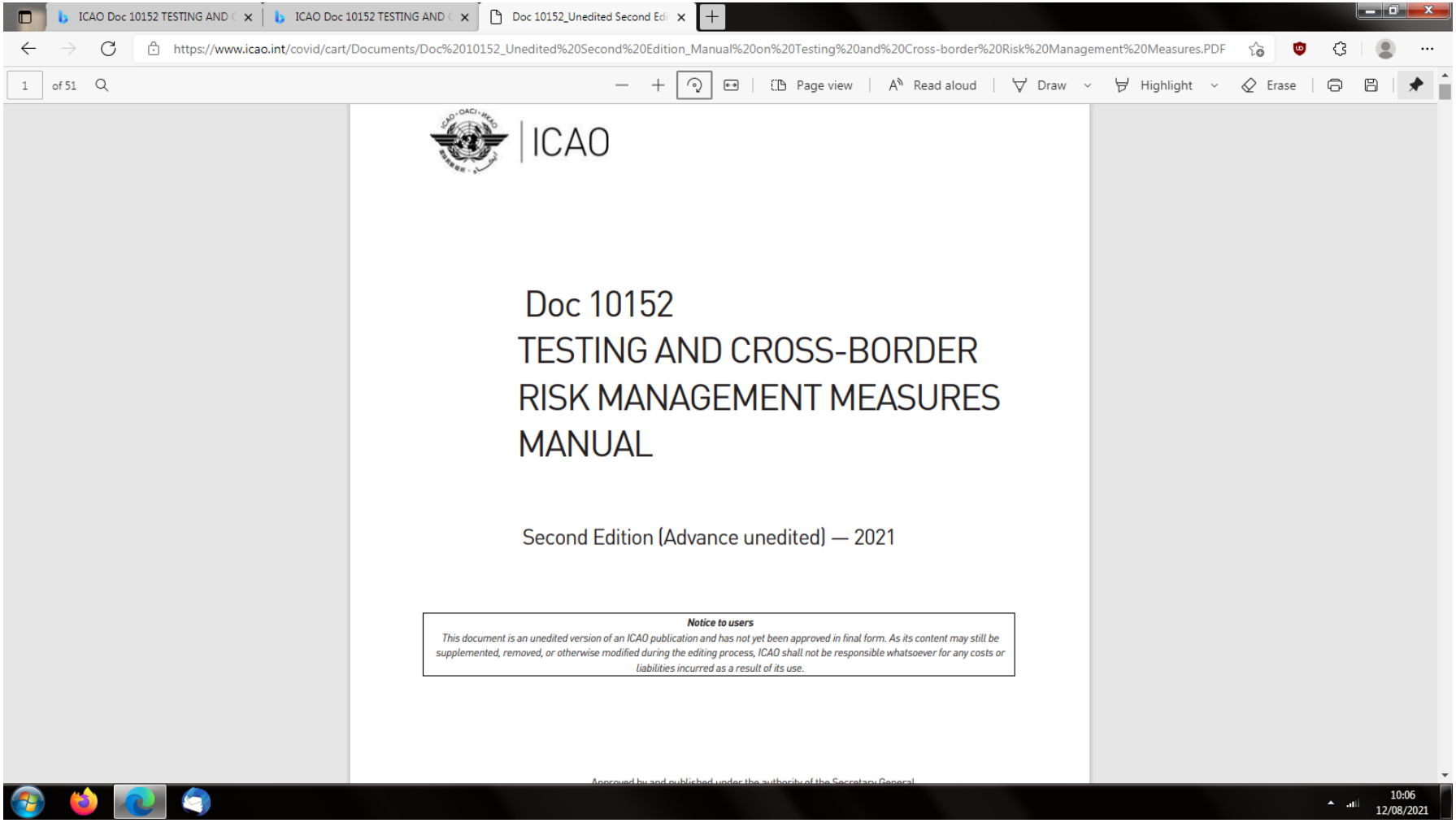
Chapter 11

Testing & Cross-Border Risk Management Measures

Lateral Flow Test for COVID 19

PCR Test for COVID-19



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FOREWORD

This manual has been prepared by aviation health experts led by the International Civil Aviation Organization (ICAO) with support from the United States Centers for Disease Control and Prevention (CDC), European Centre for Disease Prevention and Control (ECDC), Aerospace Medical Association (AsMA), and others, and it has been reviewed by the World Health Organization (WHO). Contributions from other United Nations organizations, governments and industry stakeholders ensured the practical applicability of this guidance in the aviation sector, no matter how big or small the State and no matter what scale of COVID-19challenge they face. Together these experts and stakeholders form the ICAO Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) program. CAPSCA brings together international, regional, national and local organizations to work together to improve preparedness planning and response to public health events that affect the aviation sector.

CAPSCA developed this guidance in close collaboration with the ICAO Council Aviation Recovery Task Force (CART), which requested updated guidance on the inclusion of COVID-19 testing, vaccination and its interdependencies with other risk mitigation tools for those States that choose to include testing and vaccination as elements of their overall COVID-19 risk management process.

The CART has published updated recommendations to States in the High-Level Cover Document (HLCD) including Recommendations 13 and 17 on testing, respectively quoted below:

> "While testing is not universally recommended by public health authorities as a routine health screening method, States contemplating testing in their COVID-19 risk management strategy should apply the approach outlined in the ICAO *Testing and Cross-Border Risk Management Measures Manual*."

> "Member States should implement testing certificates based on the protocol, minimum dataset and

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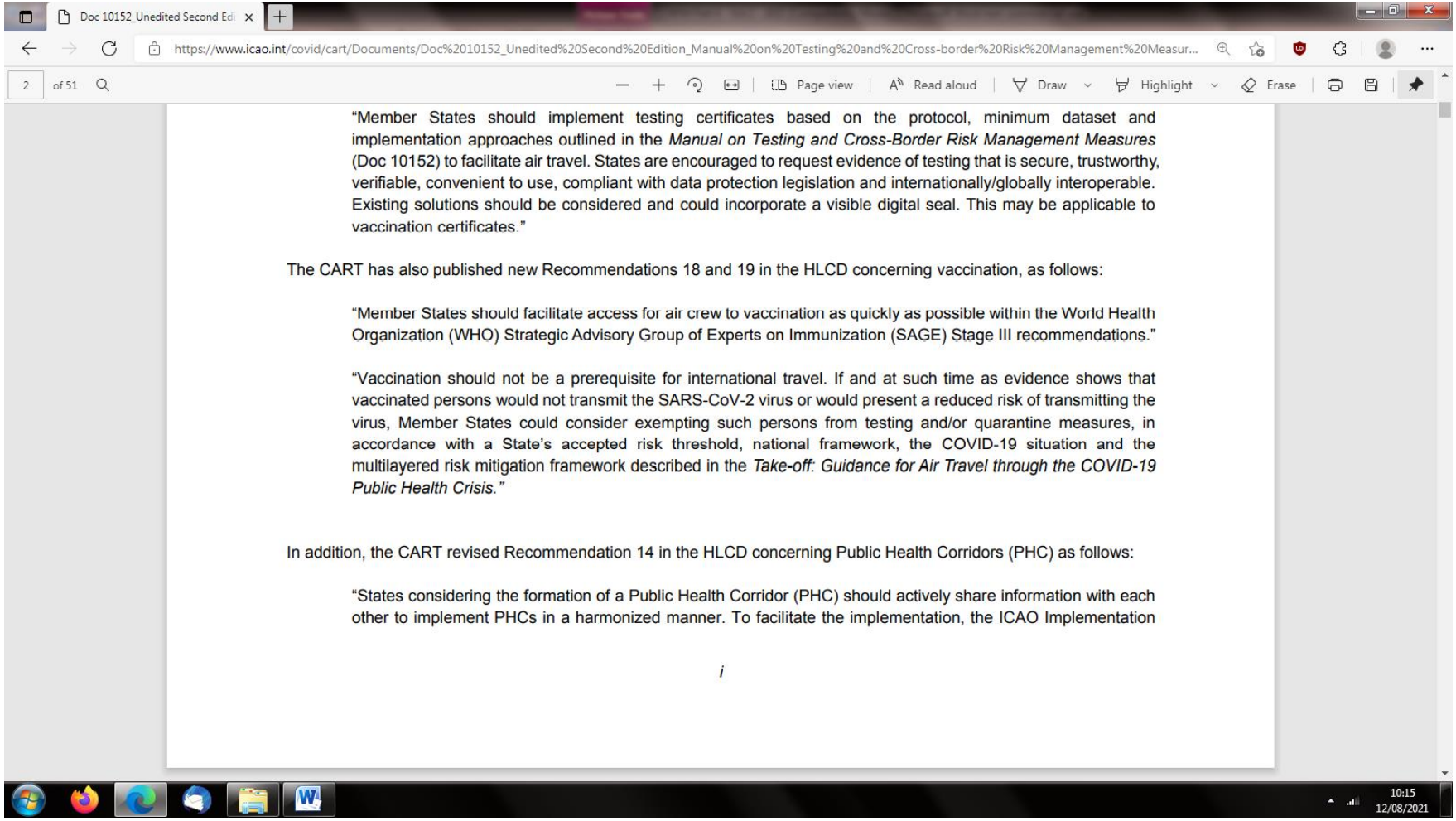

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"Member States should implement testing certificates based on the protocol, minimum dataset and implementation approaches outlined in the *Manual on Testing and Cross-Border Risk Management Measures* (Doc 10152) to facilitate air travel. States are encouraged to request evidence of testing that is secure, trustworthy, verifiable, convenient to use, compliant with data protection legislation and internationally/globally interoperable. Existing solutions should be considered and could incorporate a visible digital seal. This may be applicable to vaccination certificates."

The CART has also published new Recommendations 18 and 19 in the HLCD concerning vaccination, as follows:

"Member States should facilitate access for air crew to vaccination as quickly as possible within the World Health Organization (WHO) Strategic Advisory Group of Experts on Immunization (SAGE) Stage III recommendations."

"Vaccination should not be a prerequisite for international travel. If and at such time as evidence shows that vaccinated persons would not transmit the SARS-CoV-2 virus or would present a reduced risk of transmitting the virus, Member States could consider exempting such persons from testing and/or quarantine measures, in accordance with a State's accepted risk threshold, national framework, the COVID-19 situation and the multilayered risk mitigation framework described in the *Take-off: Guidance for Air Travel through the COVID-19 Public Health Crisis.*"

In addition, the CART revised Recommendation 14 in the HLCD concerning Public Health Corridors (PHC) as follows:

"States considering the formation of a Public Health Corridor (PHC) should actively share information with each other to implement PHCs in a harmonized manner. To facilitate the implementation, the ICAO Implementation

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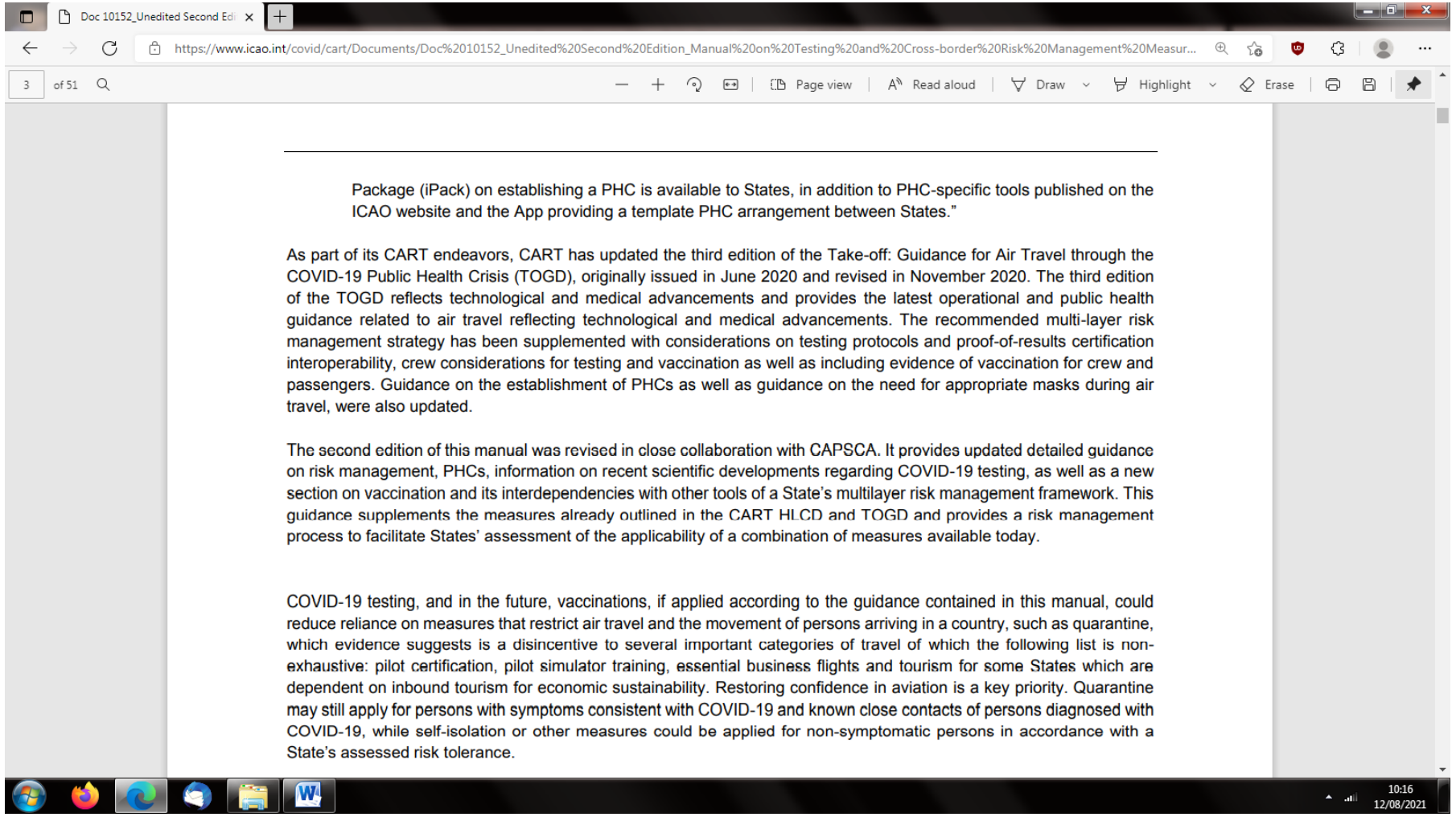
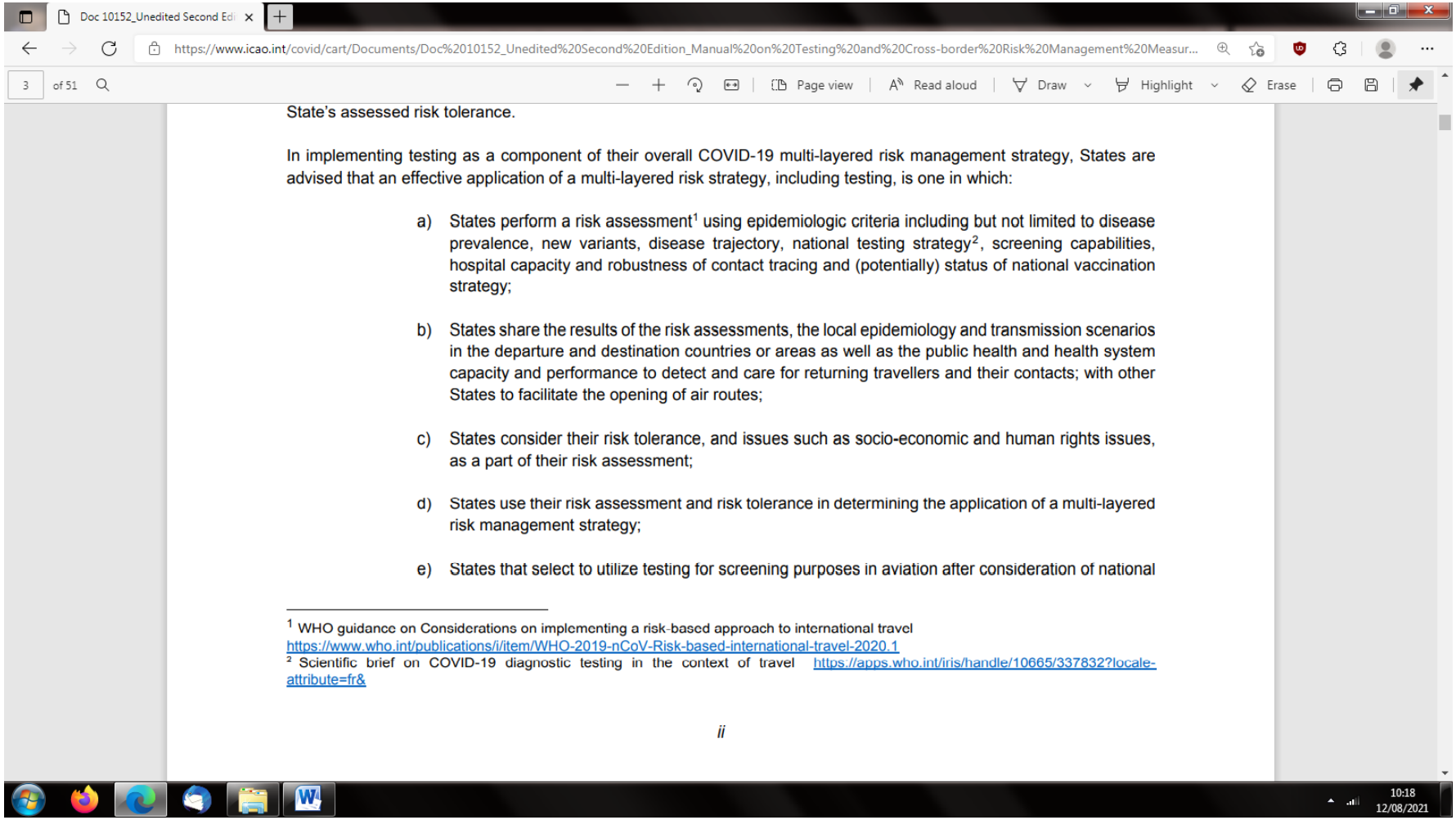


Package (iPack) on establishing a PHC is available to States, in addition to PHC-specific tools published on the ICAO website and the App providing a template PHC arrangement between States."

As part of its CART endeavors, CART has updated the third edition of the Take-off: Guidance for Air Travel through the COVID-19 Public Health Crisis (TOGD), originally issued in June 2020 and revised in November 2020. The third edition of the TOGD reflects technological and medical advancements and provides the latest operational and public health guidance related to air travel reflecting technological and medical advancements. The recommended multi-layer risk management strategy has been supplemented with considerations on testing protocols and proof-of-results certification interoperability, crew considerations for testing and vaccination as well as including evidence of vaccination for crew and passengers. Guidance on the establishment of PHCs as well as guidance on the need for appropriate masks during air travel, were also updated.

The second edition of this manual was revised in close collaboration with CAPSCA. It provides updated detailed guidance on risk management, PHCs, information on recent scientific developments regarding COVID-19 testing, as well as a new section on vaccination and its interdependencies with other tools of a State's multilayer risk management framework. This guidance supplements the measures already outlined in the CART HLCD and TOGD and provides a risk management process to facilitate States' assessment of the applicability of a combination of measures available today.

COVID-19 testing, and in the future, vaccinations, if applied according to the guidance contained in this manual, could reduce reliance on measures that restrict air travel and the movement of persons arriving in a country, such as quarantine, which evidence suggests is a disincentive to several important categories of travel of which the following list is non-exhaustive: pilot certification, pilot simulator training, essential business flights and tourism for some States which are dependent on inbound tourism for economic sustainability. Restoring confidence in aviation is a key priority. Quarantine may still apply for persons with symptoms consistent with COVID-19 and known close contacts of persons diagnosed with COVID-19, while self-isolation or other measures could be applied for non-symptomatic persons in accordance with a State's assessed risk tolerance.



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State's assessed risk tolerance.

