New FAA Airspace Warning for Afghanistan

Chris Shieff
26 July, 2021

The FAA has issued an emergency order for Afghanistan's airspace which **bans all US operators below FL260** throughout the OAKX/Kabul FIR.

KICZ Notam A0020/21 has the details but essentially there are only three exceptions:

- **Flights in and out of OAKB/Kabul are allowed to continue.**
- **If a flight has a special approval from either the FAA or the state.**
- **If you have an emergency and have to land.**

What's the risk?

Due to increased extremist activity on the ground, civil aircraft are increasingly exposed to a number of threats. **Aircraft at low levels and those taking-off and landing are especially vulnerable.**

The first is indirect fire caused by militant groups targeting airports with mortars and rockets. **OAKB/Kabul** was attacked in December last year by ballistic weapons which damaged a parked aircraft.

The second is direct fire from a variety of sources. Militia are known to have access to multiple weapons that can be used to target low level aircraft. These include rocket propelled grenades and **man-portable air defence systems** (MANPADS) which are capable of reaching aircraft as high as **FL250**. Even small arms fire has been actively used to target aircraft.

In recent years there have been several reports of anti-aircraft fire incidents from both military and civilian traffic. Tragically in two cases, military aircraft were actually shot down.

So why now? What's changed?

While the threat from militant activity in Afghanistan isn't new, the FAA has been closely monitoring the

situation there for changes in safety and security. And things are changing…

As US forces begin to withdraw, two groups are now engaged in an **escalating conflict** there – the Taliban and Afghanistan's own military, which may lead to a **civil war** if no agreement can be met. Essentially the Taliban seek to regain power, while the existing government is defending itself.

For aviation this means an increase in **exposure to known risks.** The situation is volatile, and no one really knows where the conflict is headed. But with increasing extremist activity on the ground and a **possible intention to make an international statement**, the FAA appears to have decided that a simple caution is no longer enough.

What about above FL260?

US operators can continue to overfly the OAKX/Kabul FIR above FL260 but is recommended you **stay on established airways.** It's also important you continue to monitor the situation on the ground which may change with little warning.

What are other countries saying?

Several long running airspace warnings remain in place, and it is likely we will see these changed in the near term as the situation in Afghanistan continues to evolve.

France follows similar rules and requires all operators to remain at or above FL260 throughout the Kabul FIR. Both **German** and **UK** operators are advised to consider the risks of operating below FL330 and FL250 respectively.

Stay safe up there.

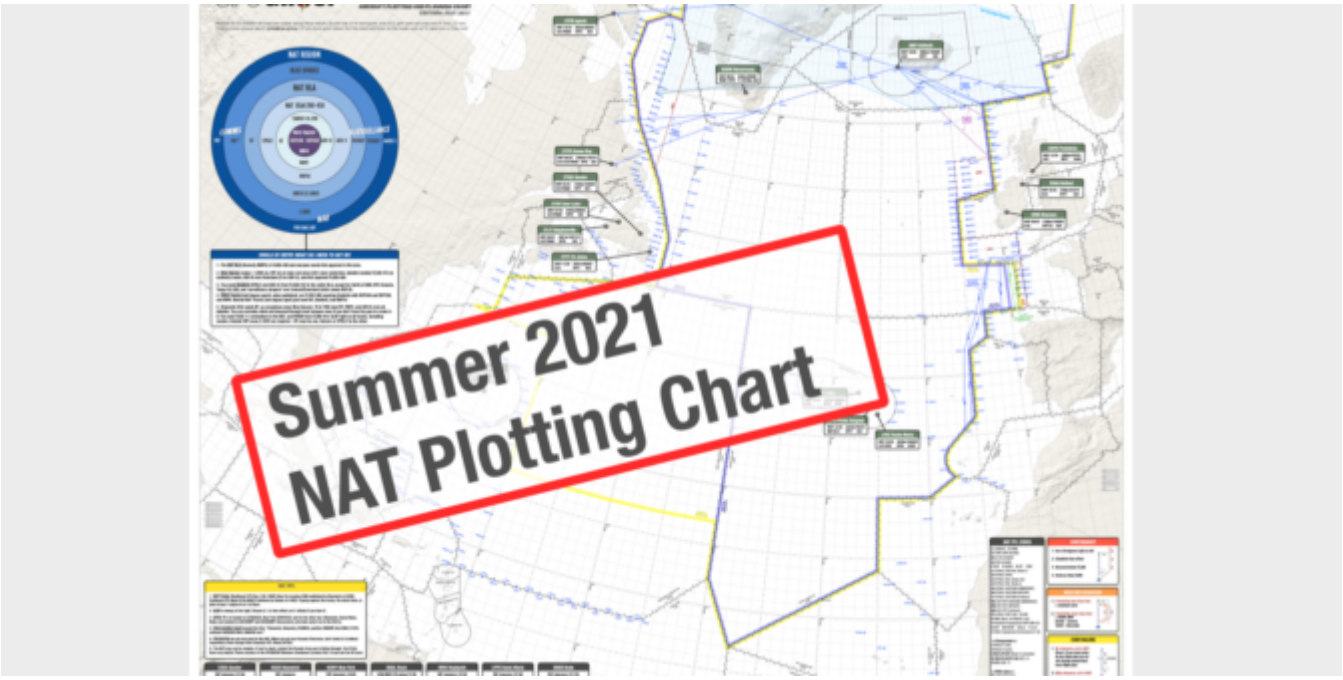
As US troops withdraw the real question now is whether the Afghan Government (or another international force) can put the brakes on a resurgent Taliban.

Until that happens, the situation remains unpredictable. You can keep up to date with airspace risk changes as they happen over at SafeAirspace.net – our conflict zone & risk database.

Click here for a full global briefing.

