

Bomb Onboard: Do you know your procedures?

OPSGROUP Team
29 April, 2021



Airport security means the threat of a bomb onboard is greatly reduced. But if you do receive a bomb threat, or find a suspicious package onboard, what procedure does your operator have in place for you to follow?

How much risk is there?

You have probably all heard the Shoe Bomber attempt from 2001. This was thwarted by some brave passengers and crew, and also the fact the bomber had sweaty feet – his swamp foot dampened the trigger preventing it from igniting.

In 2016, an aircraft made an **emergency at HCMM/Mogadishu airport** after a bomb exploded onboard. The bomb was likely brought on concealed within a laptop. This flight was lucky though – the impact of the bomb was minimal, limited because the bomb exploded while the aircraft was at a lower altitude (11,000ft).

In 2020 a European airline found a 'bomb note' onboard. The flight was escorted to a safe landing and passengers disembarked without incident.

So bomb threats, and attempted bombings, do occur, and while **security is getting better and better**, unfortunately terrorists are getting more creative in finding ways to bring items on board. The attempts are not always aimed at causing destruction either – threats alone cause a huge amount of **disruption to operations**. So understanding how to assess the risk and credibility of a threat is as important as knowing how to deal with a possible explosive device if one is found onboard.



The shoe bomber was thwarted by his own sweaty feet

Is the threat credible?

Threats received regarding an aircraft need to be assessed, and the **credibility determined**. The threat classification will generally be based around how specific the threat is. Most operators will have a procedure in place for determining this, and probably take into account something along the following lines:

If a threat mentions a **specific target**, or is made by a **known terrorist organization** and is **deemed credible** then this is going to be considered more serious. Often these are referred to as a **red** threat.

On the other hand, a threat which is **vague, general, and doesn't specify targets** might be considered less credible. A hand scribbled note in the toilet for example. This would be categorized as a **green** threat.

However, regardless of the assessed credibility, a bomb threat has to be taken seriously and treated as a genuine situation.

If you are on the ground

The simplest and safest option if you are on the ground is to **disembark and carry out a full search** of the aircraft. It might be a hassle and result in some big delays, but the possible alternative is much worse.

A serious threat may require a **precautionary disembarkation** – which will result in offloading the passengers as quickly and as safely as possible. This creates a risk to safety in itself, and generally the credibility of the threat will be communicated to the crew so that they can judge the risk of waiting (for steps) versus disembarking immediately to clear the aircraft (but have passengers hurling themselves towards the tarmac).



His face is the red threat apparently

If you are in flight

If a threat is received against your aircraft while in flight, carry out a search checking those places which are often overlooked during security checks on the ground, but **where an article might easily be concealed** – toilets, galleys, jump seats, stowage areas, closets etc. Try and do it **discreetly to avoid unnecessary worry** for passengers.

If an article is found, **do not move it or touch it**. Move passengers away from the immediate area, and remove any flammable items and have fire extinguishers ready in case. A PA asking for anyone onboard with '**BD or EOD experience**' might help – these are terms which experts will recognize without saying "Hey, passengers, is there a **bomb** expert onboard?"

Not terrifying your passengers is probably a good call, but ensuring they are following your crew's orders, and that they are prepared for the situation on the ground, is also necessary. This means providing them with clear information, but **without dramatizing the situation**.

"Ladies and Gentlemen, we have received a message that a threat has been made against one of our aircraft/an aircraft in this airspace. These threats do happen, however, until we can establish how credible it is, we will take all possible precautions and therefore intend to land at... in..."

If you find a suspicious article

Most manufacturers provide **checklists for bomb-on-board** situations. Know where this is, and understand what it says.

There are a few measures you might want to consider:

- **Talk to ATC** so they know exactly what is going on and what you need. They all assist with locating an airport with services needed, and coordinating with military if necessary.
- Try to **avoid routes over heavily populated areas**.
- Consider carefully the choice between **flying fast** to minimize airborne time **versus flying slow** to minimize air-loads and damage (in the event of fuselage rupture).
- Request **remote parking** on the ground if there isn't a **designated bomb location**.
- **Brief your crew** for a possible emergency landing, and in any event, brief them to ensure passengers are disembarked quickly and moved to at least 200m upwind from the aircraft.
- **Avoid large and rapid changes to pressure altitude** – consider using manual cabin altitude controls to minimize rapid pressure changes while still lowering the cabin altitude to reduce the differential pressure.

Aircraft are designed to not 'explode' if there is a rupture in the fuselage – that's why they tend to have a lot of smaller sections attached together. It makes the overall structure more resilient to the effects of an explosive decompression, aiming to keep it "localized".

Reducing the differential pressure to around 1 PSI will also reduce the damage if an explosion does occur. Maintaining a slight differential will ensure the blast moves outwards, but the lower differential limits the force of air from the cabin outwards.

1psi is the equivalent of about 2,500 feet difference, but flying at an altitude that allows you to manually

reduce the differential will probably mean a much lower level and much higher fuel burn.