In implementing testing as a component of their overall COVID-19 multi-layered risk management strategy, States are advised that an effective application of a multi-layered risk strategy, including testing, is one in which:

a) States perform a risk assessment[1] using epidemiologic criteria including but not limited to disease prevalence, new variants, disease trajectory, national testing strategy[2], screening capabilities, hospital capacity and robustness of contact tracing and (potentially) status of national vaccination strategy;

b) States share the results of the risk assessments, the local epidemiology and transmission scenarios in the departure and destination countries or areas as well as the public health and health system capacity and performance to detect and care for returning travellers and their contacts; with other States to facilitate the opening of air routes;

c) States consider their risk tolerance, and issues such as socio-economic and human rights issues, as a part of their risk assessment;

d) States use their risk assessment and risk tolerance in determining the application of a multi-layered risk management strategy;

e) States that select to utilize testing for screening purposes in aviation after consideration of national

[1] WHO guidance on Considerations on implementing a risk-based approach to international travel https://www.who.int/publications/i/item/WHO-2019-nCoV-Risk-based-international-travel-2020.1

[2] Scientific brief on COVID-19 diagnostic testing in the context of travel https://apps.who.int/iris/handle/10665/337832?locale-attribute=fr&

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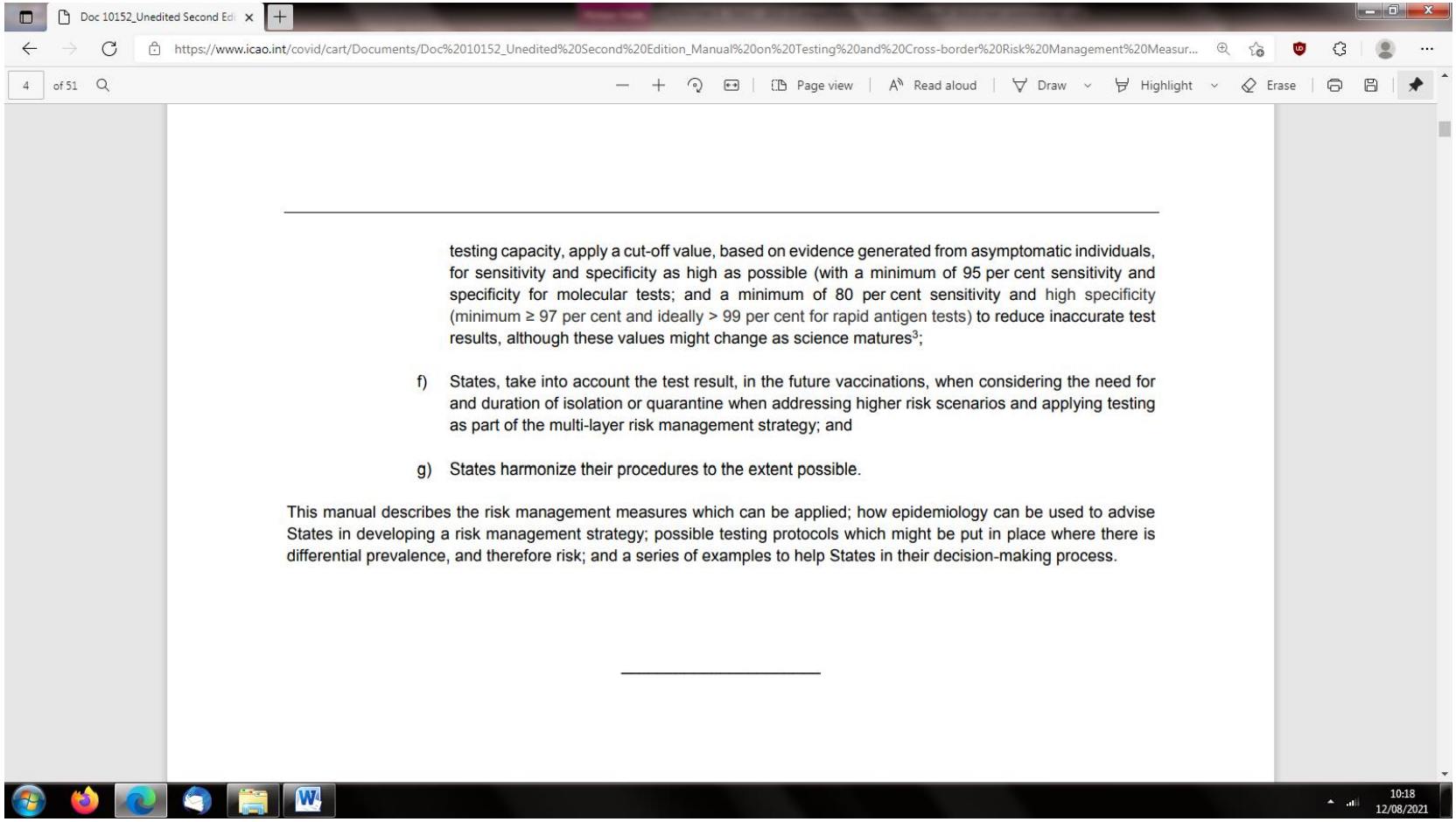

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testing capacity, apply a cut-off value, based on evidence generated from asymptomatic individuals, for sensitivity and specificity as high as possible (with a minimum of 95 per cent sensitivity and specificity for molecular tests; and a minimum of 80 per cent sensitivity and high specificity (minimum ≥ 97 per cent and ideally > 99 per cent for rapid antigen tests) to reduce inaccurate test results, although these values might change as science matures[3];

f) States, take into account the test result, in the future vaccinations, when considering the need for and duration of isolation or quarantine when addressing higher risk scenarios and applying testing as part of the multi-layer risk management strategy; and

g) States harmonize their procedures to the extent possible.

This manual describes the risk management measures which can be applied; how epidemiology can be used to advise States in developing a risk management strategy; possible testing protocols which might be put in place where there is differential prevalence, and therefore risk; and a series of examples to help States in their decision-making process.

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Chapter 1

INTRODUCTION

1.1 This guidance is intended for use by State regulators, service providers and other concerned entities, to address cross-border risk management in commercial air transport operations. The objective of the guidance is to inform States about public health risk management strategies, including those that could be applied to aviation personnel to reduce the probability of translocation (transfer) of the disease from one region to another. This document contains guidance for implementing a systematic process to identify risks related to the COVID-19 pandemic and mitigate those risks to an acceptable level as determined by each individual State. The final objective is to create a harmonized and cooperative effort to maintain global connectivity while ensuring public health security. Updates will be provided as new scientific evidence becomes available. In the future, as more States begin to plan their route out of COVID restrictions, this updated manual would offer clear guidance on how best to use public health mitigation measures including (testing and vaccination) to reduce travel restrictions and gradually return to restoring air connectivity in a safer way.

1.2 The guidance provides assessment tools that States can use to evaluate and implement measures as part of their decision-making process. For this purpose, an example of the process is presented and applied to a strategy that utilizes a range of risk mitigation measures. This guidance does not constitute a recommendation for application of any specific measure but rather a guideline on how to assess different mitigation strategies and on how they can contribute to public health risk management. As an example of this approach, the document will provide the description of a strategy based on the assessment of epidemiological indicators, testing and quarantine practices. Additional detailed guidance for States will be included as attachments by ICAO and references to the WHO publications.

1.3 This manual has been developed using the most recent information as of its publication date. The urgency, rapid development, and observed consequences of the current scenario required an expedited approach based on expert consensus and current scientific evidence. Consequently, regular updates will be required as the evidence evolves and as technology advances. Data-driven adjustments to the guidance will be made as the situation evolves.

1.4 Each State will need to conduct its own assessment and is encouraged to use the processes outlined in this manual as the basis for its assessment. Risk tolerance varies between States and depends on many factors. This has an influence on the amount of residual risk a State can accept. The determination of such level cannot be universal as it depends on specific priorities and the sovereignty of each individual State.

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APPENDICES

Appendix A

A Selection of Recommended Reading References - ***reader should check following links etc. for on-going availability, currency, usefulness, context etc.*** *(all working on date of publication)*

Note - much of the below is essential background reading (hard-going as it may be at times) for all those serious about preparing a 'fit for purpose' public health incident plan for an airline. (Whilst this guideline [the document you are reading right now] is essentially targeted at passenger airlines, some links provided relate to airports)

Pandemic (aviation related) - ***Preparation and Response*** - ***Some Useful Links***

US Government (via CDC) - **National Aviation Resource Manual for Quarantinable Disease** - Dec 2006

Note 1 - despite being prepared in 2006 (and thus not benefitting from 'lessons learned' from the swine-flu pandemic of 2009-2010 ***and*** COVID-19 pandemic of 2020-2022) - ***this is nevertheless still a useful reference to use in both airline and airport incident response planning for the influenza pandemic scenario*** (and similar communicable disease e.g. a ***coronavirus*** pandemic similar to COVID-19)

Of particular note is detailed reference to the set-up and operation of 'mass' quarantine holding facilities ***which, in certain parts of the world,*** may need to be implemented ***in the main by the concerned airline and / or airport - perhaps with minimal support from government and similar 'official' authorities at national, regional and local levels. This particularly*** *(but not exclusively)* ***pertains to some 'developing' and most 'least developed' counties*** *(as categorised by the United Nations)*. The main areas of interest will be found in Sections 5, 6, 7 and 9 - together with Appendix G (the latter providing a basic example of a mass quarantine plan for airports)

Note 2 - The above document has now been 'retired' by CDC. However, it ***may*** be possible to still find it via the above link - or via an internet search using the search words ***'National Aviation Resource Manual for Quarantinable Disease - Dec 2006'***. It is probably worth trying to find it!

Note 3 - The following provides various ***aviation*** related links which readers might find useful - from 'public health incident' (pandemic etc.) viewpoints:

Article - 27 Oct 2020
20-10-27 Almost 200 European airports facing insolvency in coming months PRESS RELEASE.pdf (aci-europe.org)

Article - 8 Dec 2020
A final call for passengers: How airports will change after the pandemic | E&T Magazine (theiet.org)

WHO - Pandemic Influenza Risk Management - 1 May 2017 (Note: ***Most*** content relates to ***2013*** and ***earlier*** - thus requiring update [if reader so desires and is so 'capable'] to incorporate 'lessons learned' from the 2020-2022 COVID-19 pandemic)
WHO-WHE-IHM-GIP-2017.1-eng.pdf;jsessionid=E305B31B325AA695E67D89537691FCB1

WHO - International Health Regulations - 11 July 2016 (Note: Requires update [if reader so desires and is so 'capable'] to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic)
International Health Regulations (2005) Third Edition (who.int)

WHO - Handbook for the Management of Public Health Events on Air Transport - 2015 (Note: Requires update [if reader so desires and is so 'capable'] to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic)
OMS-Transport Handbook-US.indd (who.int)

WHO - Guide to Hygiene & Sanitation in Aviation - **3rd** edition 2009. (Note: Requires update [if reader so desires and is so 'capable'] to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic)
https://apps.who.int/iris/handle/10665/44164?search-result=true&query=Guide+to+Hygiene+and+Sanitation+in+Aviation&scope=&rpp=10&sort_by=score&order=desc

WHO - Emergencies - Disease Outbreak News (DON) - site continually updated?
https://www.who.int/emergencies/disease-outbreak-news

WHO public health checklist for controlling the spread of COVID-19 in aviation - late 2021
https://apps.who.int/iris/handle/10665/346701

ACI - **https://www.aci-europe.org/industry-topics/covid-19.html** - site continually updated?

ACI - Airport Preparedness Guidelines for Outbreaks of Communicable Disease - ACI / April 2009. (Note: Requires update [if reader so desires and is so 'capable'] to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic) **https://aci.aero/wp-content/uploads/2021/08/Airport-Preparedness-Guidelines-For-Outbreaks-of-Communicable.pdf**

ACI - Airport Updates re Outbreaks of Communicable Disease - ACI / site continually updated
https://aci.aero/About-ACI/Priorities/Health/

ACI - COVID-19 - Some useful links and resources (some will probably become non-functional, as the adverse impacts of COVID-19 on aviation diminish [relatively speaking] with time)
https://aci.aero/advocacy/health/covid-19/

IATA - Public Health Emergency Preparedness - Fact Sheet - Nov 2020 (as updated)
IATA Fact Sheet

IATA - Operational Considerations - Managing COVID-19 Cases / Outbreak in Aviation - March 2020 (not updated)
https://apps.who.int/iris/bitstream/handle/10665/331488/WHO-2019-nCoV-Aviation-2020.1-eng.pdf

IATA - Air Transport & Communicable Diseases - IATA / site continually updated
https://www.iata.org/en/programs/safety/health/diseases/

IATA - COVID-19 Resources for Airlines & Air Transport Professionals - COVID-19 pandemic related. (Note: some content might become 'non-functional', as the adverse impacts of COVID-19 on aviation diminish [relatively speaking] with time)
https://www.iata.org/en/programs/covid-19-resources-guidelines/

IATA - Passengers - generally COVID-19 pandemic related. (Note: some content might become 'non-functional', as the adverse impacts of COVID-19 on aviation diminish [relatively speaking] with time)
https://www.iata.org/en/programs/passenger/

IATA - Communicable Diseases and Pandemic - Useful Resources (Note: Will require update [if reader so desires / is so 'capable'] to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic)

Based on past experience with different 'outbreaks' etc., IATA has produced an **Emergency Response Plan and Action Checklist** (pdf) (Jan 2018), for use by air carriers in the event of a public health emergency. ***An important part of this document involves a series of guidelines and best practices for airline and related staff - for use in the event of public health emergencies.*** (Click on any of the links below to view these guidelines and best practices): Note: links might 'break' / become outdated etc. with the passage of time. It is for the 'interested' reader / user to 'find and update' them accordingly - if so relevant / as required

- **Crew health precautions during pandemic** (July 2021)
- **Guidance for Cabin Operations During & Post Pandemic - Edn 5 - 18 May 2021**
- **Cabin Announcement Scripts** (Dec 2017 - Updated to 19 Feb 2020)
- **Universal Precaution Kit** (Dec 2017 - Updated to Feb 2020)
- **Cabin Air Quality Brief** (Jan 2018 - Updated to Feb 2020)
- **Bird Strike** (Dec 2017)
- **Maintenance Crew** (December 2017 - Updated to Feb 2020)
- **Cargo & Baggage Handlers** (December 2017 - Updated to Feb 2020)
- **Cabin Crew** (December 2017 - Updated to Feb 2020)
- **Cleaning Crew** (December 2017 - Updated to Feb 2020)
- **Passenger Agents** (December 2017 - Updated to Feb 2020)
- **Passenger Locator Form** (Sep 2012) - needs update to reflect 'lessons learned' from COVID-19 pandemic

ICAO - Public Health & Aviation - Undated (probably too old to be of any use as at July 2021) - i.e. it requires update to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic)
http://www.icao.int/safety/aviation-medicine/Pages/guidelines.aspx Includes some useful sub-sections, the most important / useful of which is the one entitled 'ICAO Guidelines for States (Countries)'

ICAO - Managing Communicable Disease in Aviation - ICAO - Site continually updated?
http://www.icao.int/safety/aviation-medicine/Pages/healthrisks.aspx

ICAO / Procedures for Air Navigation Services - ATM - Doc 4444 ATM / 501 (October 2009. Is it of any use in 2021?)
https://ifalpa.org/publications/library/changes-to-communicable-disease-notification-procedure--1522

ICAO -Collaborative Arrangement for the Prevention & Management of Public Health Events in Civil Aviation (CAPSCA) - ICAO - Site continually updated? (Might require update to incorporate 'lessons learned' from 2020-2022 COVID-19 pandemic???) - **https://www.icao.int/safety/CAPSCA/Pages/default.aspx**

ICAO - **Public Health Events & Aviation (icao.int)** (ICAO - Site continually updated?)

ICAO - Council Aviation Recovery Task-force (CART) (ICAO - Site continually updated?)
- **https://www.icao.int/covid/cart/Pages/default.aspx**

CDC - Preventing Spread of Disease on Commercial Aircraft - Guidance for Cabin Crew - (CDC - 30 August 2019 i.e. before the COVID-19 pandemic of 2020 - 2022)
https://www.cdc.gov/quarantine/air/managing-sick-travelers/commercial-aircraft/infection-control-cabin-crew.html

CDC - Travel Industry Resources - latest news (USA perspective) - (CDC - continually updated)
http://wwwnc.cdc.gov/travel/page/travel-industry-information-center

CDC - Interim Guidance for Transporting or Arranging Transportation by Air into, from, or within the United States of People with COVID-19 or COVID-19 Exposure - (CDC Jan 2021)
https://www.cdc.gov/quarantine/interim-guidance-transporting.html

CDC - Updated Interim Guidance for Airlines and Airline Crew: Coronavirus Disease 2019 (COVID-19) - (CDC May 2021) **https://www.cdc.gov/quarantine/air/managing-sick-travelers/ncov-airlines.html**

CDC - Guide to Masks (General) - (CDC - 25 Oct 2021)
https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html

CDC - Air Travel Toolkit for Airline Partners - (CDC - 28 December 2021)
https://www.cdc.gov/coronavirus/2019-ncov/travelers/airline-toolkit.html

ACRP - Synthesis Report 83 - Preparing Airports for Communicable Diseases on Arriving Flights (USA sourced document - 2018) - **http://www.trb.org/Publications/Blurbs/176419.aspx**

ACRP - Report 91 - Infectious Diseases Mitigation in Aircraft and at Airports (USA sourced document - Updated 2021) **http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_091.pdf**

FAA (Federal Aviation Administration - USA) - Safety Alert for Operators (SAFO) / May 2021 / COVID-19.
SAFO20009, COVID-19: Updated Interim Occupational Health and Safety Guidance for Air Carriers and Crews. (faa.gov)

EASA (European Union Safety Agency) - Unruly Behaviour On-board Aircraft (3 April 2019)
https://www.easa.europa.eu/newsroom-and-events/press-releases/not-my-flight-campaign-draws-attention-safety-impact-unruly

EASA **https://www.easa.europa.eu/the-agency/faqs/passenger-health-safety-covid-19** (9 June 2020)

EASA - Guidance on Management of Crew Members in relation to the SARS-CoV-2 pandemic (30 June 2020)
https://www.easa.europa.eu/document-library/general-publications/guidance-management-crew-members

EASA - Review of Aviation Safety Issues Arising from COVID-19 Pandemic - Version 2 (April 2021)
https://www.easa.europa.eu/community/system/files/2021-05/Review%20of%20Aviation%20Safety%20Issues%20From%20COVID-19%20Final%20-%20v2%20-%20April%202021.pdf

EASA - COVID-19 Aviation Health Safety Protocol / Issue no: 03 / Operational Guidelines for the Management of Air Passengers and Aviation Personnel in relation to the Covid-19 Pandemic (17 June 2021)
https://www.easa.europa.eu/sites/default/files/dfu/Joint%20EASA-ECDC%20Aviation%20Health%20Safety%20Protocol%20issue%203.pdf

EASA **https://www.easa.europa.eu/easa-covid-19-resources** (19 July 2021)

Other Articles - Various

New England Journal of Medicine - Article 'Pandemic Preparedness & Response - Lessons Learned from the H1N1 Influenza of 2009' - Updated to 03 April 2014, by - * Harvey V Fineberg - MD PhD

* '.....Implementation of the International Health Regulations (2005): report of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to pandemic (H1N1) 2009 - Geneva: World Health Organization, ***May 5, 2011***.....' (Mr Fineberg was Chairperson of this Review Committee)
https://www.nejm.org/doi/pdf/10.1056/NEJMra1208802

Air Travel & Communicable Diseases - USA (June 2020) **https://www.gao.gov/products/gao-20-655t**

Medical Journal of Australia - Efficacy of airport arrivals screening (Sydney Airport) during swine-flu pandemic of 2009 (Conclusion - Screening is almost certainly non-effective in terms of the 'bigger picture' i.e. it is probably not worth doing). **https://www.mja.com.au/journal/2014/200/5/airport-arrivals-screening-during-pandemic-h1n1-2009-influenza-new-south-wales** (2014)

Scientific American (November 2020). **https://www.scientificamerican.com/article/evaluating-covid-risk-on-planes-trains-and-automobiles2/**

Commercial Aviation to Face a Pilot Shortage post COVID-19 Pandemic (March 2021)
https://www.oliverwyman.com/our-expertise/insights/2021/mar/after-covid-19-aviation-faces-a-pilot-shortage.html

EMBRY RIDDLE Aeronautical University (July 2021) - *Impact of COVID-19 on Airline Industry…… and Strategic Plan for its Recovery (with special ref. to 'Data Analytics' technology)* **https://commons.erau.edu/publication/1564/**

Journal of Air Transport Management - Study / Report valid June 2021 re 'Airline Crisis Communications (Dealing with the public; the Media etc.) vs COVID-19'. (Although this study is dated August 2021, it was actually conducted around mid-2020 and involved a selection [30+] of European Union airlines only (Might be worth a read by airline Corporate Comms / PR departments / business units etc.)
https://www.sciencedirect.com/science/article/pii/S0969699721000867

Journal of Air Transport Management (July 2021) - *Study / Report valid March 2021 re 'COVID-19 pandemic and air transportation: Successfully navigating the paper hurricane'*
https://www.sciencedirect.com/science/article/pii/S0969699721000454

Statista - Covid-19 Coronavirus Pandemic - Impacts on Aviation Worldwide - Facts & Statistics - December 2021)
https://www.statista.com/topics/6178/coronavirus-impact-on-the-aviation-industry-worldwide/#dossierKeyfigures

From pilots to ramp agents - U.S. airlines go all out to staff up - (November 2021)
https://www.reuters.com/markets/commodities/pilots-ramp-agents-us-airlines-go-all-out-staff-up-2021-11-23/

Was a Leak from a Wuhan (China) Laboratory the Likely Origin of the COVID-19 Coronavirus? - (December 2021)
https://www.dailymail.co.uk/news/article-10313053/Covid-19-UK-Wuhan-lab-leak-likely-origin-Covid-MPs-told.html

Note: If above article fails to open & you still wish to view, please email the following address and request a copy:

info@aviation-erp.com

ICAO Press Release – 44 / 27 September 2022 / High Expectations on Sustainability and Pandemic Preparedness at 41st ICAO Assembly
https://www.iata.org/en/pressroom/2022-releases/2022-09-27-3/

Appendix B1

It is recommended that the 'professional / serious / otherwise interested' reader takes a look at the document (dated October 2020) found at the end of the below link:

https://cdn1.sph.harvard.edu/wp-content/uploads/sites/2443/2020/10/HSPH-APHI-Phase-I-Report.pdf

A reproduction of the title page of the above document is shown on the next 2 pages:

HSPH-APHI-Phase-I-Report.pdf - Adobe Acrobat Reader DC (32-bit)

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HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

NATIONAL PREPAREDNESS LEADERSHIP INITIATIVE

HARVARD Kennedy School Center for Public LEADERSHIP

The National Preparedness Leadership Initiative is a joint program of the Harvard T.H. Chan School of Public Health and the Harvard Kennedy School of Government, Center for Public Leadership

Aviation Public Health Initiative

Assessment of Risks of SARS-CoV-2 Transmission During Air Travel and Non-Pharmaceutical Interventions to Reduce Risk

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HSPH-APHI-Phase-I-Report.pdf - Adobe Acrobat Reader DC (32-bit)

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Phase One Report:

Gate-to-Gate Travel Onboard Aircraft

Prepared by

Faculty and Scientists at the

Harvard T.H. Chan School of Public Health

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Appendix B2

It is further recommended that the 'professional / serious / otherwise interested' reader takes a look at the document (dated February 2021) found at the end of the below link:

https://www.researchgate.net/publication/349393219_Aviation_Public_Health_Initiative_Assessment_of_Risks_of_SARS-CoV-2_Transmission_During_Air_Travel_and_Non-Pharmaceutical_Interventions_to_Reduce_Risk_Phase_Two_Report_Curb-to-Curb_Travel_Through_Airp

(When webpage opens click on button entitled 'Download full-text PDF')

A reproduction of the title page of the above document is shown on the next 2 pages:

Note: The above document relates to ***airports***. It is included herein as just about every passenger taking a flight on a commercial airline needs to pass through an associated, commercial airport of some type

Thus, from major public health 'incident' viewpoints (particularly very serious matters such as the devastating 2020 - 2022 COVID-19 pandemic) airlines need to correlate their own, associated public health incident plans with those of the airports at which they operate

For more on airport specific public health incident planning and response, see our separate guideline documents (***AEP*** Volumes 1 and 2) via:

https://aviationemergencyresponseplan.com/airport-emergency-plan-aep/

Harvard-APHI-Phase-Two-Report.pdf - Adobe Acrobat Reader DC (32-bit)

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HARVARD Kennedy School Center for Public LEADERSHIP

The National Preparedness Leadership Initiative is a joint program of the Harvard T.H. Chan School of Public Health and the Harvard Kennedy School of Government, Center for Public Leadership

Aviation Public Health Initiative

Assessment of Risks of SARS-CoV-2 Transmission During Air Travel and Non-Pharmaceutical Interventions to Reduce Risk

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Harvard-APHI-Phase-Two-Report.pdf - Adobe Acrobat Reader DC (32-bit)

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Phase Two Report:

Curb-to-Curb Travel Through Airports

Prepared by

Faculty and Scientists at the

Harvard T.H. Chan School of Public Health

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Appendix B3

It is further recommended that the 'professional / serious / otherwise interested' reader takes a look at the document (dated January 2021) found at the end of the below link:

https://www.researchgate.net/publication/348366794_Inflight_Transmission_of_COVID-19_Based_on_Aerosol_Dispersion_Data/link/5ffaf62245851553a033f3fe/download

(When webpage opens click on button entitled 'Download full-text PDF')

The above document might be 'hard reading' for some, but might be worth persevering with if the interest is there???