2021 New North Atlantic Plotting & Planning Chart

David Mumford
26 July, 2021



Hi members!

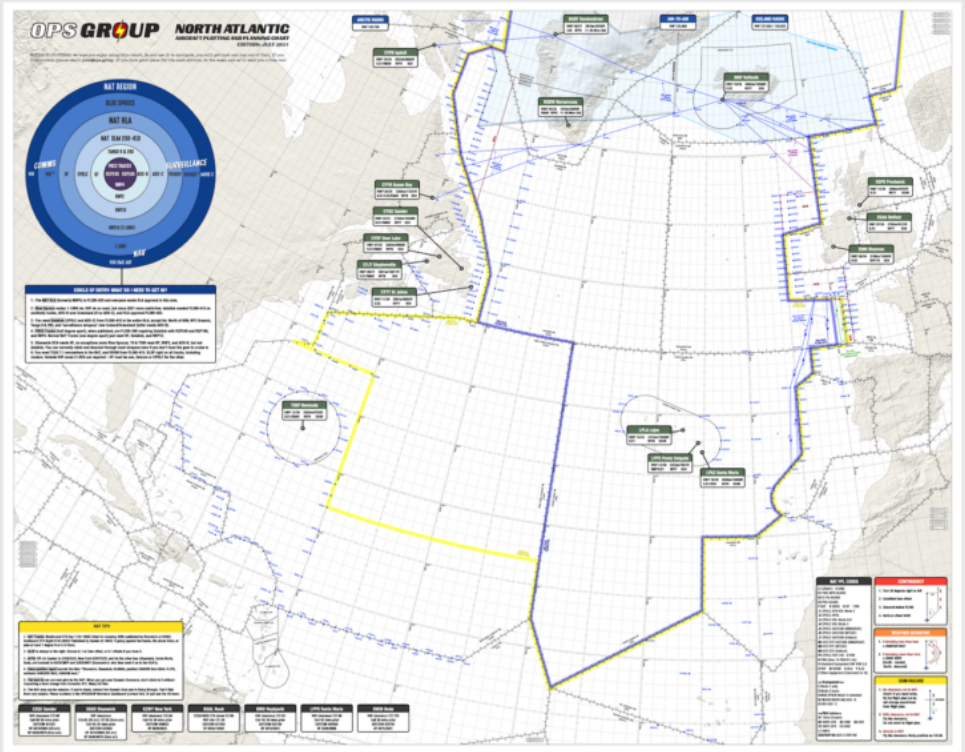
First, **thanks to all the group members who were part of making this**. We sat down from scratch and wanted to build the best possible NAT chart we could. A lot of work went into this, and we're grateful to you all! With this format and structure, we're also looking at making useful plotting charts for other areas like the Pacific, Africa, etc. – but for now, enjoy this completely updated NAT map for 2021.

So .. It's ready! You can grab it in Slack, or in your Dashboard. View it on your iPad or Laptop etc. as a PDF, or print it out as a giant wall map! It prints really well up to 15 feet wide – but you can also just put it onto A3 or A2 size paper.

If you're not a member, read on for how to get a copy.

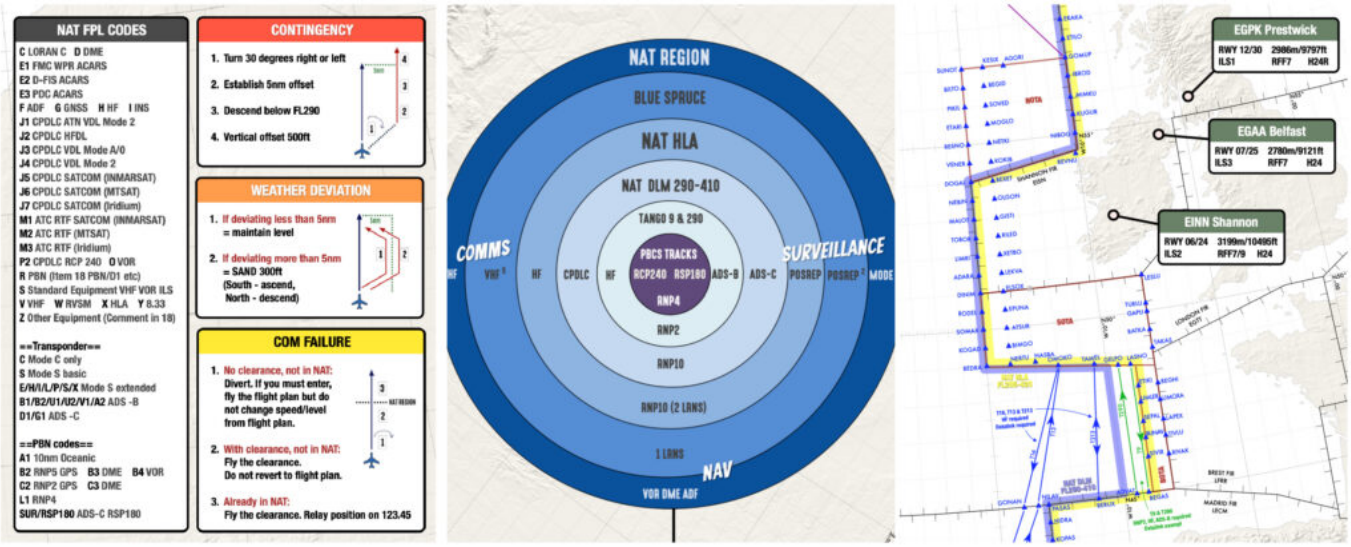
About the 2021 NAT Chart

This chart is completely new – we started from scratch, expanded the coverage area, and then worked as a group to add all the useful things we could think of that a pilot or dispatcher crossing the North Atlantic might need.