The Mogadishu bomb exploded at low altitude so differential pressure was lower

Where is your aircraft's LRBL?

A **Least Risk Bomb Location** is an area where the least damage will occur should a bomb explode. This should be specified in your aircraft manual. These are often near aft doors or in washroom stowage areas. The area provides the least risk, in the event of an explosion, to flight critical structures and systems.

If the article is deemed unsafe to move, **cover it in plastic** to prevent any liquids getting in, and then **pile blankets and pillows, seat cushions and soft clothing** around it. We're talking as big a pile as you can, and once done, **saturate in water** to minimize fire risk in case an explosion does occur. Don't forget the plastic sheets first though - liquid damage to electrical components is also a big risk.

If you can move it, and only if it is deemed essential to do so, then check that LRBL. Once in place, build up the barricade.

Always minimize movement to any article as much as possible, and don't put anything directly on top of it. An igloo of saturated cushions around it and the gaps stuffed with blankets etc is good. This 'cushioning' will help minimize the force if an explosion does occur. Never put inside an oven or trolley though as a sealed container will amplify the pressure and explosive force of a bomb.



Stack soft furnishings around the bomb and secure in place

Where to go

You will likely be accompanied by fighter jets to an airport with a **designated bomb area** – usually a remote apron away from buildings, fuel supplies and other aircraft.



EGSS/Stansted in the U.K. is the designated “emergency” airport because of its proximity to RAF bases, and the special apron for hijacking and bomb threat parking.

What next?

Getting your aircraft safely on the ground is **Step One**. Getting your aircraft to a safe point to disembark/evacuate your passengers and crew is **Step Two** and coordinating this with ATC and airport services is important. Knowing in advance where you will taxi to will get you there more quickly and safely. Landing, slamming on brakes and bursting tires will get you nowhere fast, so plan ahead and be prepared.

A bomb threat or bomb onboard situation is difficult to plan for because the ‘where you are and what will happen’ is not something we can prepare for, other than **being ready to follow our procedures** and **remaining calm**. Chances are this is not a situation many of us will (thankfully) find ourselves in, but understanding the resources you have to assist, and knowing the onboard procedures so you can coordinate passengers and crew will no doubt help if it ever does occur.

We got some checklists for you ...

Mark Zee
29 April, 2021

Checklist: Trip planning for Covid-19

Considerations	Notes	Action
Airport planned to. Some are not Covid specific, but they are included as a reminder.		
Customs availability, status, restrictions, local Covid-19 rules. Read news media/marketing that country to get a feel for current situation. Remember to...		
Runway hours? Runway lights? Any restrictions for SAT? Any Covid-19 changes to hours?		
International flight requires customs - is it an Airport of Entry? In rare cases, customs can be positioned to domestic airports. Watch customs hours changes for SAT changes for Covid-19		
Do crew need a visa for tech stop? Destination? Pass in?		
Any Covid quarantine rules on arrival?		
Check ATC hours of availability, availability of flight levels, any changes to flight levels		
Consider that some runways may be unavailable due to being used for aircraft storage. Check aircraft performance vs. length available.		
Compare handle to contract fuel price.		
Any recent supply issues?		
PCN vs. ACN. Can usually be exceeded with aircraft permission but not by much.		
Is this the right airport for the city? Domestic first, not military, is there a GA dedicated airport? How many gates?		
Any local factors eg. Wind/regular fog. Winter ops		
Is there a relative ground handling? For BA, is there an FBO? Handling mandatory?		
Availability if aircraft goes tech.		

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Item	Considerations	Notes	Action
Passenger processing	Customs desks available for larger aircraft? Check-in desks avail? Passenger terminal/VIP terminal?		
Noise restrictions	Curfew hours, ATU start procedures, aircraft types banned?		
Security	Any risk of crime, political instability, terrorism, war etc.		
Fire and Rescue	Compare IFR category to your requirements. Check NOTAMs for any Covid-19 changes/airlines.		
GH Equipment	Any medical avatars, JOPs, cargo offload, belt conveyors, GPU required? Check available.		
Prior reports	Check company reports, OPS GROUP Airport Safety reports. Any comments that may cause concern?		
Regulatory requirements	Can we land here? Eg USA Border overnight rules, Mexico, Customs/Tapachula first etc.		