In the above document some cross-referencing is made to the following report

([14] = the ***initial*** issue of said report and [15] = the ***final*** version)

[14] Silcott D, Kinahan S, Santarpia J, et al, *TRANSCOM/AMC Commercial Aircraft Cabin Aerosol Dispersion Tests*, Submitted to: United States Transportation Command (USTRANSCOM) & Air Mobility Command (AMC), 2020. Initial issue - 15 Oct 2020

[15] Silcott D, Kinahan S, Santarpia J, et al, *TRANSCOM/AMC Commercial Aircraft Cabin Aerosol Dispersion Tests*, Submitted to: United States Transportation Command (USTRANSCOM) & Air Mobility Command (AMC), 2020. Final issue - 17 Nov 2020

The report cross-referred to in [15] just above can be found at:

https://www.usTRANSCOM.mil/cmd/docs/TRANSCOM%20Report%20Final.pdf

NB: Updated information relating to the general 'limitations' (and thus usefulness in the context of the COVID-19 pandemic and its potential spread on board passenger aircraft) **of the report** (referred to in the link immediately above) **was issued some considerable number of months after its initial issue. For reader context, it is reproduced on the next two pages**:

TRANSCOM Report Final-2.pdf - Adobe Acrobat Reader DC (32-bit)

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Revision to "TRANSCOM/AMC Commercial Aircraft Cabin Aerosol Dispersion Tests"

After seeing some initial reactions to the study, the authors of this study are concerned about the potential misinterpretation of the findings, based on some hypothetical calculations originally included as discussion points. In particular, the viral aerosol production rates, infectious dose and general assumptions used to estimate a flight time of 54 hours to produce an infection are hypothetical and were not designed to provide actionable information about viral risk during flight, safe flight times or seating capacity.

As described in the report, the assumption of 4000 virions/hour is based exhaled breath studies of other human coronaviruses [1], and idealized estimates derived from studies of SARS-CoV-2 aerosol in patient rooms [2,3]. While the number is reasonable given the context of Leung et al., it is not meant to be representative of the range of possible source terms. For instance, Jianxin et al.[4] report estimates of 1.03×10^5 to 2.25×10^7 virus/hour produced by infected individuals in exhaled breath. In more closely examining the range, however, it is clear these estimates were derived from 14 of the 52 individuals studied, and that the other individuals had no detectable virus in their exhaled breath. It is also critical to note that ***all*** of the estimates of virus in exhaled breath are based on viral RNA copy numbers derived from rRT-PCR, not infectious virus. While on the face of it, it may appear reasonable to estimate concentrations of infectious virus using RNA copy data, the relationship is likely more complex. For instance, La Scola et al. [5] were unable to isolate infectious virus from nasal pharyngeal samples with a

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TRANSCOM Report Final-2.pdf - Adobe Acrobat Reader DC (32-bit)

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instance, La Scola et al. [5] were unable to isolate infectious virus from nasal pharyngeal samples with a Ct greater than 34 for the E gene of SARS-CoV-2. . Fabian et al. [6] found that laboratory stocks of influenza virus had a RNA copy to infectious virus ratio of 300, when comparing RT-PCR results to tissue culture. SARS-CoV-2 grown in Vero E6 cells also shows many RNA copies per pfu (Santarpia unpublished data). Therefore, determining infection risk from viral RNA copies is not currently possible.

The infectious dose of SARS-CoV-2 in humans is also unknown. There are a number of studies that attempt to estimate it (e.g. . Basu, 2020; Schröder, 2020, Watanabe, et al. 2010), and several studies of infections in animals (e.g. Ryan, et al. 2020), but no current study determines an infectious dose in any species, much less humans

Finally, the data in this study is relevant only to a single mode of transmission: aerosol. Contact transmission and droplet transmission are not considered. Furthermore, the impact of human behavior on aerosol transport in the airframe was not considered. Movement of people up and down the aisles, or even simply the act of turning your head to talk to your neighbor could not be considered. Human actions have been shown to significantly contribute to aerosol movement in the built environment (e.g. Wang and Chow [7]), and therefore the results of this study represent a baseline understanding of how the aircraft air-handling systems impact the transport of aerosols throughout the aircraft.

Taken in context, the data from this study indicate that the airplane environment significantly reduces the exposure to aerosol generated by passengers, especially compared to other indoor environments. However, ***the current established scientific understanding of SARS-CoV-2 transmission dynamics is not sufficient to calculate definitive SARS-CoV-2 transmission risk from these measurements of aerosol transport.***

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Appendix C

Non-Compliances

Reports from (USA) ALPA Pilots on Unsatisfactory Covid-19 Precautions

(Published [by ALPA] 14 Sep 2020) - Next 14 Pages

Key: • Inadequate Cleaning • Symptoms / Possible Interaction with Sick Person • Inadequate Supplies • Missing / Unclear Communication From Company • Questions / Comments

http://www.alpa.org/-/media/ALPA/Files/pdfs/news-events/press-release-content/2020/airline-noncompliance-covid-19.pdf

AIRLINE 1

- Report - 04/15/2020: Each contracted cleaner is using a different disinfectant, not sure of everything that is being used at the moment
- Report - 04/15/2020: Supplies are hard to come by. While the company is trying to stock every aircraft with cleaning materials, they get raided by employees
- Report - 04/15/2020: The Company is slow to adapt if something needs to be fixed it could easily take 3 weeks - 2 months in the process

AIRLINE 2

- Report - March 2020: There are reports of Sani Coms still being used on aircraft
- Report - 03/27/2020: Just tested positive for Covid-19 yesterday. Caught Covid-19 from captain I flew with on 27 March who texted me that he had tested positive too. Symptoms started 2 April
- Report - 03/19/2020: Flight from LAX to XXX. Passenger (one empty seat over from me) coughing, sneezing and noticeably sweating. Felt onset of Coronavirus on March 22 - EXTREME fatigue, occasional cough and slight fever. Checked with personal physician, ALPA aeromedical physician and LEC Chairman who all recommended that I self-quarantine for 14 days. Missed two trips / 24 March and 1 April
- Report - 03/08/2020: Symptoms started on flight to CDG after layover in NYC. I was seen by a Dr. in my hotel room and called in sick / delayed return home. Mild fever, body and heads ache, bad cough. No C19 test available. I returned home when fever broke. When are C19 antibody tests available to see if I had it?
- Report - 04/10/2020: Will wetting a surface with common hydrogen peroxide adequately kill Covid-19
- Report - 04/19/2020: Symptoms on 19 April. Tested on 20 April. Test result positive on 22 April
- Report - 04/17/2020: There were no Matrix3 wipes on-board the aircraft so we could not disinfect the Flight deck. Flight Ops published a video saying that all of our aircraft would have them. We did not. We did have two small packets of Purell alcohol wipes for each pilot and gloves for each pilot. That was it!
- Report - 04/18/2020: There were no Matrix 3 wipes on-board the jet. Only Purell wipes (two small packs per pilot) to clean the flight deck. Gloves were provided. According to Flight Ops, there should have been Matrix 3 wipes on-board
- Report - 04/27/2020: Matrix 3 wipes, the only product to kill the COVID-19 virus was not available on the aircraft. Flight Ops some weeks ago, in their video, said that every aircraft would have the Matrix 3 wipes on board. The response from the company was “we are out of them, and the supplier is having a hard time keeping up”. Also, why isn’t the union forcing the government and airlines to require each and every passenger to wear a mask? It doesn’t make sense to me. ALPA is not doing enough to protect our lives and our family

- Report - 04/27/2020: Picked up by the Hotel Airport crew vehicle (at XXX airport) marked “CREW ONLY”. The vehicle was completely full of crew - most of whom did not wear masks. We were shoulder to shoulder. If someone had COVID-19, we all will get it. It’s very unsafe to come to work every week
- Report - 04/28/2020: I was on a hotel crew vehicle this morning from the XXX Airport hotel and the van was so full with crew members that 3 pilots were standing in the aisle. There were 18 people on-board including the driver. Those pilots seated were shoulder to shoulder - with most not wearing a mask. If one crewmember had COVID-19, we could all get it on the 10 min. ride to the airport. I see this over and over. It’s not safe to come to work anymore
- Report - 05/10/2020: Upon arrival at the plane in XXX, there were no matrix 3 wipes and no flight kit cleaning bag. These were supposed to be a no-go item when the plane left XXX
- Report - 05/09/2020: My observation is that only about 50% of the LAS TSA agents were wearing masks. I know it’s not required yet by TSA agents, but just an observation. It’s no wonder that well over 500 TSA agents have COVID-19, as they don’t seem to care about their own health or that of others
- Report - 05/10/2020: Upon exiting the secure area of the airport, I noticed several TSA workersat the passenger checkpoint were not wearing masks. Whilstit’s not required yet for TSA to wear masks, I think it’s foolish not to do so now. I guess they don’t care about the passenger s’ or crews’ health?
- Report - 05/10/2020: I observed that 100% of the TSA agents were wearing masks including at KCM (The KCM agent said they are required to wear masks at LAX. It’s still not required at LAS or DTW, as I observed yesterday and today)
- Report - 03/25/2020: I am reporting now because my family and I were tested for the antibody via a blood test on May 12 and just found out today (May 14) that I am positive for the antibody. My family members were negative. I was never tested for the virus. Before it was revealed that loss of taste and smell was a symptom, I did lose my sense of taste and smell on the day of a return flight XXX to XXX. I realised it when I got my crew meal in the cockpit, with no other real symptoms. In fact I had my temperature taken at the airport in XXX upon arrival and had no fever. I then flew (XXX and back again) on April 1-2, thinking I was fine and still with no other symptoms. I started to hear shortly after that trip that loss of taste and smell was an official symptom. I lost senseof taste for approx 12 days (starting March 25) and lost sense of smell for approx 3 to 4 weeks. I have been completely back to normal since approx April 22. I did self-quarantine at home after returning from XXX for about 3 weeks just to be safe, even though I had no other symptoms. The next time I went to work was May 14 for recurrent training, so I have not had any exposure to COMPANY personnel. I’m not sure if this is important to report at this time because it has been so long, but thought the data may be relevant
- Report - 05/15/2020: How is it that we are not regularly tested for Covid since we are considered to be essential front line employees and are potentially exposed to the virus every day at work?

- Report - 06/03/2020: I went into the XXX pilot lounge at 4pm. I was the only person in the place wearing a mask. I even saw a Chief pilot talking with no mask. Our pilots are careless!
- Report - 07/15/2020: Why don't they install a plasma filtration system & use the anti-viral properties of the ozone scrubbers to lower virus in the air?
- Report - 07/27/2020: My Navy Reserve squadron had a COVID outbreak and the CO directed everyone to self-isolate for two weeks. I am trying to find out the process to notify the company of this to see if it falls under the government quarantine part of the LOA. My issue is that I am scheduled to go to CQ tomorrow, so need an answer quickly. Thank you
- Report - 07/31/2020: I would like to make mention for the association to possibly gather more details or if others have expressed concerns or issues. During July I have flown a normal schedule (approx 75 flight hours). I have concerns that chemicals and disinfectants being used in the aircraft cleaning process are causing an irritation issue for me. When flying, I am noticing a throat irritation causing dryness + allergy type draining of the nostril and back of the throat. I ensure that I am not on board during the sanitation process itself
- Report - 08/12/2020: I was very sick in February before COVID testing was readily available. I have since had two antibody tests and both came back positive. Recently I have developed a cough that is similar to the COVID cough. But I am not sick and I've been tested for active COVID and it was negative. So I'm wondering if this cough is an after effect of having COVID. Are there any COVID after-effects documented? At what point should I go back to a doctor? I've had this lingering cough for a couple of weeks. Also does ALPA have any resources for donating plasma for antibody help?

AIRLINE 3

Report - March 2020: There is poor communication regarding the cleaning of aircraft. There was a potential case on a JFK to XXX flight but since the case was never confirmed positive, we are unsure whether or not the aircraft was subsequently cleaned?

AIRLINE 4

- Report - 04/15/2020: Airline 4 is unable to answer any questions regarding the cleaning process or materials provided to crews. We are unsure if there is communication problems with the companyor if they are still working on a plan of action
- Report - 03/19/2020: As requested by recent email, I am submitting this DART relating to SAFO 20009. I contacted the company scheduling department evening of March 19 stating that I was ill, was headed to the ER and would not be available for work the next day. The ER diagnosed me as having COVID-19 (later proven correct when a POSITIVE result occurred on my test kit from the ER). I called scheduling again in the early morning of March 20th and advised them that the hospital as well as the local Health Department had advised me the entire crew shouldbe considered infected. Scheduling did not remove the rest of my crew from their flights and they continued the rest of the 4-day trip

The company did not advise anyone I had flown with of my diagnosis and (thus) their probable infection. I was forced to try and reach out through friends etc. and other non-standard methods to contact the multiple crew members I had flown with - to advise them of my confirmed positive infection. The company refused to remove these pilots from work, and most of them continued to be scheduled for work by the company. I believe one or two utilised their sick time and own expense to not go to work. I tried to have the company contact my crew members by asking for it over telephone and by email several times. This never occurred. Attached is one of the emails I sent to the company advising them the health department had contacted me asking those crew members to be quarantined or at least be advised that they might possibly be infected?

- Report - 04/23/2020: No sanitising wipes of any kind were available prior to our flight today. I have been off and away from airports since 3/25 so I don't know if this is a recurring problem. The flight attendant implied they almost never can acquire the wipes. My first officer mentioned that she had not seen any coming from the company but had gotten some from her previous captain, who had brought his own from home. This is why we need the FAA to enforce having the necessarycleaning supplies and/or cleaning the cockpit between crews. Without enforcement we will be unlikely to get the supplies we desire
- Report - 05/01/2020: Flew Flight XXXX into Buffalo and deadheaded out on the a/c as it returned to ORD. No specialised cleaning was done in the cabin nor was there any cleaning of the flight deck. Crew PPE has improved. Each segment is provided with four masks, rubber gloves and four alcohol wipes
- Report -05/03/2020: Company did not enact enhanced cleaning procedures promised during an aircraft turn-around from airport XXX to airport YYY. Company is supposed to be providing PPE per segment (masks, sanitizerwipes, sanitizer gel), but it was not provided on this flight segment and appears to be provided inconsistently. Company adherence to enhanced cleaning procedures is in need of improvement
- Report - 05/09/2020: At the out station the cleaning crew came on and "wiped" down the plane before the customers boarded. It seemed to be Clorox or at least in a Clorox bottle which seems like a good start. The problem was the only part of the passenger seats that was wiped down was the seat itself. Not the area that passengers touch constantly e.g. seatbelts, window shades, arm restsetc. Also the entire plane was supposedly wiped down in less than 10 minutes which I find impossible since it takes me over 10 minutes to wipe down the things I touch in the flight deck alone
- Report - 05/09/2020: The Company continues to provide only limited numbers of sanicoms to wipe down the cockpit and headsets for each day. With multiple aircraft changes, the ability to disinfect the flightdeck after another crew is difficult. My crew also went to the CPO to refill a company given bottle of hand sanitizer and we were told it is only for XXX crew members only. I find this incredulous since our flying brought us into XXX throughout the day multiple times. Where we are based should have no effect on being able to obtain cleaning products for our health when our trip locates us in a different base for work

- Report - 05/15/2020: In base the aircraft between passengers was not disinfected despite having over 70% capacity on the previous flight
- Report - 05/15/2020: Today flying from an out-station into base we ended up having a tight turn-around, leading to not enough time to obtain wipes. The company is still only distributing sanicoms and Ops had no 'supposed' access to any of these wipes. So on this tight connection we had no option of walking to another terminal and obtaining wipes from the chief pilot - thus leaving no chance to obtain have wipes to sanitize the headsets and flight deck
- Report - 05/14/2020: Enhanced cleaning procedure not performed prior to boarding. Cleaning crew sent only one cleaner who wiped each seat with the same rag, did not clean tray tables and did not clean flight deck
- Report - 05/17/2020: Enhanced cleaning procedure was not initially performed. Requested for cleaning procedure to be carried out in cabin and flight deck directly with cleaners on board - who made a call from the jet bridge phone to their supervisor - then performed the procedure
- Report - 07/05/2020: On the last leg of my trip, I started to notice symptoms of COVID-19 which included lack of smell / taste. Tested positive the following day

AIRLINE 5

- Report - 04/13/2020: SaniComs are still being provided to pilots. SaniComs not on the approvedlist
- Report - 04/15/2020: The training centre does not have a good process set up for instructors and there is a need for detailed cleaning guidance that matches the products being provided
- Report - 04/20/2020: I flew the same airplane for two days. We arrived back from XXX around 1500 local in YYY. After PAX de-planed, 2 cleaners came on the plane wearing gloves only and had nothing else with them. They were on and about to get off the plane in less than 5 minutes. I asked the FA to see if they were there to clean and she said yes. I asked the cleaners if they were going to disinfect the aircraft. They both looked at me with wide eyes and said they didn'tdo that and they thought someone else would. I asked the ramp agent if he knew who would come out to clean the plane. He said he wasn't sure and would follow up for us. I went back to the gate around 1830 to go to the plane. I was curious of the new procedures and wanted to make sure we had enough time to make sure the plane was properly cleaned for our passengers and other crew members. I asked the gate agent and they told me they didn't know if it was cleaned and I went downstairs to try and get on the plane early. I waited at the boarding door until 1920 for the gate agent to show up. I finally found someone to let me on the plane. After talking to Ops they told me the plane was cleaned at 1515, so it was the two cleaners who came out earlier with their gloves only and no cleaning material. I asked if they could verify if the plane had been cleaned and disinfected according to the new protocol, no one knew. The flight attendant found trash in the seat backs so we decided that it would be best to have the plane cleaned again to be safe. At one point Ops called us while we were waiting and asked if the FA told the cleaners to leave because the plane was fine.We did not see any cleaners to tell them, they showed up around 1950

After talking with one of the supervisors, I was informed that the two agents that came out to the plane were not aware of the cleaning protocols - so the plane was NOT cleaned or disinfected. We were told that they are only supposed to wipe down tray tables during turn-around cleaning. They told us the other cleaning machines were too big to fit on the plane so they never bring them on the aircraft. The cleaners wiped down the aircraft and followed the information that was provided to us via the company in my messages. They left us a virus kit. We boarded the aircraft and left for ZZZ 12 minutes late

AIRLINE 6

- Report - 03/31/2020: Cockpit cleaning is nonstandard and the contractor has been witnessed not cleaning the cockpit but reporting otherwise. There are multiple accounts of visibly dirty cockpits being reported as “cleaned”
- Report - 03/27/2020: Adequate hand sanitizer is not available on aircraft despite no sink or soap on-board. When there is hand sanitizer, it is not an alcohol based solution
- Report - 04/12/2020: The government in China is using invasive procedures on crews when entering the country. They are being bussed to the passenger terminal to wait in crowds to be tested and on some bases they are being sprayed with unspecified chemical mixtures to ensure they are disinfected. Some of the chemicals used are eye irritants and the percentage of chemical used in these sprays is unknown. Crew members who are currently being isolated in hotels are being pressured to join the government’s isolation camps. This directly contradicts the guidance provided by ‘Airline 6’ management and crews are left “on their own” while trying to navigate the process. Airline 6 security was not accessible during this process for some flight crews despite the former’s commitment to oversee health clearances
- Report - 04/09/2020: Social distancing in the flight deck is not possible. Should it be mandated to wear cloth or mask protection to prevent the escape of particles from the mouth / nose? Asymptotic crew members may unknowingly spread the virus. I recently purchased the enclosed items to wear next time I work, a suggestion made to me by my two daughters who are medical professionals. Websitebuffusa.com, known as multifunctional headwear. This headwear can easily be slipped down to the neck in case O2 mask needed for immediate use

AIRLINE 7

- Report - April 2020: SaniHands still being used for cockpit cleaning - but not on EPA approved list
- Report - May 2020: Our training department resumed CQ ground school and the instructor lead the group in donning emergency equipment whilst we have a temporary exemption to use alternate means to satisfy the requirement during the pandemic. The instructor was unaware of the exemption, and this is after the pilots were informed via email that alternate means would be in placefor our safety

The MEC has addressed the company directly. Additionally, the company will provide face coverings for crew, but the hour at which [a pilot] was dispatched, there were no masks readily available, nor was anyone available to assist him. We will now be able to procure masks from cabin-crew supervisors but communications on this have not yet been published. We are currently awaiting a response from the company on a myriad of safety concerns regarding their COVID-19 preparedness plans and policies, and we have grave concerns that our pilots will not be adequately protected or educated on how to protect themselves, based on the company's communications to date