New on this chart – effective July 2021:

- **FULLY UDPATED** for 2021 post-COVID flying!
- **EXPANDED** coverage area – much further down into the Atlantic, and further west.
- **NEW**! NAT Tips – using NAT Tracks, SLOP, filing an Oceanic Flight Plan, and helpful tips
- **NEW**! Quick reference for contingency, weather, and comms failure with easy graphics.
- **Updated**: NAT Airspace Circle of Entry 2021 – easily check what you need for Nav, Comms and ATC Surveillance depending on which bit of the NAT you will be flying through.
- Additional diversion airports, now 16 total primary NAT alternates with runway, approach, length, RFF, and hours
- Easy view of boundaries for HLA and DLM/Datalink mandated airspace
- Updated NAT FPL codes, clearance frequencies, Satcom, and HF
- Fully updated “South East Corner” with new Tango routes
- and … Treasure Boxes!



Other chart features:

:: Requirements for NAT tracks, PBCS tracks, datalink mandate.
:: Common NAT Diversion Airports.
:: Runway Orientation, Length, best IFR Approach.
:: RFF Category and Opening hours.
:: NAT FPL Codes and sample FPL.
:: Blue Spruce routes and equipment requirements.
:: All NAT Entry/Exit points with associated required landfall fixes.

How to get the new chart, if you're not a member?

- **Option 1**: Buy the chart in the store (**$35**)
- **Option 2**: Join OPSGROUP, and **get it for free**!

OPSGROUP members get this and other publications free of charge, all available through your member dashboard.

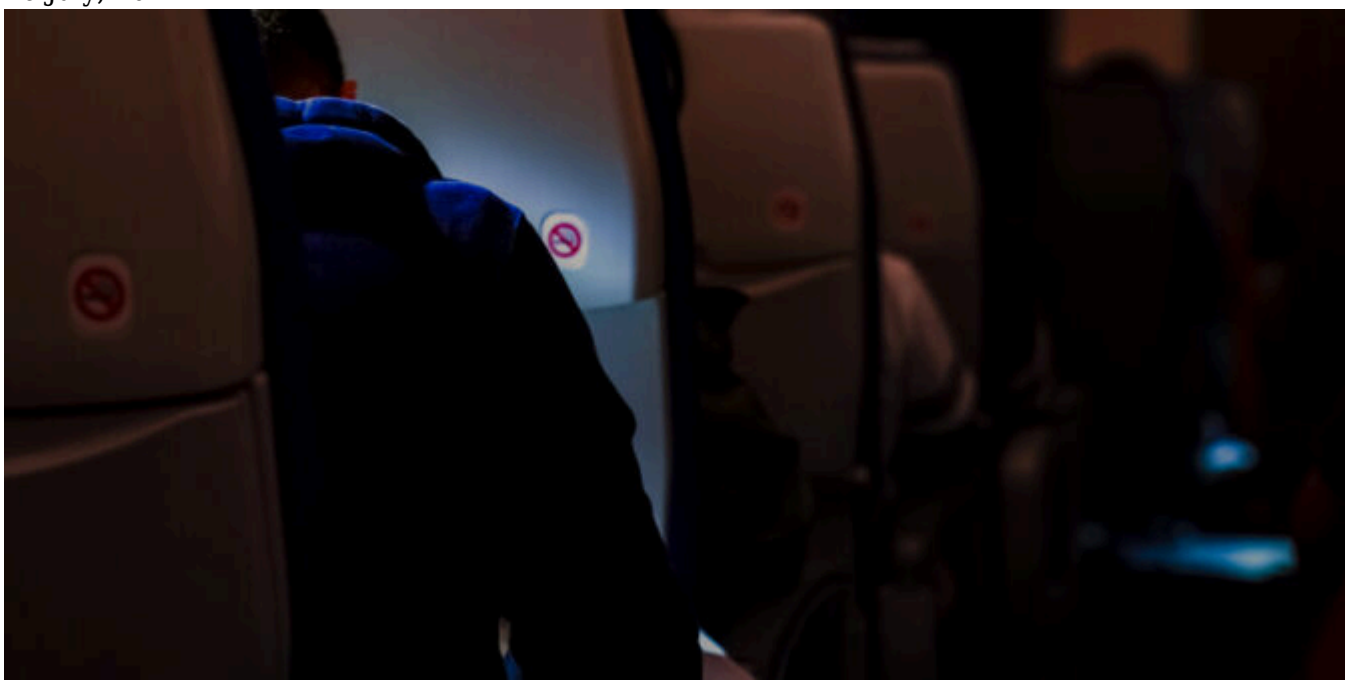
There have been **many changes on the North Atlantic** since we published our previous chart in 2019. Here's a few things to read up on:

- Feb 2021 changes here
- July 2021 changes here
- The full NAT timeline of all changes going back to 2015

We hope you find it super useful, but also have fun using it!

Pax Problems: Do you know who you have down the back?

OPSGROUP Team
26 July, 2021



How often do you think about who you have down the back? The recent Belarus incident might be prompting you to think a little more about who you have onboard and whether there are any political or operational considerations their presence might lead to.

So, here are some things to think about – from the political considerations of country politics, to what to do if the troublemaking is taking place onboard.

The Politics.

It would nice to stay above this, but unfortunately **even at 40,000 feet we seem unable to escape** the (often messy) world of politics, which means some consideration of who you have onboard, where your aircraft is registered, and where you are heading to and from, should form part of your overall risk assessment.

Israel is a fairly obvious example. They have a long history of strained relationships with neighbouring countries. It was **only in 2020** that several of their closest neighbours renewed ties with Israel and allowed operations and overflights to re-start.