Enroute

Check for each FIR enroute

Airspace	Entry requirements: HLA (North-Atlantic), RVSM, HF, CPDLC, VHF 8.33, Database		
Comms	HF, CPDLC, VHF 8.33, Database		
Navigation	RNAV, RNAV requirements		
Surveillance	AOS-B, AOS-C, Mode S		
Permits	Compliance, requirements, any Covid-19 additional documents required?		
Risk	Should we land? Check SelfAviation.net		
Closures	Any specific airport or potential airspace closures due to Covid-19?		
Engine failure	Consider whether we want to be in this airspace in an emergency situation requiring a divert - engine fail, medical, de-pressurisation		
Nav fees	Expensive? Better route close by!		
Aircraft type, registration	Some countries will not allow to enter if manufactured or registered abroad to enter the FIR or land. Registered aircraft cannot fly from many FIRs (political)		

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Checklist: Aircraft supplies (Covid-19)

Item	Notes	Quantity	Checked
On board – additional Covid-19 stock items			
Surgical Masks	For crew, passengers		
Gloves	For crew, For passengers		
Goggles	UHN has some, if more required, load separately		
Capes	UHN has some, if more required, load separately		
Hand Sanitizing Gel			
Disinfecting Wet Tissues	Eg. San-Cos		
Approved Aircraft Disinfecting Spray	Eg. Isoclean		
Infra-red Thermometer (contactless)			
Universal Precaution Kit (UPK)			
Biohazard Bags	Additional to those in the UHN for disposal of masks/gloves		
Passenger Locator Cards			
Overnight PPE Kits	For crew downroute, containing: Each pack to contain: Mask (2), gloves (2), thermometer (1), sanitiser (100, 500ml)		
Crew cleaning kits	For rental vehicles. If planned to be used as crew transport downroute		

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Covid 19

SUPERMANUAL

Members guide for pilots, dispatchers, and aircraft operators

With checklists.

Version 0.9 - May 11, 2020

This is an extract from the OPSGROUP Covid-19 Supermanual, version 0.9 - May 11, 2020

Trip planning Checklists for Covid-19

Item	Considerations	Notes	Action
Airport			
Airport	Check for each airport planned to. Some of these are routes and not Covid specific, but they are included as a reminder.		
Opening Hours	Customs availability, status, restrictions, local Covid-19 rules. Read news media/marketing that country to get a feel for current situation. Remember to...		
Customs	International flight requires customs - is it an Airport of Entry? In rare cases, customs can be positioned to domestic airports. Watch customs hours changes for SAT changes to hours?		
Visas	Do crew need a visa for tech stop? Destination? Pass in?		
Health	Any Covid quarantine rules on arrival?		
ATC	Check ATC hours of availability, availability of flight levels, any changes to flight levels		
Runway Length	Consider that some runways may be unavailable due to being used for aircraft storage. Check aircraft performance vs. length available.		
Fuel Price	Compare handle to contract fuel price.		
Fuel Availability	Any recent supply issues?		
Runway/Apron Strength	PCN vs. ACN. Can usually be exceeded with aircraft permission but not by much.		
Suitability	Is this the right airport for the city? Domestic first, not military, is there a GA dedicated airport? How many gates?		
Weather	Any local factors eg. Wind/regular fog. Winter ops		
Handling	Is there a relative ground handling? For BA, is there an FBO? Handling mandatory?		
Maintenance	Availability if aircraft goes tech.		

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At the back of the group Covid-19 Supermanual we have 5 pages of checklists, which you can download here.

- **Airport**
- **Enroute**
- **Permits**
- **Regulatory and Documents**
- **Aircraft Supplies**

What else is in the manual?

The image shows the OPS GROUP Covid 19 SUPER MANUAL. The left side is an orange cover with the title 'Covid 19 SUPER MANUAL' and a 'Members guide for pilots, dispatchers, and aircraft operators. With checklists.' The right side shows a multi-panel interface with sections like 'Before', 'During', 'After', and 'Checklists'.

We've divided the manual into four areas around phases of flight: Before, During, After ... and a Checklists section.

Before we go flying

About Covid, Precautions, Off duty crew and staff

Going to work, Health Check, Illness at work, Dispatchers

Flight Crew - Fit to fly, License, medical and recency, keeping aircraft and crew current

Wellbeing and Mental Health: How to find calm, Be Kind

Planning a flight, Crew pairings and planning

Aircraft cleaning and preparation, Risks: Hand Sanitizers, Dangerous Good regulations

Catering and Food preparation, Operations to an FBO or Executive Terminal, Passengers

Arriving at work, Briefings

During our flight

In-flight considerations

Aircraft Setup, Boarding, Temperature Checks, Baggage, Seating
Wearing of PPE (Personal Protective Equipment)
Additional Aircraft Equipment
In flight Crew procedures: Pilots, Flight Attendants, In-flight Service
Illness in Flight - Crew actions, Dispatch actions, Cleaning procedure

After - back home (or downroute)

Disembarking
Tech Stops and Turnarounds, Interim Cleaning, Walkaround
Arrival at Destination, Waste Disposal, Cleaning at outstation
Overnights/Layovers, Hotel guidance, Crew PPE kits
Crew Illness away from Home base
AOG/Unplanned overnight
Arrival at Home base,
Aircraft Cleaning, Cockpit cleaning
Crew exposure, Contact tracing

Checklists

Checklist: Trip planning in Covid-19
Checklist: Aircraft supplies
Passenger Health Screening form example

For more about the Covid-19 Supermanual contents, and to download a copy, use this link.