- Report - May 2020: Another point of concern is tracing and tracking crews with exposure to COVID-19 and ensuring CDC guidelines are interpreted to handle the way airline crews are scheduled and replaced. Two days ago, a Captain was replaced mid-pairing after he was identified as having exposure to a Flight Attendant who tested positive for COVID-19. Scheduling did not remove and replace the whole crew, just the Captain. The replacement Captain was not made awareof the reason why he was being called in
- Report - July 2020: I'm not sure whether to file this under Health or Training, so feel free to forward as necessary. I am one of the many B717 pilots and instructors scheduled to attend CQ in [CITY] in August. The state of [STATE] is reporting an average of 3,000 COVID cases per day according to the Department of Health. In addition, the [County of training center] County Epidemiology Report indicates that of the 3,953 new diagnoses made between June 25 and July 08, the central portion of the county (city- metro area) accounted for 50% while the northern and southern parts accounted for 20% and 19% respectively. The report is attached to this DART. In addition, the Governor of [State] "...extended the state's COVID-19 restrictions, which strongly encourage the wearing of masks, but stopped short of requiring them in public, calling such a measure 'a bridge too far.' His order explicitly rescinds mask orders in such key cities as [Three cities] and, along with more than a dozen other local jurisdictions where similar directives have been issued. Given the rising number of cases and the lack of governmental mandate for preventative measures, what strap are being taken to ensure the safety and well-being of all pilots and instructors who are scheduled to attend training in [City]? Thank you for any insights you can provide
- Report - July 2020: I have a quick question concerning the XX JUN 2020 crewmember exemption letter regarding the Governor's 14 Day Self Quarantine. I recently booked a hotel reservation at XXX so my family and I can take advantage of the XXX Employee discount. I have since been scheduled to fly a 2 day trip to XXX prior to our scheduled reservation date. Can I please get clarification on my exemption as the exemption letter states, "Persons traveling from the State to perform critical infrastructure functions……. Upon return to their [State] residence, such persons will NOT be subject to the self-quarantine so long as they wear appropriate protective gear and follow the social distancing requirements identified in Section III.D of this Proclamation." I fully intend to comply with the requirement to wear protective gear and will continue to practice social distancing, but I want to ensure that I've properly interpreted the letter as it pertains to; (A) any refined crewmember/essentialworker exemptions and/or restrictions and (B) the quarantine restrictions having been lifted for travel. Thank you

- Report - July 2020: If a household member has COVID-19 symptoms and is awaiting COVID-19 test results, am I required to quarantine and am I pay protected even if the test comes back negative? I am asymptomatic
- Report - July 2020: I have a question about the state quarantine. I'm a resident of XXX and have been off from work until August 10th, so I travelled to YYY to visit a friend for a while. When I return to XXX, I just want to confirm that I'll be subject to the 14-day quarantine but can still go to work if called in. Also, when I return to XXX, would I be able to leave again for YYY during the remainder of my days off for personal travel or am I required to stay in XXX?
- Report - August 2020: If commuting into XXX for work from before Sep 1 and I have a negative COVID-19 test result, do I need to quarantine?
- Report - August 2020: I am concerned that the company is not being as proactive as needed when someone who tests positive for Covid-19 comes back to work. Maybe it's changed since then, but our ground instructor disclosed to us that he / she had tested positive for the virus a while back and he/ she was not required to test negative before returning to work, only attesting that he was symptom free for a certain amount of days. I am not really concerned that I might get COVID-19 now as it has been weeks since he / she "recovered", but it just seems to not to be in our best interests to ensure that such staff are ok before sending them back to teach.
- Report - August 2020: I worked a XX flight yesterday coming back from XXX. I used the new web-based platform to provide data to the officials at the State of YYY travel desk. They scanned my QR code that was generated from the website and said I was good to go. Last night I received a text saying 'don't forget to check in daily for 14 days'. I think the program thinks I was a regular traveller.What should I do now?
- Report - August 2020: Arrived XXX Monday on flight ##. Completed the state online arrival forms prior to arrival and scanned their given QR code upon arrival. Indicated on the forms and upon arrival I was crew and was told I was still covered by the aircrew exemptions. However since arrival I have been receiving daily texts and emails warning me to complete daily online check-ins regarding my health. I have subsequent off [trips] however can't contact the state to remove me from these daily notices and verify if I need to complete them or not? Can you please advise what we're supposed to be doing right now with regards to these daily check-in requirements? Please feel free to call if anyone has advice on this topic. Thanks
- Report - September 2020: I am scheduled travel to XXX for training at the end of September. I am also being furloughed on 1 October, a few days after my return. What are the quarantine requirements upon my return to YYY? How do exemptions apply if I no longer hold a Company ID due to furlough?
- Report - September 2020: Over the last few weeks I've noticed that some flight attendants have been using the ZEP disinfectant (designated for cockpit use only) in the cabin. In the times that I noticed it the cleaner was used to clean various surfaces such as the passenger seats as well as the various galley surfaces. I chose not to immediately address the issue in case there had been a policy change. I spoke with the duty officer after the instance in question yesterday and I was told that there was no change in policy however, the flight attendant managers disagreed and stated that the ZEP was to be shared

As of today, the same duty officer notified me that another flight attendant manager found the section indicating that ZEP was to be exclusively used for cockpit cleaning. It seems thatit might be necessary for e-mail notification to be sent out regarding the improper use of this disinfectant

AIRLINE 8

- Report - 04/14/2020: Flight Decks are being cleaned on RONs however there are complaints of visibly dirty cockpits after cleaning. There is no way to verify that this cleaning is happening or that it has been effectively done
- Report - 04/14/2020: There are no 70% alcohol wipes available and the higher concentration wipes are being delivered in very small rounds.
- Report - 14/2020: The SaniCide EX3 that is also being used directs that there is a 10 minute wait time prior to wiping the chemical off, however, Airline 8 task cards do not instruct to do this
- Report -03/25/2020: Flight attendant didn't call in sick out of fear of retaliation from the company. Ended up testing positive for COVID days later

AIRLINE 9

- Report - March 2020: Crewmembers are reporting that management is not being clear when (crewmembers) are notifying that they have come in contact with a positive person. Management is not instructing crewmembers of the 48 hour self-monitoring period nor are they informing these crew members in a timely manner (within 48 hours of possible contact) or the day/time when they might have been in contact with a positive case of COVID-19
- Report - 05/09/2020: We asked for additional hand sanitizer from the agent passing out Safety kits and were told we only get the bottle we got in our first kit. Then we were given Sani-com

AIRLINE 10

- Report - 04/09/2020: Departing IAD the flight crew requested catering and specifically additional water bottles. 6 Crew on board (all with late shows following day). Catering responded stating they are no longer supplying water in the larger bottles, only small bottles are to be handed out. Personally drinking about 3 litres of water each day, I feel we still need to have water bottles supplied to each aircraft. Public water in hotels is generally found in the hotel gyms (closed) andif there is a public water fountain, would that really be the best place for us to get water from? Let's do what we can to ensure catering continues to supply our aircraft as needed by both crew and PAX

AIRLINE 11

- Report - 04/08/2020: Airline 11 has started a marketing campaign regarding their steps to make the airline safer re: Covid-19. They have a video on their website (see above) where they use fogging technology. I would like to know what the name of the chemicals are that we will be exposed to - including the MSDS if possible

I would like to know what the side effects of these chemicals are regarding prolonged exposure. The company also claims that the Airbus 320 series aircraft completely cleans the cabin air every 3 minutes and I was wondering if the union has any information or proof to verify those claims

- Report - 05/18/2020: Operated flight XXXX and XXXX on 5/18-19. Was not provided disinfecting wipes. None were available in the crew room and none were on board the aircraft. There were masks and a large bottle of hand sanitizer in the crew room, but nothing to wipe down the cockpit
- Report - 05/27/2020: I feel like the company is doing a good job providing face masks. The health issue is not with the company but rather flight crew not wearing masks. Our masks only partially protect the wearer. Their main purpose is to protect those around the person wearing the mask. Therefore, if the Captain chooses not to wear a mask even though the FO does, the FO is still at risk. I spoke with a fellow FO flying a line in May and he says masks come off as soon as cockpit door/cabin doors close. If I bring Covid home from work, I have members in my household who would be potentially hospitalised or worse by this virus. I am holding a reserve line in June. How am I to protect myself if crewmembers do not choose to wear a mask? I understand that the union's specialty is mediating with the company but what are we to do if the problem is within our own ranks because people don't research / understand how wearing masks is an effective tool for mitigating this virus?
- Report - 06/15/2020: My airline claims to screen temperature of all crew members. Screening is conducted by gate agents prior to boarding. The captain of my last trip gained his own access to the aircraft prior to the gate agent reporting for the flight, and she (latter person) never went down to the aircraft to take his temperature
- Report - 08/01/2020: My airline says that masks must be worn by everyone excepting children under 2. What about people with ADA exemptions or doctor's note? I don't care to get sued for an alleged violation
- Report - 8/15/2020: XXX shuttle from Hilton [location] @ 0730 am Monday 8/9/2020 overloaded with crew members riding to work. Possibly 12 passengers in a 10 passenger capacity vehicle. Seatbelt issues aside, can't claim to have felt comfortable with the shoulder to shoulder seating,although masks were worn by all. Is this proximity considered an acceptable and expected condition? Also curious about what hotels are doing to ensure shuttle cleanliness? Thanks

AIRLINE 12

Report - 04/23/2020: RE 1st VP Fox's email:

Airline 12 encourages the use of masks as described. Airline 12 is supplying all items listed. Additional supplies are thermometers available for each crew member and, for FAs, gowns and safety glasses. Airline 12 toilets are well equipped in the aircraft which have a portable water system. More than half the fleet does not have running water. The latter are supplied with hand sanitizer in a pump bottle

Here's where they're falling down a bit. It is pretty well left up to the crews (both pilots & FAs) to clean as we see fit. They have said that there will be allowance made for any time required by an individual to clean. My opinion: with the amount of time the aircraft are sitting on the ground at major stations, most are there at least 7hrs between flights, there's no acceptable reason for why cleaning crews can't be doing this. As for the regulator merely recommending these practices, well that's not enough either. As the Government has designated airlines as essential they also need to require certain behaviours be complied with whilst off duty as well e.g. using protective equipment, social distancing etc. when doing necessary chores such as grocery shopping

AIRLINE 13

- Report - 04/08/2020: While PAX were boarding the aircraft, the flight attendant discovered that there were no gloves or hand soap in the toilets supply kit bag. I called Ops for a complete kit but there was no response. Are gloves and soap required for passenger flight or is it just as per availability?
- Report - 04/09/2020: Just wondering how to clean hotel pillows?
- Report - 05/27/2020: I observed a discrimination of airline personnel during temperature checks at XXX at terminal X / KCM access. There are some airline crews having the option for "voluntary" temperature checks and others who are "required" to take mandatory temperature checks
- Report - 06/18/2020: From company email. It is not clear if PIC or FO can refuse a passenger who will not wear a mask after boarding and before flight. Additional concern is if a passenger cannot wear a mask due to medical condition, then I doubt they are healthy enough to fly. OpSpec says we cannot board persons in need of supplemental O2 and cabin altitude will be lower than on the ground. We are not a medical flight

AIRLINE 14

- Report - 04/09/2020: I'm a commuter, and the issue is about this recent change that crew members are not allowed to be assigned business / first class seats. My only concern is that this can put me around and closer to most of the passengers in a given flight. I was on a flight cut-off where all of the seats except one in business were open, yet we (me and a couple other crew members) weren't allow to take seats in the front due to this change. I'm completely against it, I still don't understand the benefit for this change, and don't understand how putting us essential crew members at higher risk by being around and closer to more people is something that is implemented for our duty travel
- Report - 04/17/2020: XXX base is not staffed to receive masks all day and at XXX we do not pass through the base during a trip as we start and end there. I started my last trip 0725 show time on a Thursday and no one was there. We either need to staff early to receive masks, be able to pick up in a different base or be able to receive masks at the end of a trip for our next trip

- Report - 05/03/2020: Suggest company issues an extra mask at trip end so that aircrew can use it to travel through the airport and pick up their allotted masks for their next trip / reserve period
- Report - 07/03/2020: We had a XXX jump-seater out of YYY to ZZZ on flight XXXX. Before closing the door the FA said there was a seat in the back so the XXX jump-seater took it. We changed the ACARS to reflect the change so the weight and balance was correct. However, we did not realize that the open seat in the back was supposed to be blocked for social distancing. We acknowledged we were wrong for not verifying the seat was acceptable to be occupied - and filed an ASAP on the mistake. After we departed the XXX jump-seater in the back refused to wear his mask. The FAs said they told him multiple times he had to wear it. Other passengers (around the XXX guy that was not wearing the mask) begun to complain to the FAs saying they were going to file a complaint to PARENT AIRLINE if she couldn't make him wear a mask. I found out about theXXX jump-seater not wearing the mask after we arrived in ZZZ. Everyone including the XXX guy had deplaned and left by the time the FAs told me about this. If possible we need to address the XXX Jump-seaters so that they have to comply with our policies if they want a ride. It makes us as a whole lookbad to have a pilot in uniform in the back refusing to wear his mask, after being so requested multiple times
- Report - 07/16/2020: Good evening. My mother lives with me and she just tested positive forCOVID-19. I called the chief pilot and they marked me as sick until I get tested. I don't have any symptoms but the chief pilot told me that I can't Non rev back home. I live in in Fort Myers FL. I don'tknow what to do. I need to talk to someone please
- Report - 07/18/2020: I attempted to receive face masks and a thermometer from the crew room/company offices in XXX at 9am - prior to my show time today. The office door was locked and the front desk unattended. The posted hours say the office is closed today and the front desk has a signup saying they are also closed. I was unable to complete the intellex COVID reporting app due to not being able to obtain a thermometer. This is the second time I've not been able to obtain a mask during normal business hours. See previous dart

AIRLINE 15

- Report - 04/10/2020: I've contacted my MEC Vice-Chair and Base Chief Pilot re the quantity and distribution of 'Airline 15' Pilots and Flight Attendants having tested positive for Covid-19. I've not received an explanation from either of these points of contact - nor have I seen any corporate communications detailing the extent to which C-19 is affecting both groups

  At this point I feel as though the pilot group is deliberately being left in the dark. The first, most obvious question is why e.g.is there a disproportionately high number of employees affected by the virus which management wish to conceal? Some might dismiss me as paranoid but I'm not the only member of this labour group asking the same questions. Therefore, I tend to think it's a fairly reasonable question given the circumstances. I know for a fact that this information is being collectedand monitored closely. I think we deserve to know the truth about the extent of the virus' effect on our unique work environment and co-workers heath, so we can make informed decisions moving forward

- Report - 06/17/2020: This is just a general question, not particular to any single flight. FYI, I emailed the XXX Chief Pilot this suggestion back in March and while I think he forwarded it up the chain, I am unaware of any further action, XX did not change any SOPs

  COVID is spread throughthe air and in an airliner cabin you have a lot of people in a confined space. For my airline, there has been no change in SOP regarding PACKS/airflow. I know that a lot of aircraft are equipped with HEPAfilters, but from a risk standpoint, what is lowest risk: 1. Continue with current SOP regarding PACKS/ airflow 2. Always have PACK flow set to high in your aircraft regardless of occupancy to have max airflow circulating 3. Have PACK flow set to high and keep cabin recirculation fans 'OFF' - so that cabin air isn't recycled at all, rather all air is new air coming in from the outside. If ALPA did an analysis and came up with a recommendation here, it would be beneficial to helping stymie the virus spread

AIRLINE 16

- Report - 04/09/2020: Hotel desk is refusing to move me or other crewmembers to a hotel location that isn't downtown in one of the hardest hit 'COVID-19' cities right now. I don't find it safe to have our crewmembers downtown
- Report - 04/03/2020: Was exposed to another crew member in Shanghai who tested COVID-19 positive. Have been relieved from flight status for 14 days. No follow up from company or any medical personnel
- Report - 04/08/2020: What is the FAA stance on pilot crewmembers wearing a facemask (suchas N95) while at a duty station? Airline 16 is now providing masks at some domiciles. Are the pilots authorised to fly in seat while wearing the mask? Thank you
- Report - 04/09/2020: A recent company communication indicated that some of our bases (with others soon to follow) are conducting temperature screening for COVID 19 upon arrival at the airport. If we are pulled off a trip for having a high temperature what will happen? Will we be required to quarantine in place and if so who pays for our accommodations for the 14 days? Are we paid for the time away? Sick listed? Please provide some clarifications
- Report - 04/10/2020: What are practical guidelines for pilots returning home after flying to and staying at Covid epicentres such as Newark? In other words, what should we do to protect our families?
- Report - 04/14/2020: Being that we are regularly in a position to be exposed to COVID-19, andwith Airline 16 system and crews large amount of China flying, is there any plan by the company to do antibody testing of aircraft crews as soon as these tests become available? It would seem to me that Airline 16 crews in particular, second only to medical personnel, have very likely already been exposed to/sickened by COVID-19. I and many others believe we have probably already had this. Will the union be pushing for this testing?
- Report - 04/14/2020: Worked flight AAA, XXX-YYY today. Upon boarding, my new routine consists of wiping down all cockpit touch areas with the company provided disinfectant wipes

There were none in the cockpit. I searched the locations provided by Airline 16, none could be found. I asked the FM if there was another location, he didn't seem to be interested in helping. I then called station operations and requested more wipes

There was a plastic bag of Purell hand wipes and some small alcohol wipes, both not suited to disinfect surfaces due to small size. I would have used them all. A follow up call to station operations for the Lysol wipes was met with what I would call disinterest. We were unable to secure additional company provided disinfectant wipes prior to departure. My CA and I used our personal supply, which are nearly impossible to replenish. No one seemed to think this was a problem

- Report - 04/22/2020: Crew was not provided protection kit for cockpit flight AAA. Had to request it

AIRLINE 17

- Report - 04/30/2020: A pilot who had recently been in the simulators had tested positive for COVID 19. Pilot in question was asymptomatic and tested positive after leaving the simulators

  Company indicated they have notified the appropriate personnel and have instructed them to self-monitor. They claim that full CDC cleaning protocols were followed between sim periods and there is no risk to additional crews. ALPA is seeking formal clarity and challenging if the situation was dealt withadequately

Deliberately Blank

Appendix D

U.S. Department of Transportation
Federal Aviation Administration

SAFO
Safety Alert for Operators

SAFO **20009**

25 May 2021

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies

COVID-19: Updated Interim Occupational Health/Safety Guidance for Air Carriers &Crews:

Purpose: This SAFO updates previous versions and provides updated interim occupational health & safety guidance by the Centers for Disease Control and Prevention (CDC) and the Federal Aviation Administration (FAA) for air carriers and crewmembers regarding Coronavirus Disease 2019 (COVID-19). This additional guidance has been provided to reduce crewmembers' risk of exposure to COVID-19, decrease the transmission risk of COVID-19 on board aircraft and destination communities - and provide guidance for fully vaccinated[1] crew

Background: SARS-CoV-2, the virus that causes COVID-19, has spread throughout the world and to all States and territories of the United States (U.S.). Air carriers and crews conducting flight operations having a nexus / link to the U. S., including both U.S. and foreign air carriers, should follow CDC's occupational health and safety guidance, as outlined in the Appendix further below

Discussion: On 30 Jan 2020, the World Health Organization (WHO) declared COVID-19 to be a Public Health Emergency of International Concern. On 31 January the US Secretary of Health and Human Services declared COVID-19 to be a US public health emergency under section 319 of the Public Health Service Act[2]. On 11 March 2020, the WHO upgraded COVID-19 to pandemic status. On 13 March the US President declared an associated national emergency. Because air travel remains essential, including transport of personnel, supplies etc. necessary to support COVID-19 response/recovery efforts, it is critical to protect the health/safety of crews while ensuring that essential flight ops can continue. The FAA & CDC recommend that air carriers and crew take precautions to avoid exposure COVID-19. Crew should not work while symptomatic with fever, cough, shortness of breath or other symptoms of COVID-19 or after having tested positive for same. They may return to work only after they are no longer considered infectious according to CDC's criteria for 'Discontinuation of Isolation - Persons with COVID-19 not in Healthcare Settings'

[1] People are considered fully vaccinated for COVID-19 two weeks after they have received the second dose in a 2-dose series, or two weeks after they have received a single-dose vaccine. CDC's guidance applies to COVID-19 vaccines currently authorized for emergency use by the FDA: Pfizer-BioNTech, Moderna, and Johnson and Johnson (J&J)/Janssen COVID-19 vaccines. CDC's guidance can also be applied to COVID-19 vaccines that have been authorized for emergency use by WHO (e.g. AstraZeneca/Oxford). [2] This has been renewed several times since 31 Jan 20, most recently on 15 Apr 21

The CDC continues to recommend 14 days quarantine for individuals with known exposure to COVID-19. However, shorter quarantine periods may be considered. Crewmembers with known exposure should not work on aircraft until they meet CDC's criteria for release from quarantine. The CDC has issued guidance for exposed workers in critical infrastructure who might need to return to work before these criteria are met, available in 'COVID-19 Critical Infrastructure Sector Response Planning'

CDC does not recommend allowing crewmembers with known exposures to continue to work, until they have met criteria for release from quarantine, even if asymptomatic (due the inability of crewmembers to remove themselves from the workplace if they develop symptoms during a flight and the challenges involved in effectively isolating a symptomatic person on board an aircraft)

Crewmembers fully vaccinated against COVID-19 or who have recovered from COVID-19 in the preceding 3 months do not need to quarantine, be tested or be excluded from work following an exposure, unless they have symptoms of COVID-19. However, they should still self-monitor for symptoms for 14 days after last known exposure. Those developing symptoms should self-isolate and be tested, regardless of vaccination status or previous recovery from COVID-19