This has not happened with all their neighbours though. If you are routing to or from Lebanon then LLBG/Tel Aviv is unlikely to accept you in a diversion. Likewise, if you divert to OLBA/Beirut with Israeli passengers onboard, this could pose some serious issues for them. Checking **Country Rules and Restrictions** for notes on Israeli flights (originating from or routing to) will bring up a fair few places that you need to be aware of – such as Pakistan – who still will not accept overflights or diversions to aircraft coming from, going to, or registered in Israel.

Israel itself is allowing aircraft in, but **read the small print** on this because in order to land in Israel you must be departing from one of their approved airports, and your crew and passengers must be nationals of countries that have diplomatic relations with Israel.

India/Pakistan have an ongoing feud that has led to huge fence being erected along much of their border. The countries allow over flights from each other, but if you are operating into one, a diversion to the other may cause some consternation. OPLA/Lahore in particular is one to look out for because of its proximity to the Indian border.

If you divert into India with a technical issue that sees you grounded, and you are carrying Pakistani passengers there may be issues with them overnighting in the country.

It isn't always political though.

Sometimes the folk causing problems are the troublemakers onboard.

If you can spot them before takeoff then all the better. Cabin Crew are your last line of defense for ensuring anyone under the influence of alcohol (or just being generally offensive) is offloaded before they have a chance to cause issues. Remember, **the law is on your side here** – most countries specify that it is a criminal offense to be drunk onboard an aircraft.

The FAA have just made it a whole lot easier to handle disruptive passengers. In January 2021 they announced a **zero tolerance policy for bad behavior**, and they have a hefty **57 different civil penalty actions** available to them. So far for 2021, they have received around 3,100 reports of unruliness and these have led to open investigations for 465 incidents – a sizable increase on the 146 seen in 2019.

What counts as disruptive?

Anything that is disrupting the flight, causing a nuisance to other passengers, or impacting the safety onboard really.

- Being intoxicated with drugs or alcohol
- Refusing security checks
- Disobeying instructions
- Threatening, abusive or insulting words

ICAO put out a list of the **top reasons for unruliness** and unsurprisingly, alcohol topped it, with compliance with regulations (smoking, seatbelt signs etc) not far behind. In the top 16 there were also pet/emotional support animal related reasons, along with seat reclining disputes.

What actions do you have available onboard?

A PA from the Captain telling all the other passengers that "The Annoying Person in Seat 45B is going to delay everyones' holidays unless they **sit down!**" might do the trick for passengers who are just a bit of a nuisance (although your company might frown on this). But for those passengers that are posing an actual danger, the **Tokyo Convention** is your go-to convention here.

First written in 1963, it focuses on security and **lays out what the rules and rights are**.

The convention gives any passenger the right to take **"reasonable preventative measures"** to maintain their own safety (without having to ask permission first), but also makes it pretty clear that **only the Captain has the right to order a passenger be restrained,** and this requires some thought because it does need to be justified – a *"high burden of proof"* will be needed.

And justified means it really is **the only remaining option available to prevent the person from endangering the safety of themself, passengers, crew or the aircraft.** What you deem "endangering safety" is up to you but bear in mind there will be a bunch of witnesses on board.

Following on from Tokyo came the **1970 Hague hijacking definition** and then the **1971 Montreal convention that deals with sabotage**, and the criminalization of anything being brought onboard to jeopardize safety. In 1974 they revisited the good old **Chicago convention** and aviation security standards were developed. History lesson over, but it is worth having a vague understanding on what these contain in case you ever need to call on one.

Aside from these there always remains the option to divert.

In 2015, a flight from Las Vegas to Germany was forced to divert after a passenger became unruly over a cat. The woman had managed to board with the cat in her purse, rather than an official carrier, leading crew to storing the offending feline in a bathroom. This upset the lady and she threatened to "bring the aircraft" down if her pet was not released from its prison. Purr-ison if you like.

Diversions due unruly passengers are alarming not uncommon because while a passenger can be restrained, the implications of doing so for a substantially long flight need to be considered, as does the

ongoing stress for other passengers onboard.

The UK CAA suggest that a diversion typically **costs from around £10,000 – £80,000** depending on aircraft size.

Back on the ground

OK, so you've called the cops. Before they get there you might want to do a PA ensuring the other passengers know to remain in their seats and not get in the way of the police or that bad passenger might just slip out with the rest of the herd. But when they are arrested, **who actually has the right to prosecute?**

The Tokyo Convention give **explicit jurisdiction rights to the airline's country of registration** when it comes to court. However, there are some doors left open there for other countries to seek extradition as well. These were brought in following a case in 1949 where a passenger sunk their teeth into the ear of the pilot. Alas, the US had no laws at that time which could apply to crimes committed while flying over an ocean, so the biter went free.

In 2014, the Montreal Protocol was also issued. This extends automatic jurisdiction over the crime to the destination. Important because it stops criminals sneaking off free because they were clever enough to commit the crime while heading into a country that the airplane was not registered in.

This rather ugly slide by ICAO gives an 'Example of the problem'.

So, for now, the crime is punishable by the country of registration, but the Montreal Protocol sort of extends the right of police in destination country to basically help in arresting the passenger.

In-ads/ Prisoners

An inadmissible passengers is not a prisoner.

Generally, it is some poor person who forgot to get a visa in their passport and have been turned away at destination. Usually it is on the carrier that brought them in (and didn't check them at the departure airport properly) to take them home again, and as the Captain, you can expect to be handed the documents and passport for the in-ad at departure. However, you cannot detain an in-ad onboard when you land back wherever you are going. So **alert the authorities** and make sure they are there to meet the passenger. If not, you pretty much have to let them go.

Prisoners will always be escorted. For any "unusual" passenger, it is best to board them first and disembark them last. They must not seated at an emergency exit and preferably should be near the back of the aircraft and away from the aisle.

Emotional Support Animals

The rules for these recently changed and no more bizarre creatures have to be accepted. The UK do not allow any animals that are not service animals with full documentation. The US is the same, and only classify dogs as **bone-afide** service animals.