COVID-19 vaccines authorized for emergency use by the U.S. Food and Drug Administration (FDA) are available across the USA and everyone 16 years of age and older is eligible to get a COVID-19 vaccination. These vaccines are effective against COVID-19, including severe disease, and a growing body of evidence suggests that fully vaccinated people are less likely to have asymptomatic infection or to transmit SARS-CoV-2 to others, pending further investigation. Vaccination is a critical tool to help stop the pandemic and it is recommended that crew members get vaccinated ASAP - in compliance with FAA direction on flight duties after vaccination

Recent CDC Actions: In order to slow the worldwide spread of SARS-CoV-2 and its highly contagious variants CDC issued (12 Jan 21) an Order requiring all air passengers (including those who are fully vaccinated) travelling to the US from a foreign country, to present proof of a negative result of a SARS-CoV-2 test or documentation of recovery from COVID-19 before boarding their flight

Whilst the 'Order' includes a limited exemption for crewmembers under the conditions outlined in CDC's Guidance and 'Frequently Asked Questions', CDC and FAA recommend that air carriers consider implementing routine testing of crewmembers to minimise the likelihood of them working on aircraft while asymptomatically / pre-symptomatically infected with SARS-CoV-2. It is also recommended that fully vaccinated persons with no COVID-19-like symptoms and with no known exposure should be exempt from routine screening testing programs, if feasible.[3] Crewmembers who had recovered from COVID-19 in a preceding 3 months should also be exempt[4]

To further slow the spread of the virus, the CDC issued a separate Order (2 Feb21) requiring the use of masks on public conveyances (including aircraft) traveling into, within or out of the US - and also in US transportation hubs including airports. Wearing masks helps people who may have COVID-19 avoid transmitting the virus to others and also provide some protection to the wearer. While the wearing of masks on aircraft is required, the Order includes an exemption if wearing a mask would create a risk to workplace health, safety or job duty - as determined by the relevant workplace safety guidelines or federal regulations. See again CDC's 'Guidance and Frequently Asked Questions' for the most up-to-date information about mask requirements

Air carriers and crewmembers should be mindful of the regulations regarding the use of oxygen masks where the operation requires same to be rapidly placed on the face, properly secured, sealed and supplying oxygen upon demand.[5] CDC's Order does not apply if wearing of oxygen masks is needed on an aircraft when a loss of cabin pressure or other event affecting aircraft ventilation occurs

Air carriers should complete a safety risk assessment and provide guidance to their crewmembers on procedures for the use of masks as they mayaffect the donning of oxygen masks or conducting other safety functions on the flight deck and / or in the cabin

Recommended Action: The FAA and CDC recommend and expect that all US based air carriers / crews and all non-US based air carriers / crews operating flights with a U.S. nexus - implement and use their company-developed COVID-19 preparedness plans and procedures. This shall be in conjunction with the FAA / CDC occupational health and safety guidance in the attached appendix, regarding practices for limiting the spread of COVID-19

The FAA and CDC will update and /or supplement this SAFO as more information becomes available. Air carriers and crew members should also review and incorporate into their COVID-19 preparedness plans and procedures, CDC's 'Updated Interim Guidance for Airlines and Airline Crew: Coronavirus Disease 2019 (COVID-19)'. CDC has additionally provided fact sheets for the transportation industry and a communication toolkit for airlines

Contact: Questions or comments regarding this SAFO should be directed to the Air Transportation Division, at 202-267-8166. Urgent questions pertaining to the Appendix below should be directed to the CDC Emergency Operations Center at 770-488-7100. Non-urgent questions or comments may be directedto 800-CDC-INFO (800-232-4636)

[3] See CDC guidance for fully vaccinated people with no COVID-19-like symptoms and no known exposure to someone with suspected orconfirmed COVID-19

[4] People who have recovered from COVID-19 may continue to test positive for three months or more without being contagious to others. Forthis reason, crewmembers having tested positive for SARS-CoV-2 in the preceding 3 months should be tested only if they develop new symptoms of possible COVID-19. Getting tested again should be discussed with a healthcare provider, especially if the crewmember has been in close contact with another person who has tested positive for COVID-19 in the last 14 days. The healthcare provider may work with an infectious disease expert at the local health department to determine when the crewmember can be around others.

[5] See e.g., 14 C.F.R. § 121.333

APPENDIX - COVID-19: Updated Interim Occupational Health and Safety Guidance for Air Carriers and Crews from the Federal Aviation Administration and the Centers for Disease Control and Prevention - 25 May 21 (Guidance for US based Crews + Crews Based in Other Countries whilst Locatedin the US). (As CDC guidance is updated regularly, the links below should be checked for most current information):

COVID-19 Vaccinations

- Crewmembers are encouraged to get a COVID-19 vaccine. Those holding an FAA-issued airman medical certificate must comply with applicable medical requirements following vaccination[6]
- Crewmembers are encouraged to share their vaccine status with their employer's occupational health program
- Crewmembers who are fully vaccinated:[7]
  - Should follow CDC guidance for fully vaccinated people.
  - Should continue to monitor themselves for symptoms of COVID-19 and self-isolate if they getsick.
  - Do not need to quarantine, be tested or be excluded from work following an exposure unless they have symptoms of COVID-19. However, they should still self-monitor for symptoms of COVID-19 until 14 days after their last known exposure. Those who develop symptoms should self-isolate and be tested.
  - Are still required to wear a mask on aircraft and other conveyances - and also in US transportation hubs
  - Are still subject to CDC's Order: 'Requirement for Proof of Negative COVID-19 Test Result or Recovery from COVID-19 for All Airline Passengers Arriving into the United States' - if they are not eligible for the crew exemption.
  - May be excluded from their air carrier's routine testing programs for COVID-19, if feasible.

Health Monitoring

- Crewmembers should monitor themselves for fever (feeling feverish or a measured temperature of100.4°F [38°C] or higher), cough / shortness of breath or any other symptoms of COVID-19
- Crewmembers should take their temperature any time they feel sick.
- Crewmembers should stay home or in their hotel room, notify their employer's occupational health program and not report to work - if they meet ***any*** of the following conditions:

[6] Air crewmembers required to have an FAA Airman Medical Certificate to perform their duties may not exercise the privileges of their FAAairman certificates for a minimum of 48 hours following injection and until side effects have resolved for Pfizer-BioNTech, Moderna, and Johnson and Johnson (J&J)/Janssen COVID-19 vaccines. Waiting periods for new vaccines will be evaluated by the FAA Federal Air Surgeon as they receive FDA Emergency Use Authorization. For more information, please see https://www.faa.gov/coronavirus/guidance_resources/vaccine_faq/.

[7] People are considered fully vaccinated for COVID-19 two weeks after they have received the second dose in a 2-dose series, or two weeks after they have received a single-dose vaccine. CDC's guidance applies to COVID-19 vaccines currently authorized for emergency use by the FDA: Pfizer-BioNTech, Moderna, and Johnson and Johnson (J&J)/Janssen COVID-19 vaccines. CDC's guidance can also be applied to COVID-19 vaccines that have been authorized for emergency use by WHO (e.g. AstraZeneca/Oxford). Note, only certain COVID-19 vaccines are cleared by the FAA for use by U.S. aircrew as described in footnote 6. Crewmembers who are partially vaccinated should continue to follow recommendations for unvaccinated people

- Develop fever, cough, shortness of breath or other symptoms of COVID-19 - even if mild.This recommendation also applies to fully vaccinated crewmembers and those who have previously recovered from COVID-19.
- Test positive for COVID-19, even if no symptoms or crewmember is fully vaccinated
- Are exposed to a person with suspected or confirmed COVID-19
- Crewmembers who are fully vaccinated against COVID-19 or who have recovered from COVID-19 in the preceding 3 months do not need to quarantine, be tested or be excluded from work / travel after being exposed to a person with COVID-19 - as long as they have no symptoms of COVID-19. However, they should notify employers of the exposure, monitor their health until 14 days after their last known exposure and, if they develop symptoms of COVID-19, self- isolate and be tested

Exposures of concern include:

- Being within 6 feet for a prolonged period of time (i.e. a cumulative total of 15 minutes or longer within a 24-hour period) of a person (including co-workers and passengers) who has tested positive for SARS-CoV-2 (see CDC definition of close contact for more information)[8]
- Close contact with a sick person such as a household member unless the sick person has testednegative for SARS-CoV-2 and been determined not to have COVID-19 by a licensed medical provider or public health official
- Extended face-to-face exposure[9] to a sick person with symptoms of COVID-19 on an aircraft

- Crewmembers who are symptomatic, test positive for COVID-19 or have been exposed to aperson with COVID-19 - should not return to work until cleared to do so by their employer's occupational health program, a licensed medical provider or a public health official - following CDC's guidance for release from isolation or quarantine

  - Those who are symptomatic, test positive for COVID-19 or are caring for a sick personshould follow public health guidance: 'If You Are Sick or Caring for Someone'
  - Those who are exposed should quarantine unless they are fully vaccinated or have recovered from COVID-19 in the past 3 months

- Crewmembers should notify supervisors if they are awaiting a COVID-19 test result and inform same of the reason for taking the test (e.g., symptoms / potential exposure)
- Crewmembers should be aware of the requirement for all air passengers to show a negative SARS-CoV-2 test result or documentation of recovery from COVID-19 before boarding a flight from a foreign country to the United States. Crewmembers traveling by air to the United States for reasonsother than those covered by CDC's exemption will need to meet this requirement.
- Crewmembers (unless fully vaccinated and asymptomatic) should avoid working or travelling on an aircraft while a SARS-CoV-2 test result is pending.

8 In the context of crewmembers working on an aircraft, CDC generally interprets "within 6 feet" as a cumulative of direct face-to-face interactions, such as extended time spent with an ill passenger or other passenger requiring special attention, or being seated within 6 feet ofan infected person for more than 15 minutes. CDC does not include time spent passing through aircraft aisles or other very brief periods of time within 6 feet that might add up to 15 minutes over the duration of a flight as contributing to exposure duration and classification as a close contact. **9** In general, 15 cumulative minutes of exposure at a distance of 6 feet or less can be used as an operational definition for considering a personpotentially exposed to COVID-19. Shorter duration exposures may be significant if there is likelihood of generating respiratory aerosols e.g. if a sick person coughs directly in the face of a crewmember

  - If a crewmember's test is positive whilst at a destination, that crewmember will need to self-isolate at that location and other members of the crew will need to quarantine
  - The infected crewmember and (unless they are fully vaccinated or recovered from COVID-19 in the previous 3 months) exposed co-workers - will not be able to return by a commercial passenger flight until they are cleared for travel by their employer's occupational health program, a licensed medical provider or an appropriate public health official. Employer movement of an infected or exposed crewmember must be conducted in accordance with CDC's Interim Guidance for 'Transporting or Arranging Transportation by Air into, from or within the United States of People with COVID-19or COVID-19 Exposure'

- If a (cabin crew???) crewmember develops symptoms during a flight, he / she should stop working as soon as practicable, don or continue wearing a surgical or cloth mask (unless crewmember is vomiting or otherwise cannot tolerate wearing a face mask), notify the Lead Flight Attendant and maintain a distance of 6 feet from others to the extent possible

Health Protection

To protect their health and the health of others (including co-workers and passengers) crew members should:

- Maintain a distance of 6 feet from others to the extent possible, including:
  - While working on aircraft e.g. whilst seated in jump seats during take-off or landing or workingin galley areas etc. Certain FAA regulations may be implicated in implementing this guidance (e.g., 14 CFR § 121.391(d)). Crew members may wish to verify that the air carrier has sought relief.[10]
  - During ground transport
  - While in public places

- Stay in their hotel rooms to the extent possible during layovers
  - Limit activities in public to essential errands such as getting food and, to the extentpossible, eat in their hotel rooms.
  - Follow any additional recommendations or requirements of national, state or local authorities. In the United States see: 'CDC Travel Planner'

- Wash their hands frequently with soap and water for at least 20 seconds and thoroughly dry them - and / or use an alcohol-based hand sanitizer with at least 60% alcohol, particularly after assisting sick travellers or touching body fluids or surfaces likely to be contaminated with body fluids; after coughing, sneezing or blowing their nose; after using the restroom; before eating; before preparing and / or serving food / beverages; after removing any personal protective equipment (PPE),including gloves
- Avoid touching eyes, nose or mouth with unwashed hands - and wash hands if / after touching eyes, nose or mouth

[10] FAA Exemption No. 18522 (and subsequent extensions of that exemption) allows flight attendants to relocate from the seats they wouldnormally occupy so they can observe social distancing. It also excuses them from having to demonstrate the use of certain emergency equipment including life preservers and oxygen masks, allowing for alternative methods to inform passengers regarding the use of such equipment. Individual carriers must submit a Letter of Intent and be granted authorization by the FAA in order to exercise the relief in the exemption until the exemption or any extensions of same expires

- Wear a mask while on an aircraft, in airports, on ground transportation (unless travelling with members of their household) and in other situations around other people, especially in situations where they cannot maintain the recommended physical distance from others.[11]

Masks are required on airplanes, buses, trains and other forms of public transportation travelling into, within or out of the United States and in U.S. transportation hubs - such as airports and bus / train stations

  - Masks may be removed for brief periods of time when eating, drinking or taking medications
  - Cloth masks should not replace the use of surgical masks or other PPE provided in the Universal Precaution Kit (UPK) (latter doc. modified in Feb 2020) ***when interacting with a sick traveller on board***

- Avoid contact with persons having a cough, fever, shortness of breath or otherwise suspectedof having COVID-19.
- Before each flight, inspect and confirm the condition and contents of the UPK(s). If needed to provide care to a sick / suspected sick traveller on board, follow existing air carrier policy and procedures regarding use of the PPE available in the kits
- Follow guidance for COVID-19 precautions of the State and / or local health authorities in the area where they are located.

Crew should be aware that their employer's occupational health and safety program may include policy and procedures exceeding these recommendations. Crews based in other countries should also follow guidance from the relevant foreign public health and civil aviation authorities.

[11] Wearing masks may help persons who may have COVID-19 from transmitting the virus to others. Masks also protect the wearer. Air carriers and crewmembers should be mindful of the regulations regarding the use of oxygen masks where the operation requires an oxygen mask to be rapidly placed on the face, properly secured, sealed, and supplying oxygen upon demand. Air carriers should complete a safety risk assessment and provide guidance to their crewmembers on procedures for the use of masks as they may affect the donning of oxygen masks

Guidance for US Air Carriers and Foreign Air Carriers Operating in the United States[12]

COVID-19 Vaccinations - Air carriers should:

- Encourage crewmembers to get a COVID-19 vaccine.[13]
- Facilitate crewmembers obtaining a vaccine to the extent feasible.[14]
- Encourage crewmembers to notify their occupational health program of their vaccination status.
- Maintain records of crewmember's vaccination status as appropriate.

Fully Vaccinated Crewmembers[15]

- Can follow CDC guidance for fully vaccinated persons.
- Do not need to quarantine / be excluded from work following an exposure unless they have COVID-19 symptoms. They must still self-monitor for such symptoms until 14 days after any last known exposure. Those developing symptoms should self-isolate and be tested.
- Should continue to monitor their health for symptoms of COVID-19 and self-isolate if they develop symptoms.
- Are still required to wear masks on aircraft, other conveyances & in U.S. transport hubs.
- Are still subject to CDC's Order: 'Requirement for Proof of Negative COVID-19 Test Result or Recovery from COVID-19 for All Airline Passengers Arriving into the United States' (if not eligible for the crew exemption)
- May be excluded from participating in routine screening testing programs for COVID-19 if feasible

Health Monitoring - Air carriers' occupational health and safety programs and COVID-19 preparedness plans should include provisions for:

- How to remain in contact with crewmembers to ensure they continue to monitor their health,avoid risk factors that could increase risk of exposure to SARS-CoV-2 and do not report to work while symptomatic
- Ensure they do not report to work following an exposure, unless they are fully vaccinated or have recovered from COVID-19 in the previous 3 months.
- Educating crewmembers on what to do if they or their close contacts become sick with COVID-19 symptoms or test positive for COVID-19

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[12] For foreign air carriers, recommendations apply to flights with a U.S. nexus and air crews working on flights with a U.S. nexus or onlayovers in the United States.

[13] Air crewmembers required to have an FAA Airman Medical Certificate to perform their duties may not exercise the privileges of their FAA airman certificates for a minimum of 48 hours following injection and until side effects have resolved for Pfizer-BioNTech, Moderna, and Johnson and Johnson (J&J)/Janssen COVID-19 vaccines. Waiting periods for new vaccines will be evaluated by the FAA Federal Air Surgeon as they receive FDA Emergency Use Authorization. For more information, please see https://www.faa.gov/coronavirus/guidance_resources/vaccine_faq/. [14] Some operators may be considering incentive programs to encourage vaccination, such as paid time-off, scheduling flexibility, etc. [15] People are considered fully vaccinated for COVID-19 two weeks after they have received the second dose in a 2-dose series, or two weeks after they have received a single-dose vaccine. CDC's guidance applies to COVID-19 vaccines currently authorized for emergency use bythe FDA: Pfizer-BioNTech, Moderna, and Johnson and Johnson (J&J)/Janssen COVID-19 vaccines. CDC's guidance can also be applied toCOVID-19 vaccines that have been authorized for emergency use by WHO (e.g. AstraZeneca/Oxford). Note, only certain COVID-19 vaccines are cleared by the FAA for use by U.S. aircrew, as described in footnote 14

- To extent feasible, screening aircrews for symptoms of COVID-19 at the start of their duty day using a combination of visual observation for signs of illness, temperature checks and asking about fever, cough, shortness of breath etc. or other symptoms of COVID-19 in the preceding 48 hours

- Ensuring crewmembers who are symptomatic or known to have COVID-19 have met CDC's criteria for discontinuation of isolation and crewmembers with known or suspected exposure to a person with COVID-19 (as defined in crewmember section above) have met criteria for release from quarantine, before they are allowed to return to work / travel. CDC is available for consultation upon request[16]

- Air carriers should consider implementing a program of routine screening / testing of crewmembers for SARS-CoV-2 infection using a viral test (nucleic acid amplification test [NAAT] or antigen test) authorized or approved by the U.S. FDA

  - Screening testing refers to testing of asymptomatic people with no known or suspected exposure. For more information, see 'Overview of testing for SARS-CoV-2 (COVID-19)'
  - CDC considers antigen testing acceptable for this purpose; if antigen testing is used, CDC's 'Interim Guidance for Antigen Testing for SARS-CoV-2' should be followed, including for confirmatory testing when indicated
  - CDC does not recommend testing for people who recovered from COVID-19 in the past 3 months

- To the extent feasible, air carriers should consider scheduling routine testing of crewmembers for COVID-19 so that they are not scheduled to work or travel on aircraft, including repositioning orcomplete any in-person training, whilst a test result is pending

  - If a crewmember's test comes back positive while at destination, the infected crewmember will need to self-isolate at destination - and other members of the crew will need to quarantine unless they are fully vaccinated or recovered from COVID-19 in the preceding 3 months
  - The infected crewmember and, unless they are fully vaccinated or recovered from COVID-19 in the previous 3 months, exposed co-workers - will not be able to return by any commercial revenue flight until they meet criteria for discontinuation of isolation or quarantine, as applicable

    Employer movement of an infected or exposed crewmember must be conducted in accordance with CDC's Interim Guidance for 'Transporting or Arranging Transportation by Air into, from or within the United States' of People with COVID-19 or COVID-19 exposure

- Crewmembers should be aware of the requirement for all air passengers to show a negative SARS-CoV-2 test result or documentation of recovery from COVID-19 before boarding a flight from a foreign country to the United States. Crewmembers traveling by air to the United States for reasons other than those covered by a CDC exemption will need to meet this requirement

Crewmembers should be excluded from work / travel on aircraft, including repositioning or completing any in-person training, if they:

- Have fever (defined as feeling feverish or a measured temperature of 100.4°F [38°C] or higher), cough, shortness of breath or other symptoms of COVID-19, or test positive for SARS-CoV-2 regardless of symptoms
    - Crewmembers should remain excluded until they meet CDC's criteria for discontinuing isolation or a healthcare provider determines the crewmember does not have COVID-19.
    - These recommendations apply regardless of crewmembers' vaccination status or priorhistory of COVID-19.