So, have a think about who is down the back.

Having an awareness of the nationalities of your passengers and considerations as to the countries you are overflying and their political relationships with other countries can be useful.

Knowing what the Tokyo Convention does and does not allow you to do with unruly passengers is also a good one to read up on. Your power as Captain only really extends to when the doors open.

If want to read more on unruly passengers then IATA put out some handy info here.

If it's the Tokyo Convention then ICAO have it published here (although it makes for some dull legal reading).

And if you'd like to read about the emotional support pet rulings (for the US) then here you are.

IFALPA have a very useful paper on carrying in-ad, deportee and other non-revenue passengers.

Article photo courtesy @surachetsh.

Simthing to Think About

OPSGROUP Team
26 July, 2021

What are you practicing with your crew in the sim nowadays? An engine failure on take-off? A few technical malfunctions? An assessment of their competencies and then send them on their way for another year?

Well, we thought we might suggest **a slightly different sim scenario** for you to think about…

What else should you be throwing at your crew?

There have been a bunch of recommendations out from the authorities suggesting crew swot up on their Unreliable Speed procedures because the number of these occurring have increased a lot recently. Something to do with aircraft coming out of long term storage with bugs nesting in their probes…

However, an **'Oracle of the NAT'** recently pointed out to us that many crew have not been doing anywhere near as many NAT routings, which means their NAT procedures probably need as much attention as their airplane's pitot ports do.

What are we talking?

Incorrectly flown contingency procedures (not to do with weather) were one of the top reasons for lateral deviation events in the NAT in 2020. Now it was admittedly only 6% but that is still one of the Top Ten mess ups, and a mess up easily prevented with practice.

There were also a few **incorrectly flown weather deviations.** These procedures are not hard to do, but they do need thinking about once in while (preferably before you're actually up there needing to know them) which is why the sim suggestion was presumably made.

Now, you could just email everyone a reminder of how to do it. A bit of text and a diagram. But a handier way to recap (and in a way that properly puts the info into their heads) would be **to really put crew up there**, throw some "fun" failures at them, and let them practice "for real" in the sim.

So, what's the recommendation?

Well, we ain't no trainers, but between us we have seen a few sims ourselves in our time. So here is what we suggest you might want to throw into a sim session if you think your crew could do with a refresher…

The Opsgroup Ops on the NAT Sim Scenario Storyline Suggestion.

Let's set the scene. *It is the middle of the night, the flight is somewhere over the North Atlantic, dark, lonely and quiet, when…*

KABOOM! Rapid decompression.

This throws in a nice bit of startle factor (which is also something pilots need practice in dealing with.)

Now those contingencies will be put to the test – **how much to turn, how much to offset, what else do they need to do and say?**

There is also that good old Situational Awareness thing to look at as well.

Do they, for example, identify where **other traffic** is, think about the **NAT tracks** and their proximity to the next parallel one, and think about whether they were **SLOP**ing already or not?

Let's get really mean.

A big thing to consider with NAT flights is just how remote and far from land you often are. So **Big Picture proactive planning** is a good habit to get into.

This means setting up for **emergency diversions** before you find yourself suddenly having to do one. An awareness of where the closest and most suitable spot for a landing is *in advance* might really save the day. Or at least a few panicked minutes of trying to work it out.

This is important anywhere, but particularly so when flying in the NAT because something like a **rapid decompression** is going to have you zooming down to FL95.

Fuel can become a big problemo quickly, but so can **separation to other traffic** if you start diving down and crossing tracks.

Where we would do it.

We would be mean trainers. The ones that people always call sick for. Power-crazed with the fun of coming up with mean scenarios to inflict on our poor pilots!

We would definitely make sure it was remote, with a massive headwind making the **“nearest” in distance the furthest in time.** We would probably throw in some **bad weather** at one to see if the crew fly themselves into a corner, and maybe an **HF blackout** or **ATC Zero** just to make those radio procedures a bit more fun.

Then we would sit back and enjoy watching it unfold while rubbing our hands together gleefully.

You might be nicer than us though.

If you are then you could always share the following with your crew before the sim session:

- The latest changes to ICAO NAT Doc 007
- Contingency Procedures for the NAT

Skills Fade.

The real point of this is that recent surveys of pilots returning to work (after prolonged periods) have shown that it isn’t the hand flying that gets rusty (well, it does, but comes back pretty fast).

It is the **Procedures and the Workload Management** which really suffer.

Unusual or unused (or not regularly used) contingencies and SOPs will need refreshing. The NAT is a prime spot where additional threats and challenges make it all the more important to **not be rusty when you route through**.

So sims to get your pilots’ flying skills up to scratch are critical. Practicing those **engine-out procedures**, **crosswind landing techniques** and general “How do I make actually it move?” **hand-flying sessions** will definitely help with confidence levels.

But opportunities to (re) consolidate those procedures, particularly those ones in challenging airspace like the NAT which are *likely to be required on a standard flight* could make a very big difference to safety in a practical way.

Hitching a Ride: How To Save Fuel with Geese

Chris Shieff
26 July, 2021

Industry heavyweight Airbus is currently running an innovative new trial over the North Atlantic that has potential to **change the way we fly in oceanic airspace** – and ANSPs Eurocontrol, NAT, DNSA and Navcanada are all on board. It's called **wake harnessing**, and it was invented by geese. Okay maybe not 'invented' – but certainly provided by nature.

Geese, you say?

Geese have already left their mark on aviation history in ways that that we'd probably like to forget. So, it seems only fair that they do something positive for the industry too.

And now it seems that they are (unintentionally, but we'll still take it). When a flock of Canada Geese infamously downed an airliner over New York back in 2009, they were flying in formation.

They were doing that because they were going somewhere and using each other to make things easier. Geese are known fly 1500 miles *in a single day*. That's only possible because they use very little energy doing it.

So why do we care?

One word: **biomimicry**. Or in more simple terms – copying nature. When we want to figure out how to do something that we don't know how to do, it's often worth looking out the window. *Nature, it seems, always finds a way.*

Enter aviation. **When it comes to fuel, it is facing a couple of big problems.** The first is that ICAO have set some seriously lofty goals for improving fuel efficiency and carbon emissions. While the other issue is dosh. Jet fuel is expensive and modern aircraft use a lot of it. Reducing fuel burn is big business, especially in an environment where profit margins are tiny.

There are solutions coming. Sustainable aviation fuel and next-gen turbine engine design have been making headlines recently. But behind the scenes Airbus has been turning to nature to help solve the problem using **existing technologies** we have today and by changing the **way we fly** – and it's all thanks to geese.

The Flying-V

Geese fly long distances in formation. Have you ever wondered why?

It's because they are using something called **wake energy retrieval**. It's a really fancy term for **riding each other's wave**. It's the result of countless years of evolution and it may have big implications for airplanes.

Here's how it works: When a bird flaps its wings its tips creates vortices. In the same way that our man-made wings do. These vortices create a horizontal swirl of air – an outer upward component and an inner downward one.

The reason why birds fly in a V is because if they position themselves in such a way that their wings stay in upward-moving air from the bird in front, **they can effectively fly in an updraft, constantly**. Which means they flap less and travel further.

What if airplanes did the same thing (but with less flapping)?

Airbus thinks that's a good question. Since 2016 they have been copying geese by flying large jets in formation so that the trailing aircraft 'rides the wake' of the one in front.

It turns out that if you find just the right spot, not only is it smooth for the passengers, but also **very fuel efficient**. *Get this* – Airbus have shown **fuel savings of five to ten percent** simply due to the effects of this phenomenon, and potential to reduce overall climate impact by twenty-five percent.

They're heavyweight numbers. That's because by flying in the upward component of the wake from the aircraft in front, we are essentially getting **free lift**. Or in other words, 'harnessing' energy we'd otherwise lose – which is why the concept is also known as 'wake harnessing'.

It's almost as though the trailing aircraft is flying in a gentle descent while level. That means **less thrust, less fuel and less emissions.**

But here's the kicker – **you have to get close**. Like real close. Airbus have found the optimum distance between aircraft is only 1.5nm. That's a fraction of the spacing applied by ATC. But with existing technologies like TCAS and ADS-C it's not unreasonable to think that this can be achieved safely.

Airbus have called the project Fello'fly.

And here's how it works.

ETAs would be used by ATC at **feeder waypoints** to set aircraft up for their 'wake energy retrieval pairing'- i.e. formation. The aircraft will still be **separated both horizontally and vertically**, but close enough for the pairing process to begin.

Responsibility for separation will then be handed to the two aircraft. Using newly developed FMS software, the trailing airplane will slowly close in on the leading one until it is positioned in the **optimum spot for wake harnessing**. There it will stay until the two aircraft part ways again. The lead aircraft will be responsible for talking to ATC while in formation.

But it's not all smooth sailing.

While the idea has some serious potential there are some fairly obvious hurdles that would need to be overcome:

Wasting energy. The idea only works if aircraft don't waste energy flying at sub-optimal speeds to make it happen. In other words, loitering or playing catch up. Which means it will be difficult to achieve for aircraft departing the same airport.

Instead the answer may lie in new software. For instance, German researchers have developed 'MultiFly' –

a system that identifies jets that can be paired together based on type, location and how long they will be on the same route.

Different aircraft. Unlike a flock of geese, all aircraft types are different. 1.5nm may be optimal for a pair of A350s, but more testing needs to be done to find the sweet spot for all possible combinations of jets. Both aircraft would also need to have the same optimal cruise speed – otherwise all the gains would be pointless.

Then there is the raft of regulatory changes that would be required to make sure this can all happen safely.

Full Speed Ahead

Despite the obvious challenges that wake harnessing presents, if they can be overcome the potential benefits are obvious. Airbus is pressing ahead with the project and hope to make it reality in oceanic airspace by the middle of the decade.

Considering the growth potential of the industry in a post-Covid world, formation flight may be the next big step in cleaner and more efficient flying.

Who'd have ever thought we get there with the help of geese?

July 2021 North Atlantic Changes

David Mumford
26 July, 2021

Just when you thought it was safe to go back in the water…

Yep. Barely five months since the last version of the NAT Doc 007 was published, **we now have a new one**.

First things first – links…

To see **just the new changes**, click here.

To see **the new NAT Doc 007 in its entirety**, click here.

To see **the old NAT Doc 007**, and painstakingly cross-check all the changes compared to the new version (i.e. what we did so we could write this post), click here.

Here's the lowdown of what's changed…

The Datalink Mandate

No changes to the rules here. The old NAT Ops Bulletin 2017_001 which contained all the info about the Datalink Mandate has been discontinued, and the essential info incorporated into the NAT Doc 007.

Key points:

- Aircraft **without datalink** can request to climb/descend through datalink mandated airspace, but will only be considered on a tactical basis by ATC.
- Flights without datalink that file **STS/FFR, HOSP, HUM, MEDEVAC SAR, or STATE** in Field 18 of the FPL, may be permitted to flight plan and fly through datalink mandated airspace, but may not get their requested flight levels.
- For datalink failure **before departure**, you should re-file your FPL to stay clear of NAT DLM airspace. If it fails **after departure** or **whilst in NAT DLM airspace**, ATC may let you

continue based on “tactical considerations” (i.e. how much other traffic is around).