[16] Air carriers can contact CDC by calling the CDC quarantine station of jurisdiction or by calling the CDC Emergency Operations Center at770-488-7100. CDC can assist in contacting state or local health departments or foreign public health authorities, if needed

Where exposed to a person likely to have or confirmed to have COVID-19 (see exposures of concern in 'Guidance for Air Crews' above), unless they are fully vaccinated or recovered from COVID-19 in the past 3 months

- Exposed crewmembers should remain excluded from work until they have met criteria for release from quarantine
- Crew members who are fully vaccinated against COVID-19 or who have recovered from COVID-19 in the preceding 3 months do not need to quarantine, be tested or be excluded from work / travel following an exposure, provided that they have no COVID-19 symptoms. However, they should notify their employer of the exposure and monitor their health for 14 days following the last known exposure [17]. Those developing symptoms should self-isolate and get tested

Minimize Crewmember Exposures

To minimize crewmember exposures, air carriers should:

- Arrange for private ground transport to move crews to hotels, parking lots etc. at their homebase, which allows crewmembers to maintain the recommended 6-foot (2-meter) distance from others.
- Arrange to house crewmembers in hotels that are in close proximity to the airport. Ensure that hotel rooms are sanitized in advance of the crews' arrival.
- Provide sufficient quantities of alcohol-based hand sanitizer containing at least 60% alcohol to crewmembers, for their personal use.
- Provide sufficient quantities of cleaning and disinfectant products (e.g., disinfectant wipes) which are effective against COVID-19 and compatible with aircraft - for crewmembers to use on surfaces which they touch frequently in the galley, in the passenger cabin and flight deck.
- Increase the frequency of routine cleaning of the aircraft to focus on the most frequently touched surfaces

[17] Interim Public Health Recommendations for Fully Vaccinated People

- After each flight, clean and disinfect surfaces in the galley, passenger cabin, flight-deck etc. and other areas that are frequently touched by crewmembers e.g. buttons and dials that control cabin lighting and temperature, safety demonstration equipment, phone handsets and touchscreens etc. Use products which are effective against COVID-19, compatible with the aircraft and approved by the aircraft manufacturer for use on board the aircraft.[18]
- After each cockpit crew change, clean and disinfect surfaces in the flight deck that are frequently touched and utilized by cockpit crewmembers - such as yoke, throttles, auto pilots, radios etc. Use products which are effective against COVID-19 and approved by the aircraft manufacturer for use on board the aircraft.[19]
- Increase the frequency of routine cleaning of flight simulators and training devices, training aids and other training equipment that crew are likely to use or touch during training. Use products that are effective against COVID-19, compatible with the simulator, training devices, training aids and other equipment - and as approved by the appropriate manufacturer

  Provide sufficient personal protective equipment (PPE), (e.g., gloves, face shield, surgical masks,etc.) on board aircraft for crewmember use when interacting with a sick traveller and ensure availability of masks to place on symptomatic travellers. Before each flight, ensure that UPK(s) are inspected for proper condition and contents - and are properly stored

18 The FAA issued Special Airworthiness Information Bulletin (SAIB) NM-20-17 on November 04, 2020, to advise aircraft owners andoperators of the potential implications of disinfectants for airworthiness. The SAIB further explains that failure to follow the aircraft manufacturer's recommended practices on the use of approved materials for disinfection can lead to airworthiness issues, and provides additional guidance and information regarding potential negative impacts that may develop from the use of disinfectants. **19** See footnote 18

- Ensure crewmembers trained in the correct use of PPE, including correct procedures for donning (putting on) and doffing (taking off)
- Consider providing masks to crewmembers for routine use when on duty - if wearing a mask does not interfere with required PPE and / or job tasks
- Establish procedures for managing crewmembers developing symptoms of COVID-19 duringflight

  - Relieve crewmember from duty if not endangering the safe operation of the aircraft
  - Isolate sick crewmembers from other co-workers and passengers by a distance of at least 6 feet (2 meters) as much as possible during flight and have the sick crewmember don a surgical mask or cloth mask, if tolerable

- Consistent with 14 CFR § 382.23, airlines may refuse transportation to a passenger, because of a communicable disease, if the passenger's condition poses a direct threat to the health or safety of others.

Notifications

Air carriers should notify:

- Local health authorities (for the crewmember's place of residence or where the crewmember islocated, if different) if they are notified by a foreign health authority that a US-based crewmember tested positive for SARS-CoV-2

- CDC if:
  - A crewmember with COVID-19 worked on a flight to or within the United States[20] whilst possibly infectious
  - A crewmember with COVID-19 needs to be repatriated (either back to the United States or from the US to another country) or relocated from one U.S. State or territory to another - before CDC's criteria for discontinuing isolation are met; or
  - A crewmember with known exposure to COVID-19 needs to be repatriated (either back to the United States or from the US to another country), or relocated from one U.S. State or territory to another - before they have met CDC criteria for release from quarantine
- National health authorities about a crewmember who has symptoms of COVID-19 or tests positive for COVID-19, if they are in a foreign destination
- Crewmembers who may have been exposed to an infected co-worker or passenger with COVID-19 and who (the latter) have met the definition of a close contact

[20] For international flights outbound from the United States, public health authorities at destination should be notified

Response Plans

Air carriers should have plans for:

- Managing a crewmember identified as symptomatic or who tests positive for COVID-19 whilst on duty. (Whenever possible, air carriers should avoid having crewmembers working on flights whilst a test result for SARS-CoV-2 is pending)
- How to house crewmembers or move them safely to their residence if, whilst on duty, they are found to be positive for SARS-CoV-2 or identified as having been exposed to COVID-19
  - Housing an infected or exposed crewmember (other than at crewmember's residence) should be coordinated with the State and local health department of jurisdiction for where the concerned crewmember is located at the time of such infection / exposure
  - Relocating a SARS-CoV-2-positive or exposed crewmember into, within or out of the US should be conducted in accordance with CDC's Interim Guidance for *'Transporting or Arranging Transportation by Air into, from or within the United States of People with COVID-19 or COVID-19 Exposure'*

Air carrier occupational health and safety programs may choose to exceed the above recommendations based on their own policies. Air carriers based in other countries should also follow guidance from the relevant foreign public health and civil aviation authorities

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Appendix E

AIRLINE REVENUE, YIELD MANAGEMENT etc.

Set against a 'pandemic' context e.g. COVID-19 *(March 2020 - TBA 2022)*

Appendix E1

How COVID-19 is Impacting and Reshaping the Airline Industry

Journal of Revenue and Pricing Management - Laurie Garrow & Virginie Lurkin - 8 January 2021

Abstract

The Airline Group of the International Federation of Operations Research (AGIFORS) held a conference in October 2020 that included keynote addresses from KLM Royal Dutch Airlines and Airbus, as well as three panels that included representatives from 11 airlines throughout the world that focused on how COVID-19 is impacting and reshaping the airline industry

This paper presents key themes that emerged from these discussions, including the impact of border closures on airline operations and demand forecasts; the shift in development priorities within revenue management departments and outlooks for how passenger preferences, booking curves and fare product restrictions may change after the COVID-19 pandemic

Introduction

The Airline Group of the International Federation of Operations Research (AGIFORS) is a non-profit organization dedicated to the advancement of operations research within aviation

From 20-23 October AGIFORS held its 60th Annual Symposium on a virtual platform. As part of the program, two keynote presentations were given by Sander Stomph, a Vice President at KLM Royal Dutch Airlines and Robert Lange, a Senior Vice President at Airbus. ***In addition, three panels were held that focused on how COVID-19-related impacts are affecting and reshaping airline operations, crew management, and revenue management***

The panels included representatives from Airbus, Boeing, Massachusetts Institute of Technology (MIT) and 11 airlines from across the world: AeroMéxico, Air Canada, Air France-KLM, American, Cathay Pacific, Copa, Emirates, IndiGo, United, Qatar and SAS

This paper presents key themes that emerged from these discussions, including the impact of border closures on airline operations and demand forecasts; outlooks for how passenger mix, booking curves and fare product restrictions have changed during COVID-19 ..... and shifts that are occurring in development priorities within revenue management (RM) departments. These and other themes are discussed by following the two separate links found just below:

https://link.springer.com/article/10.1057/s41272-020-00271-1

https://rdcu.be/csFFI

Appendix E2

Airline Revenue Planning and the COVID-19 pandemic

Journal of Tourism - Ben Vinod - 9 July 2021 - Publisher: Emerald Publishing Limited

Abstract

The static world of commercial flight scheduling - where said schedules rarely changed once published is becoming more responsive (with schedule change updates sometimes occurring right up to associated departure dates), due to (COVID-19 pandemic related) demand volatility / unpredictable demand patterns etc.

Innovation in cash flow generation will take centre stage to operate the business in such uncertain times

Forecasting demand for future flights is a challenge, since historical demand patterns will not necessarily (no longer) be meaningful, thus requiring a new (adaptive and robust) revenue management etc. approach which typically:

- ***Monitors*** key metrics
- ***Detects*** anomalies…… and
- ***Quickly takes corrective action*** when performance targets are not being achieved

The above article can be read in full by following the link found just below:

https://www.emerald.com/insight/content/doi/10.1108/JTF-02-2021-0055/full/pdf&hl=en&sa=T&oi=ucasa&ct=ufr&ei=qo6BYYXGDIWN6rQPkcGeiA8&scisig=AAGBfm3OifIXOtCr9Whh78hXuLWTZeDZwg

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Appendix F1 (A)

Pandemic (or equivalent PH type Incident)

Examples of 'Forms' etc. which Airlines etc. might possibly be required to Originate, Distribute, Manage, 'Pass-on' to Authorities etc.

Health Declaration Documents *(e.g. Health Declaration Card, Passenger Locator Form etc.)*

IATA *(and others)* ***- Examples - HEALTH DECLARATION CARD*** (See pages 196 - 217)

IATA

(International Air Transport Association)

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IATA - Passenger Locator Form

https://www.iata.org/en/programs/safety/health/locator-form/ 133%

PROGRAMS

- COVID-19: All resources
- Cargo: COVID-19
- Passenger Experience
- Distribution & Payment
- Environment
- Safety
  - Audits
  - Safety Management Systems
  - Cabin Safety
  - Drones
  - Health and Safety
    - Air Transport &

Passenger locator form

Some countries' immigration and health authorities require passengers to leave a health and travel history record. In those cases, IATA suggests the use of a card based on the Passenger Locator form and providing an additional section, the Health Declaration Card.

Advice to travelers

Most states have their own online passenger locator form. If travel requirements for your destination demand filling such form, the form is usually provided on the government website to be filled online, particularly for travel during the COVID-19 pandemic.

- The **IATA Travel Centre Travel Regulations Map** provides information country by country, detailing where governments have made the use of a passenger health form mandatory, and providing a link to the specific government's online form
- Find out more information about safely traveling by air during the COVID-19 pandemic

Suggested passenger locator form to be used by governments

WHO, ICAO and IATA advocate the use of this standard Passenger Locator form:

- English (pdf)

Related Links

Up-to-date passenger restrictions

Air transport professionals: Timatic solutions

Information for travelers: Travel regulations map

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iata-harmonization-health-declaration-form.pdf - Adobe Acrobat Reader DC (32-bit)

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IATA

Traveller Health Declaration Documents

Harmonization is Needed

Health Related Information amidst the COVID-19

To mitigate the impact of the COVID-19, some States are collecting additional information on passengers including on their health. The data currently being collected is self-declarative, and include a person's identity, health conditions, contact details for tracing purposes and travel history. Such data has also been collected during previous international health outbreaks.

However, the global scale and the pace of the COVID-19 spreading has led to a rapid accumulation of uncoordinated measures that are challenging to manage effectively by aircraft operators, notably the collection of Health Declaration Forms. Carriers are often required to distribute such a form to their passengers. This additional task can be eased through a greater harmonization of all processes and data that are required by authorities.

To prevent the risk of transmission, IATA favours the development of government web portals dedicated to collect passenger health data and other digital solutions that passengers may access prior to departure or on arrival. Harmonization of the health data fields would facilitate the development of these paperless solutions by allowing passengers to pre-fill the information off-line.

In this context, IATA is calling for a harmonized health declarative document that would include a globally recognized set of data. Such harmonization will facilitate effective implementation of this temporary measure. IATA does recognize however that processes should become paperless to reduce the risk of virus transmission and to reduce the challenges of authorities in acting on data entered manually.

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Benefits of Harmonization

A standardized Health Declaration Form set forth by World Health Organization (WHO) and the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) programme had been developed during past health outbreak, notably for the Ebola crisis. ICAO also makes available a Public Health Passenger Locator Form in the Appendix 13 of Annex 9 – *Facilitation*.

However, a standardized form or standardized set of data have not been developed to address the information required in the context of the COVID-19. The passenger data currently collected by authorities are diverse, but typically revolve around:

- Passenger identity
- Travel information
- Contact details
- Medical information including symptoms questionnaire
- Travel history

In order to accelerate the development of a standardized form, IATA has cross-referenced the fields used in a dozen of Health Declaration Form currently being used and an initial set of data is proposed in **Annex A**.

IATA – International Air Transport Association May 12, 2020

Harmonization of the data fields present benefits for the solutions, paper-based or digital, that are proposed by governments:

- It will enable the use of only one form globally. This will ease its distribution by various stakeholders, including carriers which are currently required to distribute different types of forms and tear-sheet to passengers depending on the transit/destination countries;

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- Such a form would be easier to translate and ultimately enable the reach out a wider traveling population;
- As travelers become increasingly familiar with the same data fields to be completed from one country to the other, this will improve the data quality;
- Harmonization of a set of data fields would enable a more automated process for passenger to provide their data. This would take the form of an electronic submission (web service) of the form from third party applications. With this solution, third party applications would be enabled to send the data on behalf of the passenger the same way a browser does it when the passenger is using a web portal.
- Such harmonization will create synergy opportunities to reduce the development and running costs of existing web portals and open the opportunity for groups of states to have a shared portal.
- Having the data field and data structure aligned could allow customer centric application to store the persistent information from previous form submission and reuse it for future travel to different destinations.

IATA's Position

The harmonization of the data elements for a travel health form will ease the immediate administrative and operational burdens on carriers that distribute the Health Declarative Form to their passengers.

Such harmonization will assist the deployment of automated and paperless solutions and favour the direct exchange of information between passengers and authorities. IATA favours the setup of dedicated government web portals to collect the required additional health information over the paper-based declarations. Paper-based forms, further to increasing the risks of contamination, are cumbersome to store and resource intensive to act on compare to digital information.

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Annex A
Proposed Data Fields[1]

Data elements commonly used, mandatory (M) for the passenger to fill or optional (O):

1- Passenger identity

- First name: M
- Last name: M
- Nationality: M
- Date of birth: M [format YYYY - MM – DD]
- Gender: M
- Travel Document number: M
- Issuing authority: M
- Expiry date: M

2- Travel information

- Date of arrival: M
- Date of departure: M
- Last city/port of embarkation: M
- Port of entry: M
- Mode of Travel: M
- Flight number: M
- Seat number: O [if known ahead of the trip]

Travel Companions - Family

1) Last (Family) Name: M	First (Given) Name: M	Seat Number: O [if known ahead of the trip]	Age <18
2) Last (Family) Name: M	First (Given) Name: M	Seat Number: O [if known ahead of the trip]	Age <18

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3) Last (Family) Name: M	First (Given) Name: M	Seat Number: O [if known ahead of the trip]	Age <18
4) Last (Family) Name: M	First (Given) Name: M	Seat Number: O [if known ahead of the trip]	Age <18

[1] Based on the cross-referencing of health data requirements of the following countries and form set forward by international organizations:

IATA – International Air Transport Association May 12, 2020

3- Contact information

Address of stay

- Hotel/Residence name: O
- Street name: M
- Street number: M
- Postal code: M
- Province: M (if applicable)

Home address

- Residence name: O

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- Street name: M
- Street number: M
- Postal code: M
- Province: M (if applicable)
- Country: M

Other contact information:

- Email address: M
- Confirm Email address: M
- Primary Mobile phone number: M - country code – mobile number
- Secondary phone number: O– country code – phone number

4- Medical information

Symptoms

Symptoms	Yes	No
Fever		
Cough		
Difficulty of breathing		
Sore throat		
Running nose		

History of exposure

Within the past 14 days, have you, or has any person listed above:

- Had close contact with anyone diagnosed as having coronavirus COVID-19? M
- Have yourself been diagnosed by COVID-19? M
- If yes, when was the infection detected? [M if answer to the above question is yes] - [YYYY-MM-DD]

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5- Travel history

List of the countries visited the last 14 days prior to arrival

Country	Date of arrival [YYYY-MM-DD]	Date of Departure [YYYY-MM-DD]
Country name A		
Country name B		
Country name C		

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Appendix F1 (B)

Some examples of other, real '***Health Declaration Cards***' etc. follow - starting next page:

'OSAC' = USA Government's 'Overseas Security Advisory Council'

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Health Alert: United Kingdom,

https://www.osac.gov/Country/UnitedKingdom/Content/Detail/Report/d5b995b4-94c4-4077-bbe7-1893fb7561ad

About | Content | Events \ Groups \ Resources \ Help | Search | Login

5/1/2020 | Alerts

2 all time - 0 last 7 days

Share | Print

Health Alert: United Kingdom, Updated COVID-19 Immigration Policies

Location: United Kingdom
Event: Health Alert

U.S. Embassy London will be sending a daily update to ensure all U.S. citizens in the United Kingdom have the latest information about COVID-19 and local conditions. Updated information will be prefaced with **(NEW)**. If different or additional information would be useful, please email us with your suggestions at SCSLondon@state.gov.

(NEW) Updated Information on Updated UK COVID-19 Immigration Policies

- The UK government is granting visa extensions for most foreign national visa holders through May 31, 2020. Extensions will be granted for those who are unable to depart the United Kingdom as a direct result of COVID-19. You **MUST** contact the Coronavirus Immigration Team if your leave to remain in the UK expires between January 24 and May 30, 2020.
- You can apply from the UK to switch to a long-term UK visa until 31 May 2020. This includes applications where you would usually need to apply for a visa from the U.S.
- If your 30-day visa to travel to the UK for work, study or to join family has expired, or is about to expire, you can request a replacement visa with revised validity dates free of charge until the end of this year.
- If you have applied for a Tier 2, 4, or 5 visa and are awaiting a decision, you may start studies/work if certain conditions are met. For information, please visit Advice for

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Health Alert: United Kingdom,

https://www.osac.gov/Country/UnitedKingdom/Content/Detail/Report/d5b995b4-94c4-4077-bbe7-1893fb7561ad

- If you have applied for a Tier 2, 4, or 5 visa and are awaiting a decision, you may start studies/work if certain conditions are met. For information, please visit Advice for UK Visa Applicants and Temporary UK Residents .

Commercial Flights Still Available from UK to USA

The U.S. government does not anticipate arranging repatriation flights from the UK at this time. U.S. citizens in the UK who wish to return to the United States should make commercial flight arrangements or be prepared to remain in the UK for an indefinite period.

International flights from the UK to the United States are departing from London Heathrow Airport (LHR). Four carriers are running daily flights from LHR to the United States. Below is a list of carriers and possible destinations:

- **Carriers: American, British, Delta, and United**
- **Destinations: Atlanta, Boston, Chicago, Dallas, Las Vegas, Los Angeles, Miami, Minneapolis/St. Paul, New York, Salt Lake City, San Francisco, Seattle, and Washington D.C.**

Commercial flights are still available from multiple UK airports connecting to London Heathrow for direct flights to the United States. Trains from Scotland to London are also still available; however, this may change at any moment. Please check the airport and rail websites for the latest information:

- London Heathrow
- Belfast City Airport
- Aberdeen Airport
- Edinburgh Airport
- Glasgow Airport
- Scotrail
- National Rail

Limited Services at London Heathrow Airport

London Heathrow Airport is moving all flights into Terminal 2 and Terminal 5. All passengers should double-check their arrival and departure terminals, as they may change.

Food and other services in transit areas are extremely limited. Passengers must be prepared to be self-sufficient during their transit.

Guidance for Travelers Exhibiting COVID-19 Symptoms

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Health Alert: United Kingdom,

https://www.osac.gov/Country/UnitedKingdom/Content/Detail/Report/d5b995b4-94c4-4077-bbe7-1893fb7561ad

Guidance for Travelers Exhibiting COVID-19 Symptoms

Airline staff may deny boarding to passengers exhibiting potential COVID-19 symptoms. Passengers who are denied boarding will be directed to an airport self-isolation room where they may make quarantine arrangements before departing the airport. Each terminal should have a designated self-isolation room. Travelers exhibiting symptoms will be required to arrange their own transportation and accommodations for the quarantine period.

Please visit: https://www.heathrow.com/customer-support/faq/coronavirus-covid-19 for more airport information and a detailed FAQ section.

Information Regarding Hotel Availability in the United Kingdom

Most hotels in the UK have closed until further notice, per UK government guidance issued on March 23. Travelers are urged to reach out to directly by phone before travel to ensure specific hotels are still operating and accepting guests. The most up-to-date guidance can be found on the UK COVID-19 website.

The Department of State encourages all U.S. citizens to enroll in Smart Traveler Enrollment Program (STEP) to receive security and health updates.

On March 23, the Prime Minister advised that people should leave home only for the following reasons:

- Shopping for basic necessities
- One form of exercise a day
- Any medical need/care for a vulnerable person
- Travelling to and from work, only if absolutely necessary

Visit the UK COVID-19 website for updated information.
The U.S. Mission to the United Kingdom has suspended routine consular services. For emergency American Citizens Services, including emergency passports, please visit our website for additional information at https://uk.usembassy.gov/.

The Department of State has issued a Global Level 4 Health Advisory for COVID-19.

The Centers for Disease Control and Prevention (CDC) has issued a Global COVID-19 Pandemic Notice advising travelers to avoid non-essential travel.

Actions to Take:

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Health Alert: United Kingdom,

https://www.osac.gov/Country/UnitedKingdom/Content/Detail/Report/d5b995b4-94c4-4077-bbe7-1893fb7561ad

Actions to Take:

- Consult the CDC website for the most up-to-date information.
- For the most recent information on what you can do to reduce your risk of contracting COVID-19, please see the CDC's latest recommendations.
- Visit the COVID-19 crisis page on travel.state.gov for the latest information.
- Have a plan to depart the UK that does not rely on U.S. government assistance. The U.S. government does not anticipate arranging repatriation flights from the UK at this time.
- Check with your airlines, cruise lines, or travel operators regarding any updated information about your travel plans and/or restrictions.
- Visit our updated Embassy webpage on COVID-19 for information on conditions in the United Kingdom.
- Visit the Department of Homeland Security's website on the latest travel restrictions to the United States.