Which brings us neatly on to…

ATS Surveillance Airspace

This one has had us scratching our heads for a while now…

So, there is an **updated chart** showing the areas of ATS Surveillance Airspace in the NAT:

We have to say, we really don’t like this chart very much. **The green blobs are misleading.** Here’s what we mean…

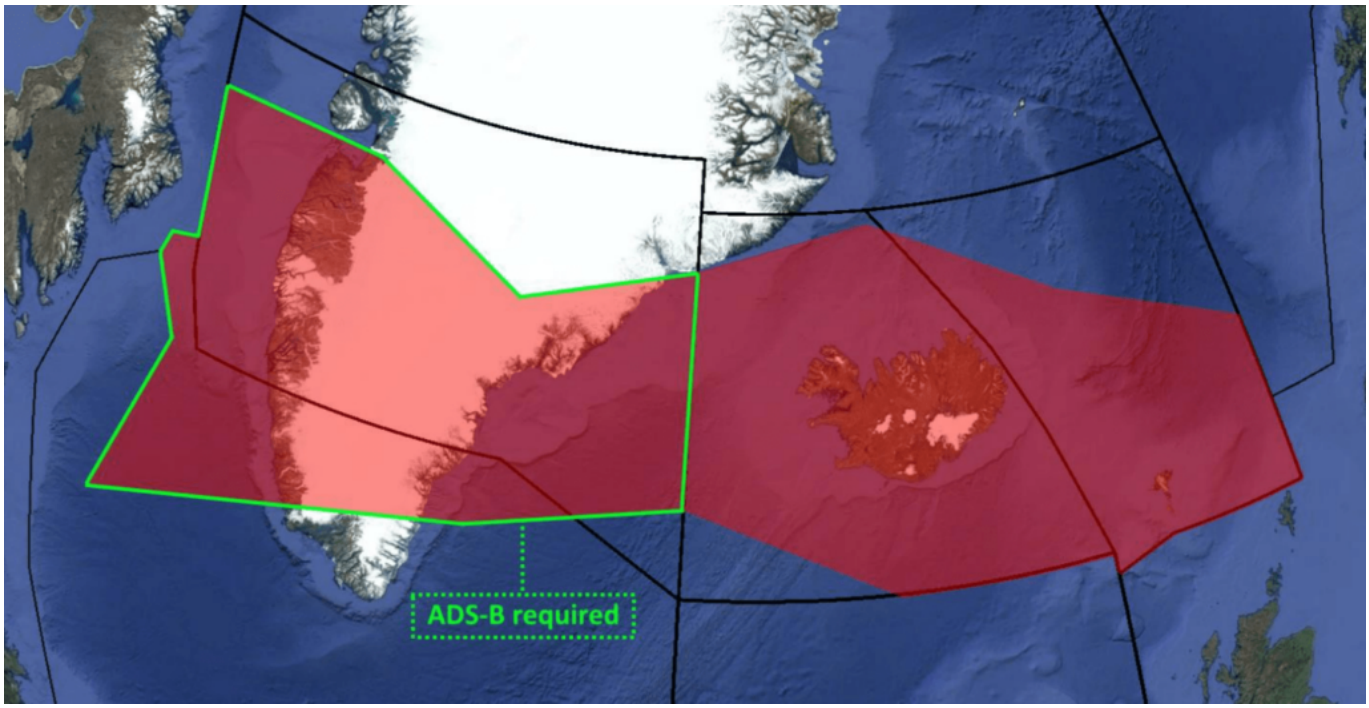
Essentially, the NAT Doc 007 says that **these are the datalink-exempt bits within the NAT Region:**

1. Everything north of 80°North.
2. New York Oceanic East FIR.
3. Tango Routes T9 and T290.
4. ATS Surveillance Airspace, where surveillance service is provided by means of radar and/or ADS-B, coupled with VHF.

So these green blobs give a **rough idea** of where ATS surveillance service is provided by radar and/or ADS-B within VHF range. But rough ideas don’t win prizes, and neither do they explicitly tell you what the rules are. **Where is this mythical ATS Surveillance airspace in reality?** Give me some hard coordinates!

Thing is, they actually do, right there in the NAT Doc 007, they just don’t say it very clearly.

Here’s the answer (we had to get in contact with Gander and Reykjavik ATC to confirm this): **ATS Surveillance Airspace is the area over Greenland and Iceland shown in this picture below. This is where you’re allowed to fly above FL290 if you don’t have datalink.**

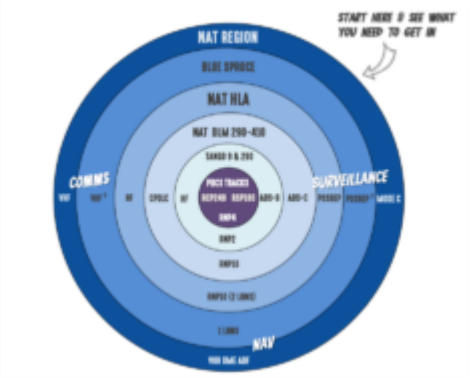


There is no special datalink exemption for the **Blue Spruce routes**. That’s another key point here.

The **southerly** Blue Spruce routes are not fully contained in the exempted airspace. So if you’re flying

these routes you will have to meet the NAT DLM requirements or fly below FL290 or above FL410.

The **northerly** Blue Spruce routes are different (i.e the ones going overhead BGSF/Sondrestrom airport). These do fall within the exempted area of airspace – so datalink is not mandatory if you're flying here.



Confused? We don't blame you. Here's something that might alleviate some misery though – our **NAT Airspace Circle of Entry**. OPSGROUP members can download the full hi-res PDF version here. The Circle shows you what equipment you need – like CPDLC, ADS-C, HF – for each different type of airspace in the North Atlantic. With the datalink requirement effective Feb 2021, and the introduction of new requirements for the Tango Routes on the eastern side of the Shanwick OCA (T9 & T290), there are some important changes.