Assistance:

U.S. Embassy London, United Kingdom
33 Nine Elms Lane
London, UK SW11 8DG
+44 (0) 207-499-9000
from U.S.: 011 44 (0)20 7499-9000
SCSLondon@state.gov
https://uk.usembassy.gov/

-
U.S. Consulate General Edinburgh
+44 (0) 131 556-8315
Edinburgh-info@state.gov

U. S. Consulate General Belfast
+44 (0) 28 9038-6100
ConsularBelfast@state.gov

State Department – Consular Affairs
888-407-4747 or 202-501-4444
United Kingdom Country Information

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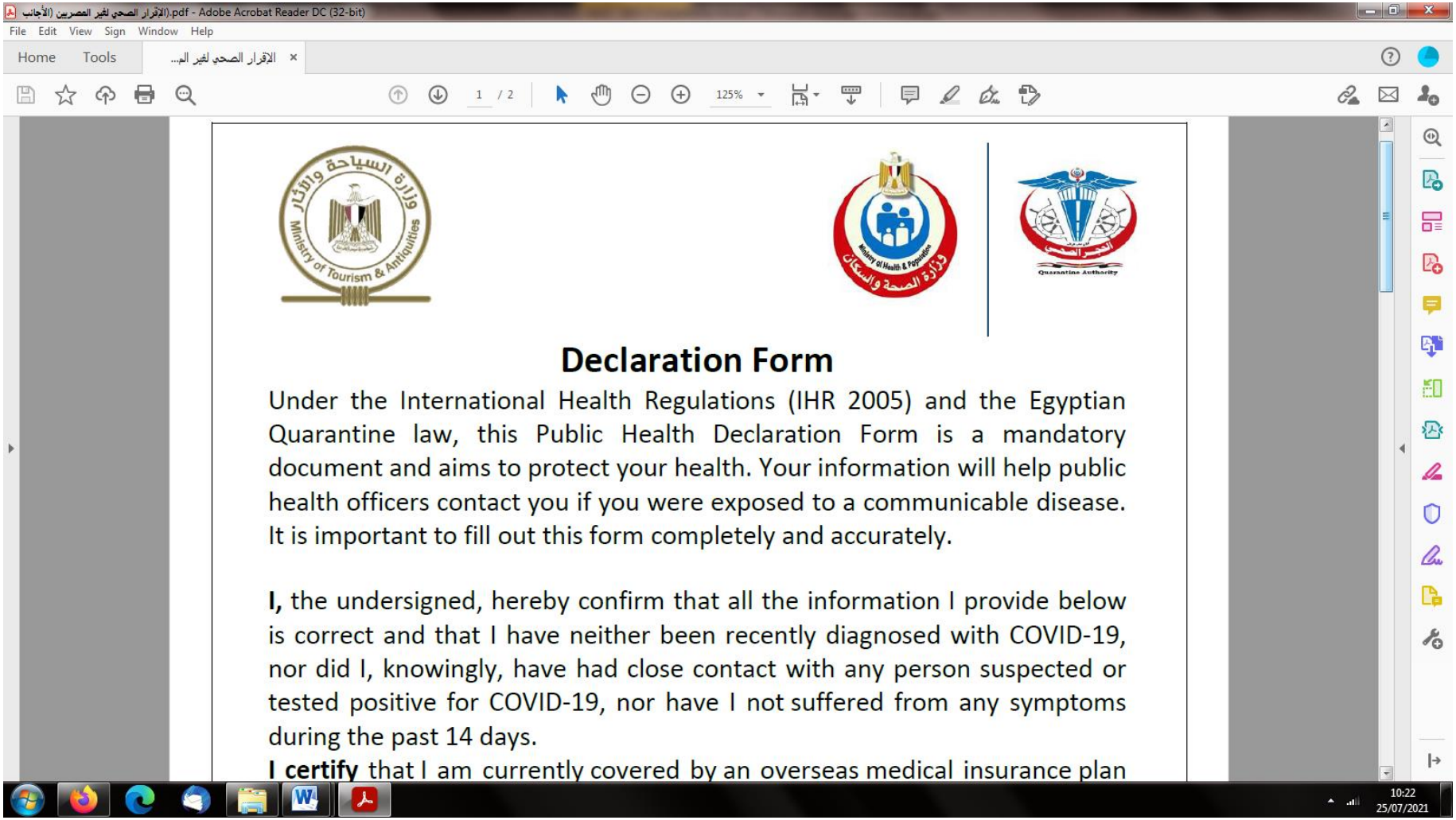

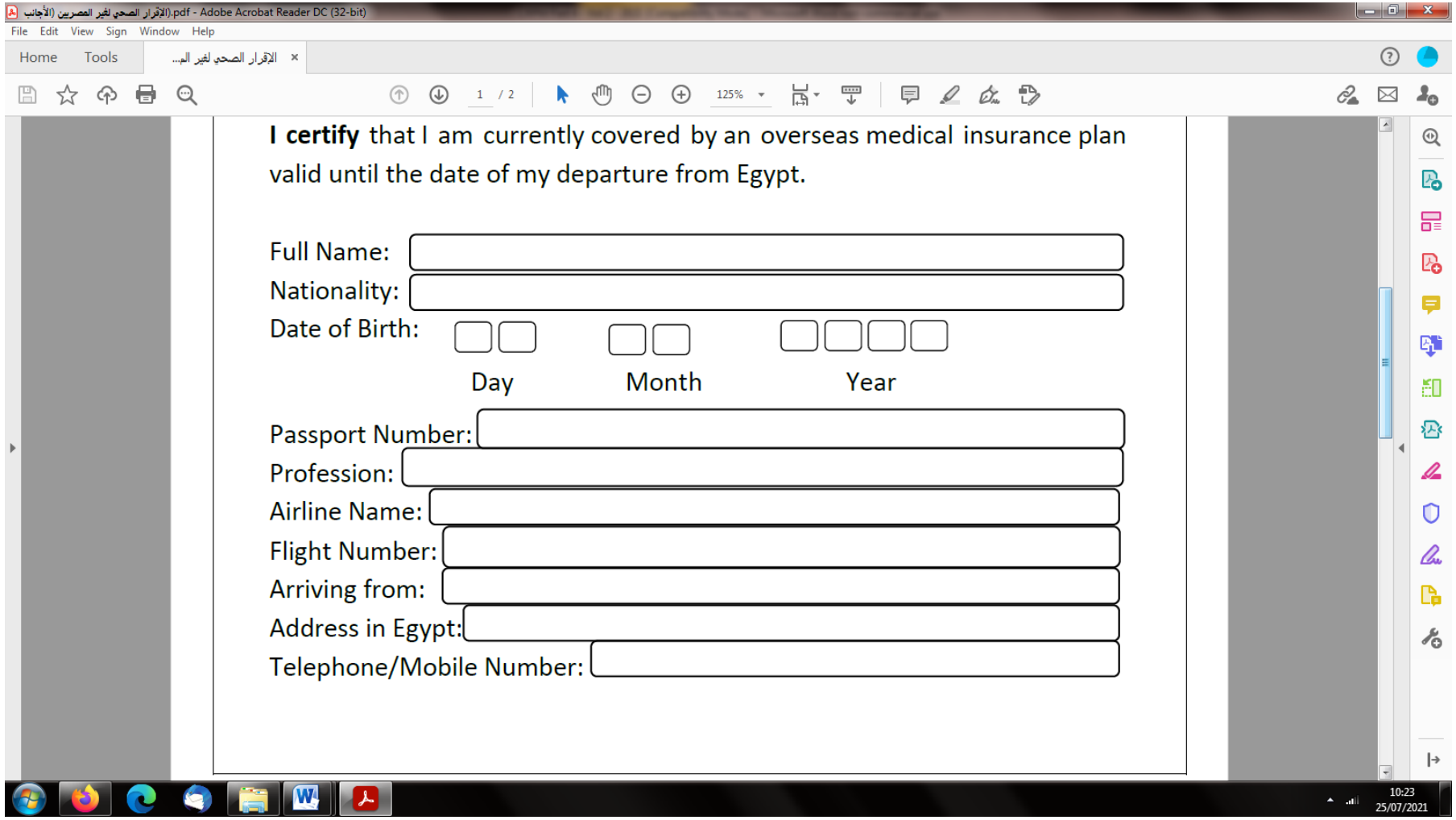

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I certify that I am currently covered by an overseas medical insurance plan valid until the date of my departure from Egypt.

Full Name:

Nationality:

Date of Birth: ☐☐ ☐☐ ☐☐☐☐

Day Month Year

Passport Number:

Profession:

Airline Name:

Flight Number:

Arriving from:

Address in Egypt:

Telephone/Mobile Number:

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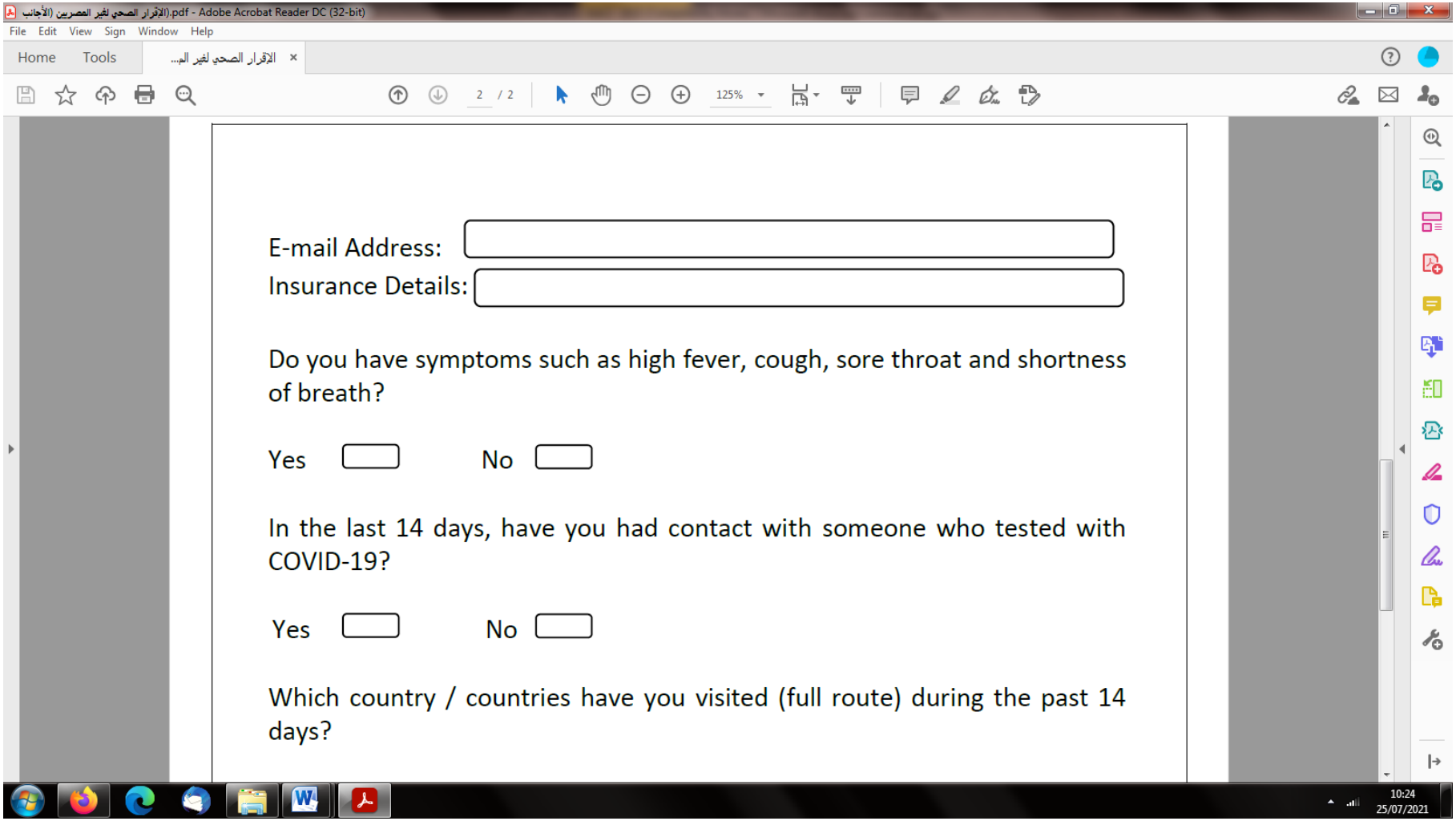

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Which country / countries have you visited (full route) during the past 14 days?

--- --- ---

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Should I experience any symptoms of COVID-19 during my stay in Egypt, I will immediately report the incident to the hotel management and doctor and seek the necessary medical assistance, or call 105.

Should I change the above mentioned address or phone number during my stay in Egypt I will call 105 to give the new information.

In case I violate the above, the Egyptian Government shall not be subject to any liability, whatsoever, if I show evidence of positive testing for COVID-19 during the 14 days after departure.

Failure to submit this declaration will result in an illegal entry to the country.

I hereby confirm that I have read and understood all of the above.

Signature: ..... **Date:** .....

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Health Declaration Certificate | Notice on Online Application for He

www.chinese-embassy.org.uk/eng/visa/jiankangmaEn/t1835247.htm

中华人民共和国驻大不列颠及北爱尔兰联合王国大使馆

Embassy of the People's Republic of China in the United Kingdom of Great Britain and Northern Ireland

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China-UK Relations

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- Education
- Culture

Home > Visa > Health Declaration Certificate

Notice on Online Application for Health Declaration Certificate for Non-Chinese Nationals

2020/11/25

Starting from November 28th 2020, non-Chinese nationals who are to fly to China from the United Kingdom need to apply for Health Declaration Certificate online. The Chinese Embassy in the United Kingdom, as well as the Chinese Consulates-General in Manchester, Edinburgh and Belfast, will no longer accept applications for Health Declaration Certificate via email.

Non-Chinese nationals could access the Health Declaration Certificate system on PC, mobile phone or other terminals to fill in the information, declare the health conditions and upload tests reports (instructions on how to use the platform are detailed below). After the Chinese Embassy in the United Kingdom, or the Chinese Consulate-General in Manchester, Edinburgh or Belfast, examines and approves the application, the passenger will receive an electronic Health Declaration Certificate via the online system, which is a green QR code marked with "HDC". Passengers must present the green QR code with the "HDC" mark to the airline staff for verification before checking-in.

Annex: Operation guide of the Health Declaration Certificate system

1. Please visit the login page (https://hrhk.cs.mfa.gov.cn/H5/) with PC or scan the QR code with smart phone (see the picture below).

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Health Declaration Certificate | Notice on Online Application for He

www.chinese-embassy.org.uk/eng/visa/jiankangmaEn/t1835247.htm

- Economy & Trade
- Science & Tech
- Education
- Culture
- People to People
- Local Exchanges

Embassy Information

- Offices
- Embassy Events
- Tour the Embassy
- Office Hours and Address

Consulate-General in the UK

- Manchester
- Edinburgh
- Belfast

@ChineseEmbinUK

Chinese Embassy in UK WeChat

facebook

Chinese Embassy in UK

Please enter keyword

2. Click "En" in the upper right corner to switch to English version (see the picture below).

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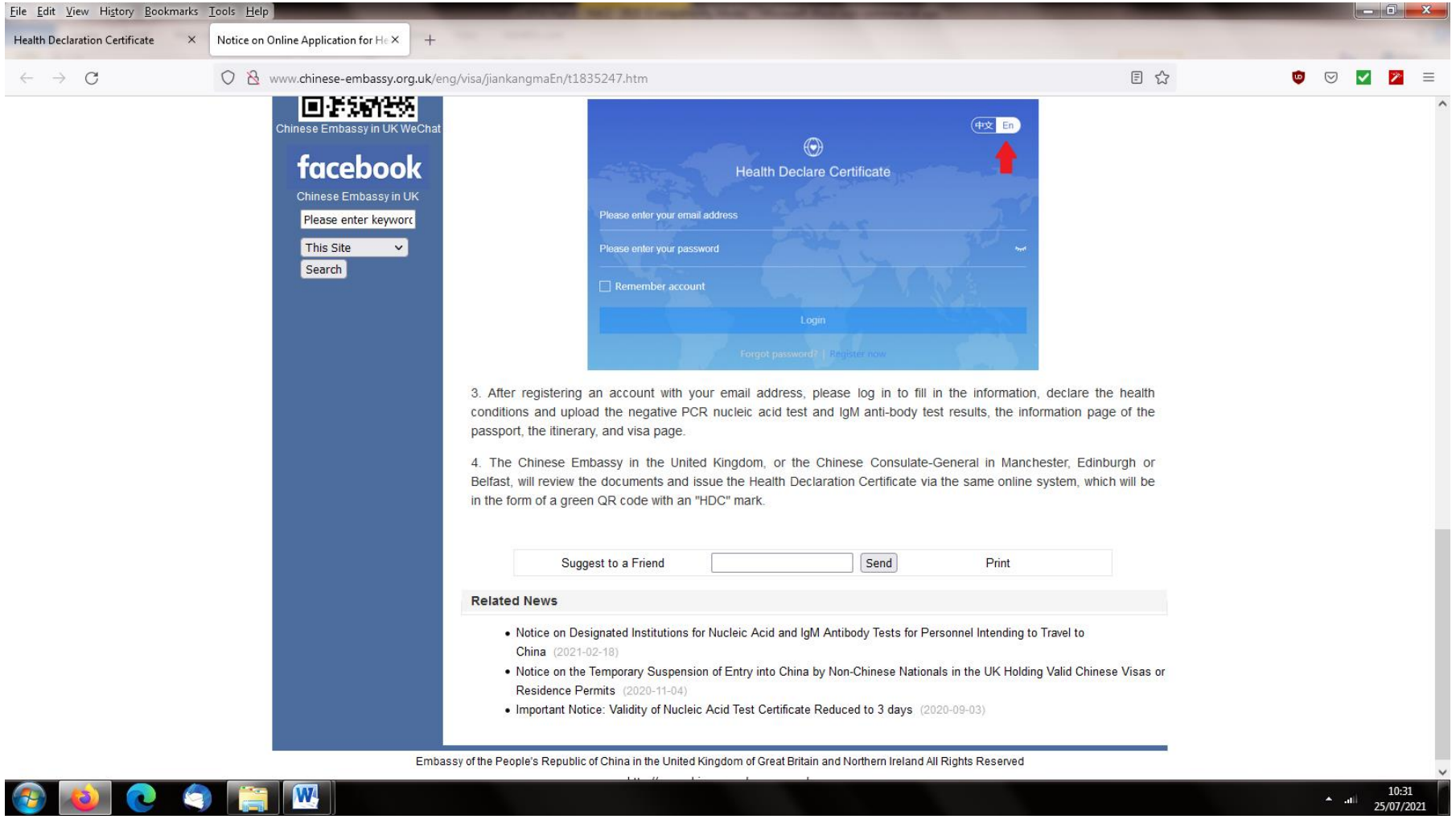

Appendix F1 (C)

Some examples of '***Passenger Locator Forms***' etc. follow - starting next page (pages 219 - 232):

public-health-passenger-locator-form-1.pdf - Adobe Acrobat Reader DC (32-bit)

File Edit View Sign Window Help

Home Tools public-health-passe...

Public Health Passenger Locator Form: To protect your health, public health officers need you to complete this form whenever they suspect a communicable disease onboard a flight. Your information will help public health officers to contact you if you were exposed to a communicable disease. It is important to fill out this form completely and accurately. Your information is intended to be held in accordance with applicable laws and used only for public health purposes. ~***Thank you for helping us to protect your health.***

One form should be completed by an adult member of each family. Print in capital (UPPERCASE) letters. Leave blank boxes for spaces.

FLIGHT INFORMATION: 1. Airline name | 2. Flight number | 3. Seat number | 4. Date of arrival (yyyy/mm/dd) 2 0

PERSONAL INFORMATION: 5. Last (Family) Name | 6. First (Given) Name | 7. Middle Initial | 8. Your sex Male ☐ Female ☐

PHONE NUMBER(S) where you can be reached if needed. Include country code and city code.

9. Mobile | 10. Business

11. Home | 12. Other

13. Email address

PERMANENT ADDRESS: 14. Number and street *(Separate number and street with blank box)* | 15. Apartment number

16. City | 17. State/Province

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public-health-passenger-locator-form-1.pdf - Adobe Acrobat Reader DC (32-bit)

File Edit View Sign Window Help

Home Tools public-health-passe...

18. Country

19. ZIP/Postal code

TEMPORARY ADDRESS: If you are a visitor, write only the first place where you will be staying.

20. Hotel name (if any)

21. Number and street *(Separate number and street with blank box)*

22. Apartment number

23. City

24. State/Province

25. Country

26. ZIP/Postal code

EMERGENCY CONTACT INFORMATION of someone who can reach you during the next 30 days

27. Last (Family) Name

28. First (Given) Name

29. City

30. Country

31. Email

32. Mobile phone

33. Other phone

34. TRAVEL COMPANIONS – FAMILY: Only include age if younger than 18 years

Last (Family) Name

First (Given) Name

Seat number

Age <18

(1)

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public-health-passenger-locator-form-1.pdf - Adobe Acrobat Reader DC (32-bit)

File Edit View Sign Window Help

Home Tools public-health-passe...

30. Country

31. Email

32. Mobile phone

33. Other phone

34. TRAVEL COMPANIONS – FAMILY: Only include age if younger than 18 years

	Last (Family) Name	First (Given) Name	Seat number	Age <18
(1)				
(2)				
(3)				
(4)				

35. TRAVEL COMPANIONS – NON-FAMILY: Also include name of group (if any)

	Last (Family) Name	First (Given) Name	Group *(tour, team, business, other)*
(1)			
(2)			

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ABCX AIRWAYS - PUBLIC HEALTH - PASSENGER HEALTH LOCATOR** (Contact Tracing) **FORM

To better protect your health, public health officers require you to complete this form when a communicable disease on board your flight is suspected. Your information will assist them to contact you (over the next few weeks) if they suspect that you ***may*** have been exposed to such communicable disease. It is important to complete this form fully and accurately. Your information is held in accordance with applicable data protection and other relevant laws and shall be used only for public health purposes. Thank you

FLIGHT INFORMATION

Airline: Flight No: From:

To: Via: (as appropriate) *Seat Number(s):

Estimated Arrival Date / Time: (Include 'time zone' used e.g. 'UK Local time'; 'USA Pacific time' etc.)

* Please provide details of ***all*** seat numbers sat in during the flight - if appropriate (e.g. if you changed seat[s] for some reason)

PERSONAL INFORMATION

Last (family) Name:

First (given) Names: Male or Female?

Telephone Numbers (mobile/cell; home; business; landline; other):

Email Address:

Full Permanent (postal) Address (including zip / post code):

Temporary Address[es] (if any) during next 14 days (continue on separate sheet if necessary & attach securely to this form)

EMERGENCY CONTACT INFORMATION (of ****someone else*** who can ***reliably reach you*** during the ***next 30 days***)

** Give full name; full postal address; all available telephone numbers; email address; social media contacts etc.

TRAVEL COMPANIONS (FAMILY / RELATIVES)

Provide full names of all family members etc. travelling with you. Also provide their ***seat numbers

*** Please provide details of ***all*** seat numbers sat in by your family during the flight - if appropriate / known (e.g. they changed seats for some reason). (Continue on separate sheet if necessary & attach securely to this form)

TRAVEL COMPANIONS (NON-FAMILY / RELATIVES)

Provide full names of all ***non***-family members travelling with you. Also provide their ****seat numbers and (if travelling on a 'Group' booking) - the name of the group (tour / business / team etc.

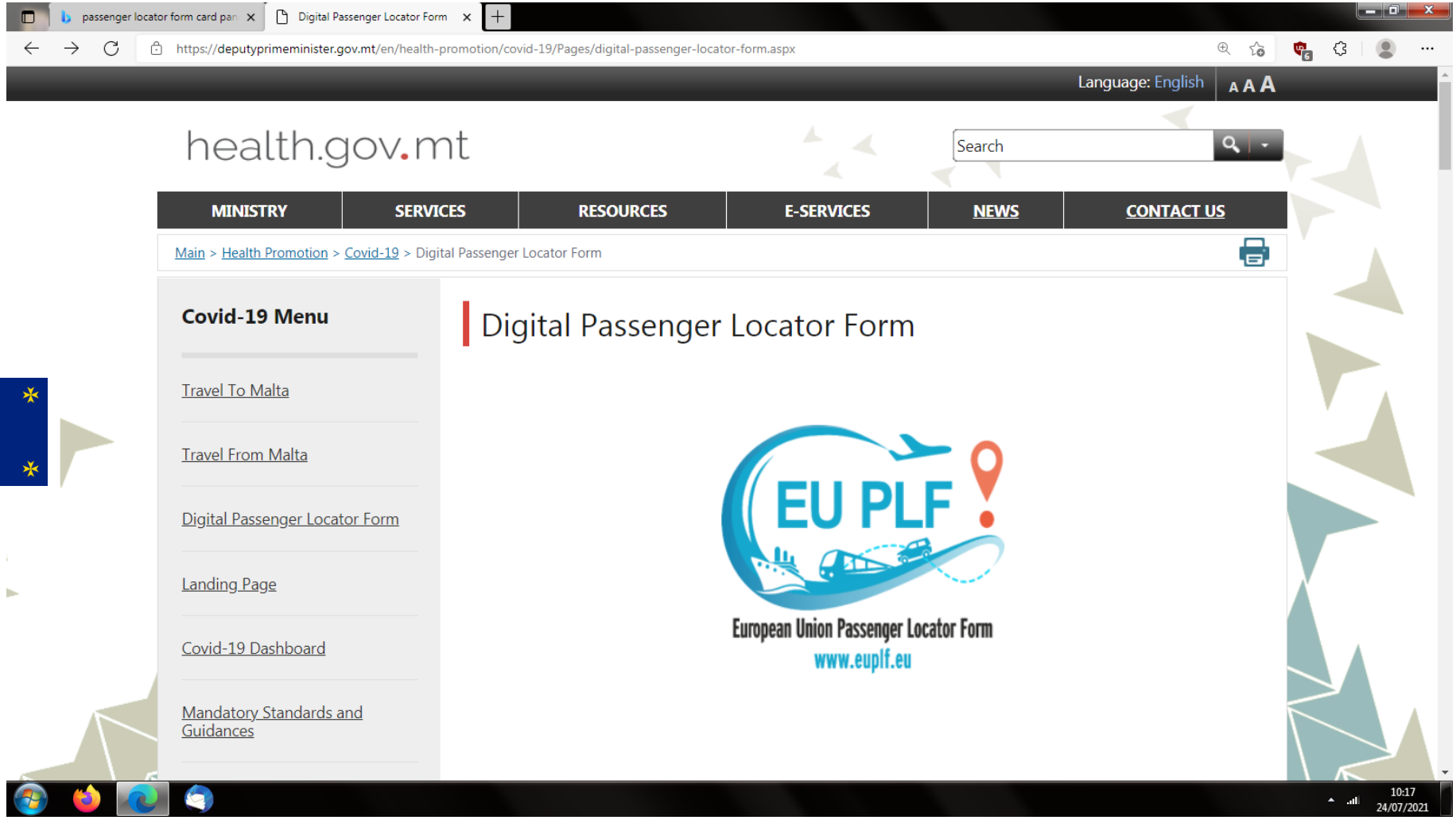
**** Please provide details of ***all*** seat numbers sat in by your travel companions during the flight - if appropriate / known (e.g. they changed seats for some reason). (Continue on separate sheet if necessary & attach securely to this form)

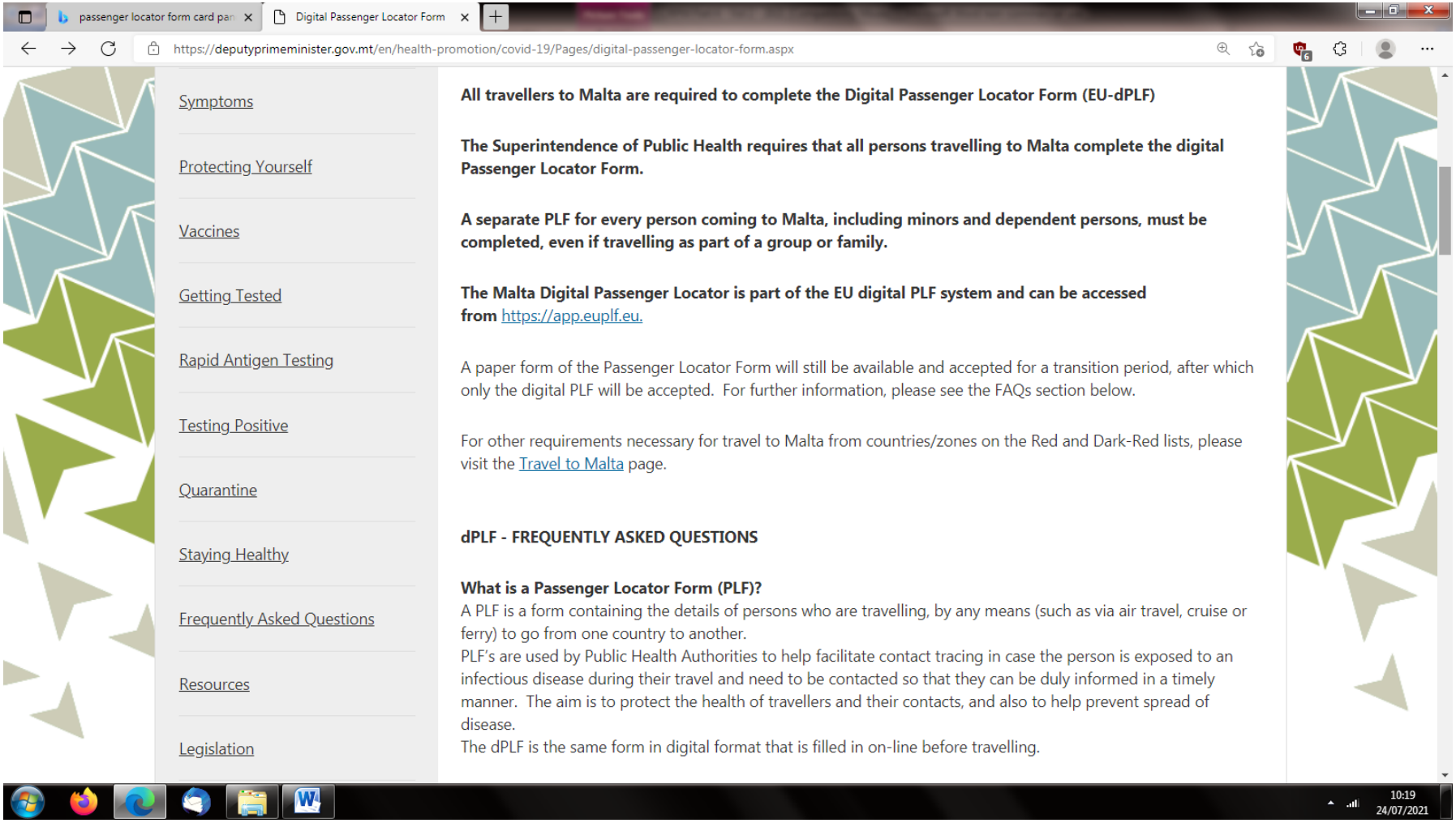
European Union Digital Passenger Locator Form *(EUdPLF)*

- Using Malta for this Example -

+ User Manual *(For Travellers)*

Only_Passenger_User_Manual_EUdPLF_en_v2.pdf (euplf.eu)





passenger locator form card pan | Digital Passenger Locator Form

https://deputyprimeminister.gov.mt/en/health-promotion/covid-19/Pages/digital-passenger-locator-form.aspx

Who is required to complete the digital Passenger Locator Form (dPLF)?

All travellers entering Malta via air or by sea (cruise or ferry) are required to complete a digital Passenger Locator Form (dPLF).

Each individual who is travelling will have to complete a separate PLF, even if travelling as part of a group or family.

The Malta digital Passenger Locator is part of the EU digital PLF system and can be accessed from https://app.euplf.eu

What is the procedure to complete the digital PLF in the EU-dPLF web application?

STEP 1: Access the EU-dPLF form from https://app.euplf.eu

STEP 2: Register: Travellers must register to the EU-dPLF web application by providing a valid email address and a password. Travellers will receive a confirmation email sent to the email address they provided. To validate and complete the registration, travellers must click on the link sent to the declared email address.

STEP 3: Complete the EU-dPLF: Travellers will be asked to provide the following information:

- Select your destination country. Passengers travelling to Malta need to choose Malta from the drop-down screen.
- Travel information: mode of transport, aircraft, cruise or ferry
- Details of flight or cruise or ferry including, where applicable, airline or ship name, flight number, seat/cabin number, embarkation airport/port, destination airport/country, arrival/disembarkation/travel date and any connection flights.
- Personal information: name, contact details, phone number, email address, identification details
- Permanent address details
- Temporary address details (if different from permanent address)
- Previously visited countries over the previous 14 days other than your permanent address
- Emergency contact information (optional)
- Uploading of recognised vaccine certificate or negative pharyngeal PCR test result taken within 72 hours of arrival in Malta

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passenger locator form card pan | Digital Passenger Locator Form

https://deputyprimeminister.gov.mt/en/health-promotion/covid-19/Pages/digital-passenger-locator-form.aspx

- Travellers that have spent time in a dark red country and those with exceptional exemptions will also be required to enter their COVID-19 Public Health Travel Authorisation Code to proceed

Health declaration including which countries you visited in the previous 14 days, vaccination status and test results (with uploading of relevant documentation), your age, symptoms, quarantine details, and recent COVID-19 history.

STEP 4: Review and submit the EU-dPLF: Before submission of the form the traveller will be able to preview the information they have completed.

STEP 5: Receive the QR Code: Travellers will receive a confirmation e-mail with the outcome of the submission of the dPLF with a unique Quick Response (QR) code. The e-mail will contain the QR code and a link to download the dPLF in PDF format. Travellers must download onto their device or print the dPLF form from the e-mail they receive. You will need to show the dPLF form at boarding and/or at arrival in Malta.
Should the information provided not be sufficient or in-line with travel requirements, the digital PLF may not be accepted and may be classified as pending review or rejected. Travellers will be warned of this prior to pressing "Submit". If the Submit button is pressed, the traveller will not be allowed to resubmit another application for the same personal and travel details.
If the information submitted is satisfactory, upon completion of the digital Passenger Locator Form, the traveller will be allowed to travel to Malta.

At what stage do I need to present the dPLF?
The dPLF is needed for boarding to travel to Malta. Flight, cruise liner and passenger ferry operators are directed not to allow anyone without all the requirements for travel to Malta, including a completed PLF, to board.
You will receive an email confirmation with a PDF file upon submission of the dPLF. You will be directed to show this document at the boarding checkpoint before boarding your flight or ferry to Malta. Cruise liner passengers will have to complete the dPLF to be allowed disembarkation in Maltese ports.

What will I have to do upon arrival in Malta?

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What will I have to do upon arrival in Malta?
Upon arrival in Malta, the traveller will be asked to show the dPLF QR Code to the Inspector at the point of entry. Based on the information provided in the dPLF you will either be allowed to enter Malta, or else might be required to repeat the test and/or quarantine if the requirements for entry to Malta are not met.
It is important to note that a false declaration on arrival is considered a criminal offence.

Is a new PLF required if I have a connection flight through Malta, or if I am travelling by cruise?
As a general rule when the traveller uses different means of transport (ship, airplane), then a new PLF should be completed each time the traveller boards a new mode of transport to travel to another country. As an exception, when travellers are travelling by airplane, and the travel includes connection flights in different country/countries, then only one PLF should be submitted for the final destination country. However, if the traveller leaves the airport, before boarding the connection flight, then a separate PLF should be completed for this country as well.
Travellers travelling with a cruise ship who will remain on the cruise ship need not submit a dPLF and will need to submit the dPLF prior to disembarkation in the final destination country (end of cruise).

Who will use the information I share in the digital PLF?
The information shared in the EU-dPLF is used only by the Maltese Public Health Authorities in case this is needed to contact the person. This information is not shared with other third parties and is protected by the General Data Protection Regulations of the EU.

Who has access to the data I share?
The information collected will be shared with a hosting service provider and application development, maintenance, and technical support providers, and the Maltese Public Health Authorities. The information is stored and shared according to the General Data Protection Regulation (GDPR).

Why is the information in the EU-dPLF collected?

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https://deputyprimeminister.gov.mt/en/health-promotion/covid-19/Pages/digital-passenger-locator-form.aspx

Why is the information in the EU-dPLF collected?

Information in the EU-dPLF is collected for the following purposes:

- For contact tracing purposes on a national and international level as necessary
- To help prevent cross-border threats.
- To implement disease prevention measures

I have travelled a lot before and was never asked to fill in this form. Why is this being done now?

Before the COVID-19 pandemic, travellers were asked to fill in a PLF only in certain scenarios in the interests of Public Health. Since the COVID-19 pandemic, it became clear that it is not always possible to know who might be suffering from an infectious disease that can be transmitted to those persons nearby, and therefore this extra precaution can help improve contact with travellers at risk should this be needed. PLFs have been collected since the beginning of the COVID19 pandemic.

What happens if I don't want to fill in the PLF?

Persons who decide not to fill in the PLF will be denied boarding as this is a mandatory requirement for travelling to Malta.

When can I fill in the digital PLF?

You should aim to fill in your dPLF leaving adequate time to deal with any problems you may have with filling it in. You will need to have the following documents in hand to be able to submit the form, depending on the country you are travelling from:

- Your valid, recognised certificate of vaccination, OR
- A Negative nasopharyngeal PCR swab from a licensed or accredited laboratory, that was taken within 72 hours prior to arrival in Malta,
- Authorisation from the Maltese Health Authorities for travel to Malta if you are arriving from a country which is on the Dark-Red list, or if you are arriving from a country on the Red list and are not in possession of a valid certificate of vaccination accepted by the Maltese Health Authorities.

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passenger locator form card pan | Digital Passenger Locator Form

https://deputyprimeminister.gov.mt/en/health-promotion/covid-19/Pages/digital-passenger-locator-form.aspx

What happens to those persons who do not have access to a computer while abroad and cannot get someone to fill in the form for them?

There will be a transitory period starting from the 1st of July, where both the paper-based and the digital system for the PLF may be used. After this period, the digital PLF only will be accepted. You may also access the dPLF from a smart phone or tablet.

I have filled in my form, but I was informed that my application is pending review, or has been rejected. Why is this?

If your application is pending review, a team from the Maltese Public Health Authorities will assess your PLF for any irregularities or any mistakes, or to see if you have missed providing any required documentation.
If your application is rejected, you will not be allowed to fill in another application for the same flight.
Some of the reasons of why an application is rejected includes the following:

- If you have symptoms that can be indicative of COVID-19
- If you are currently in quarantine or in isolation
- If you have been tested positive for COVID-19 in the previous 14 days
- If you fail to upload a valid vaccine certificate or a negative COVID-19 test result
- If you fail to input a correct travel Authorisation code provided by the Maltese Health Authorities

Please note that the opening hours of the Helpline are between 0700hrs and 2100hrs. Any pending applications that are pending review will only be reviewed between 0700hrs and 2100hrs.

I have filled in my form, but I was informed that my application is pending review, or has been rejected. What can I do?

You can write to dplfqueries@gov.mt asking for an explanation. Please note that the opening hours of the Helpline are between 0700hrs and 2100hrs. Any pending applications that are pending review will only be reviewed between 0700hrs and 2100hrs.

I need an Authorisation and an Authorisation Code before I can travel to Malta. How can I obtain one?

Every person who is travelling from a country on the Dark-Red list or else from a country on the Red list without an

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passenger locator form card pan | Digital Passenger Locator Form

https://deputyprimeminister.gov.mt/en/health-promotion/covid-19/Pages/digital-passenger-locator-form.aspx

I need an Authorisation and an Authorisation Code before I can travel to Malta. How can I obtain one?

Every person who is travelling from a country on the Dark-Red list or else from a country on the Red list without an approved vaccination certificate needs to obtain authorisation from the Maltese Health Authorities before travelling.

The authorisation can be obtained by sending an email to covid19.vetting@gov.mt with the following information:

- Full name and official identification number of every person travelling to Malta. The identification number must be the same that will be used on the travel document.
- The reason for travel to Malta.

You should apply at least 1 week before your planned trip to Malta to allow for your authorisation application to be reviewed in time.

If your application for travel is accepted, you will receive an Authorisation Code that you would need to input in the relevant section on the EU-dPLF when prompted. Each code will be unique for every person travelling to Malta and can be used only once. An application has to be submitted for every member of the family or group (including minors and dependent persons) travelling to Malta.

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The Government	Services & Information	Life Events	Communities	About Malta
Government of Malta	A to Z List of Websites	Pregnancy and Birth	Media in Malta	The Maltese Islands
Press Releases	eForms	Getting a Passport		History and Culture
Government Gazette	Education and Learning	Getting a Driving Licence		Places of Interest
Department of Information	Healthy Living	Looking for a Job		Public Holidays
		Renting and Purchasing Property		Media in Malta

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Appendix F1 (D)

The following forms (FEC and PRC) are typically used by airline 'ABCX Airways' (see separate document [in this same series] 'CRPM Part 4 / ***Volume 1***' for more about 'ABCX Airways' - as / if required)

Both forms are intended for use in the 'catastrophic aircraft accident' type situation i.e. not for a 'pandemic / serious public health' type incident

However (and probably in extremis), they might also be appropriately adapted for use in a 'pandemic / serious public health' type incident, as outlined below:

Family, Relatives & Friends Enquiry Card - FEC see next page:

The primary use of this standard ABCX Airways form is to take information (about passengers on-board an aircraft which has experienced a ***major accident***) - from associated family, relatives and friends (FR) - where such FR had ***not*** been on board the accident flight. Attempts are then made by the airline / whoever to ***match*** FR with their associated passengers

The FEC might be adapted to the pandemic etc. situation as required e.g. where (upon arrival at destination airport) all on board are placed in immediate quarantine and some on board are placed in immediate isolation

Passenger Record Card - PRC see next page after that:

Similar to the FEC, but this time the information is provided directly by the passengers themselves and used as part of the ***matching*** process (as already described above for the 'FEC')

FAMILY, RELATIVES & FRIENDS ENQUIRY CARD FEC

Flight No		Date of Flight		Flight Route	
Details of "the ***person***" *(i.e. the **person** reporting / providing information **here** about a possible **Victim**)*					
Full Name				Relationship to Victim	
Telephone Contacts *(Country code + area code + No)*					
Home Address / Equivalent					
What is *'person's'* preferred Language		Has *'person'* already had contact with the victim *(e.g. by mobile phone, text, face to face etc.)*			
Details of the *possible* '***Victim***' as provided by the ***'person reporting'***					
Last / Family Name		First / Other Names			
Known by any Other Names (Aliases)					
Male/Female/Child/ Infant		Nationality		Religion	
Existing Medical conditions (if any)					
Other information (e.g. skin / hair/ eye colour, marks / scars / tattoos) etc.					
Total Journey Details of ***Victim*** (***all*** sectors) as known to *'person reporting'*					
Other persons believed to have travelled with ***this Victim*** (as known to *'person reporting'*)	Last / Family Name	First / Other Name(s)	Relationship to ***this Victim***		
Closest relative (or equivalent) of ***this Victim*** - if known to *'person reporting'*	Full Name	Full Contact Details & Address	Relationship		
Remarks / Notes: (Continue on separate sheet if necessary and securely attach to ***this*** top sheet)					

Form completed by - Name / Contact: Date/Time:

Note: If more space needed to enter information, use *separate sheet(s) of paper & attach securely to **this** FEC*

PASSENGER & CREW (VICTIM) RECORD CARD VRC

Flight No		Flight Date		Flight Route	
Details of the '***Victim***' i.e. the person who this VRC is about					
Last / Family Name		First / Other Names			
Known by any Other Names?					
Type of ***Victim***: *(Flight Crew, Cabin Crew, Passenger, Positioning Crew / Staff, Ground Victim etc.)*					
Male/Female/ Child/Infant		Nationality		Religion	
Existing Medical Problems *(if any)*				Date of Birth	
Total Journey Details *(all sectors)*					
Home Address			Alternate Address		
Telephone Contacts - *Country & area code + No*			Preferred Language		
Victim Status - ☐ Missing ☐ Un-injured ☐ Hospitalised (non-life threatening) ☐ Hospitalised (life threatening) ☐ Dead ☐ Unknown					
Victim's Current Location					
Victim's Intentions: ☐ Travel to local address ☐ Continue Journey ☐ Proceed to SRC (L) ☐ Other (Provide Details)					
Passport #		Issue Date		Expiry Date	Issue place

Other persons believed to be travelling with ***this Victim***	Last Name	First Name(s)	Relationship to ***this Victim***

Known closest relative/Next of Kin of ***this Victim***	Full Name	Full Contact Details & Address	Relationship

Meeter/Greeter info (i.e. person(s) *meeting* ***this Victim***)	Full Name	Full Contact Details & Address	Relationship

Remarks / Notes: (Continue on separate sheet if necessary and securely attach to this top sheet)

Form completed by - Name / Contact Date/Time:

Note: If more space needed for information, *use separate sheet(s) of paper & securely attach to VRC*

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