This NAT Airspace Circle of Entry will also appear on the **new NAT Plotting/Planning chart** that we are finalizing at the moment, and we'll send you that when it's ready.

"SET MAX UPLINK DELAY VALUE TO 300 SECONDS"

This thing started back in 2018 – a new procedure designed to **prevent pilots from acting on any old CPDLC messages** that might have been delayed in the network.

So, we have CPDLC where ATC can basically 'text' you some sort of message. Usually a clearance to do something. There is a risk though that the message is latent meaning 'existing but not yet developed or manifest; hidden or concealed'. **Basically lost for a longish time in the digital void** and it means there is a risk pilots might get a message to do something way after they were supposed to do it, and it is no longer valid (or safe to) anymore.

The old NAT Ops Bulletin 2018_002 about CPDLC Uplink Message Latency Monitor Function has been discontinued, and the essential info is now incorporated into the NAT Doc 007. But there is some **new info** to be aware of.

The key change here is that all the NAT ANSPs have agreed on **300 seconds** as the period of time all aircraft should set their uplink timers to (any message that takes longer than that to reach you will be deemed 'latent'). Also, they will be **sending this to all CPDLC connected aircraft immediately after they enter each control area** – so you might receive the message a bunch of times (a bit annoying) but the procedure is the same regardless of whether you've "done it already" or not.

This procedure is covered in section 8.50.20 of the new NAT Doc 007, and it **works like this:**

- When you receive the message to set your max uplink delay to 300 seconds, acknowledge it with a Roger [ACCEPT].
- If you don't have a message latency monitoring function available then you still have to acknowledge the message but say 'TIMER NOT AVAILABLE'.
- Now, if you do have the function available then change the max uplink delay to 300 seconds

and you're done.

If the system gives you an indication that a message has been delayed over 300 seconds then **don't follow what it says but get in touch with ATC (by voice)** and let them know so they can confirm whether they still want you to do carry out whatever the clearance told you to do. They will also close the message out of the system.

Bottom line: don't act on a delayed uplink message until you've checked with ATC.

Weather Deviation Procedures

No new rules here, they've just made a nice little graphic to help understand the Procedures.

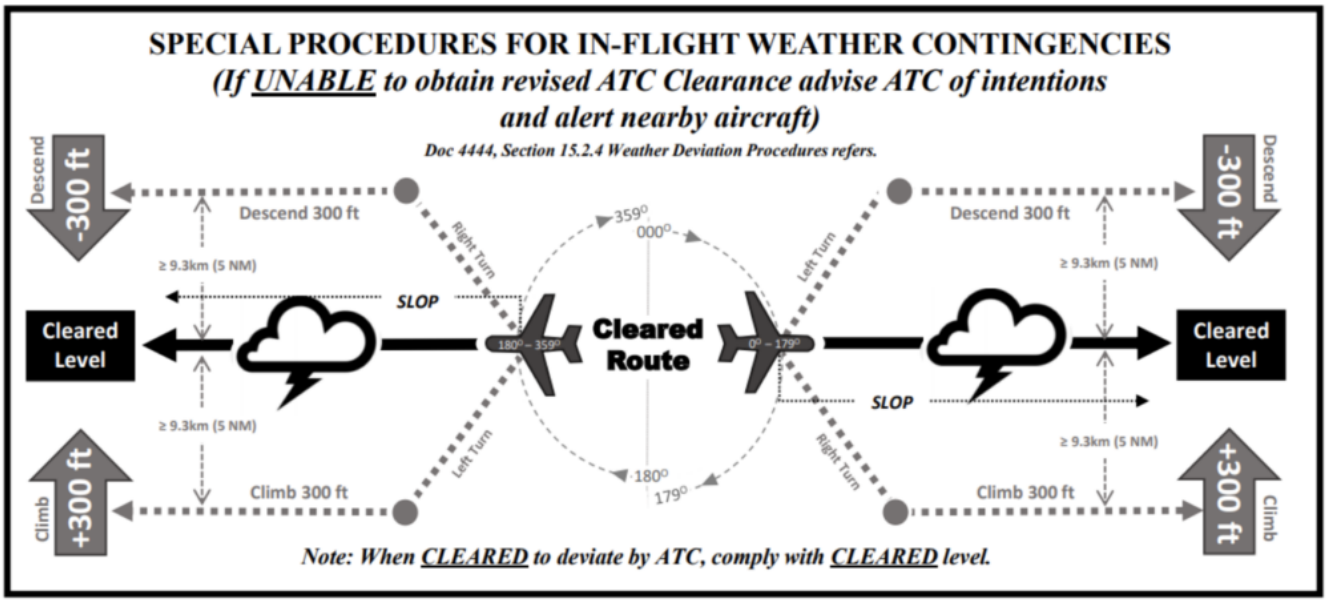


Figure 13-2. Visual aid for understanding and applying the weather contingency procedures guidance.

Funky! If you prefer a slightly simpler version, check out this one we made earlier:

Almost finished now. That's the big stuff done…

Climbs in Gander and Shanwick airspace

Gander and Shanwick have decided that they will **advise crew in their OCA when a higher flight level becomes available**. Basically, they have a function in their ATM system which lets them interrogate the flight's vertical profile to determine when a higher level is available. They will then check there is no separation issue and if not, will offer the new level.

What did it used to say?

It used to say that clearances tend to specify a single flight level, but that **sometimes there might be 'scope' for higher climb**. It had some stuff about how, if you got a re-clearance you should climb without delay. It also said that if you aren't CPDLC equipped you should tell ATC as soon as you've left your old level and when you reach the new level.

Actually it still says that in the new document but now it has a new bit about how Shanwick and Gander **will be a bit more proactive** about letting you know when the levels become available.

PBCS operations

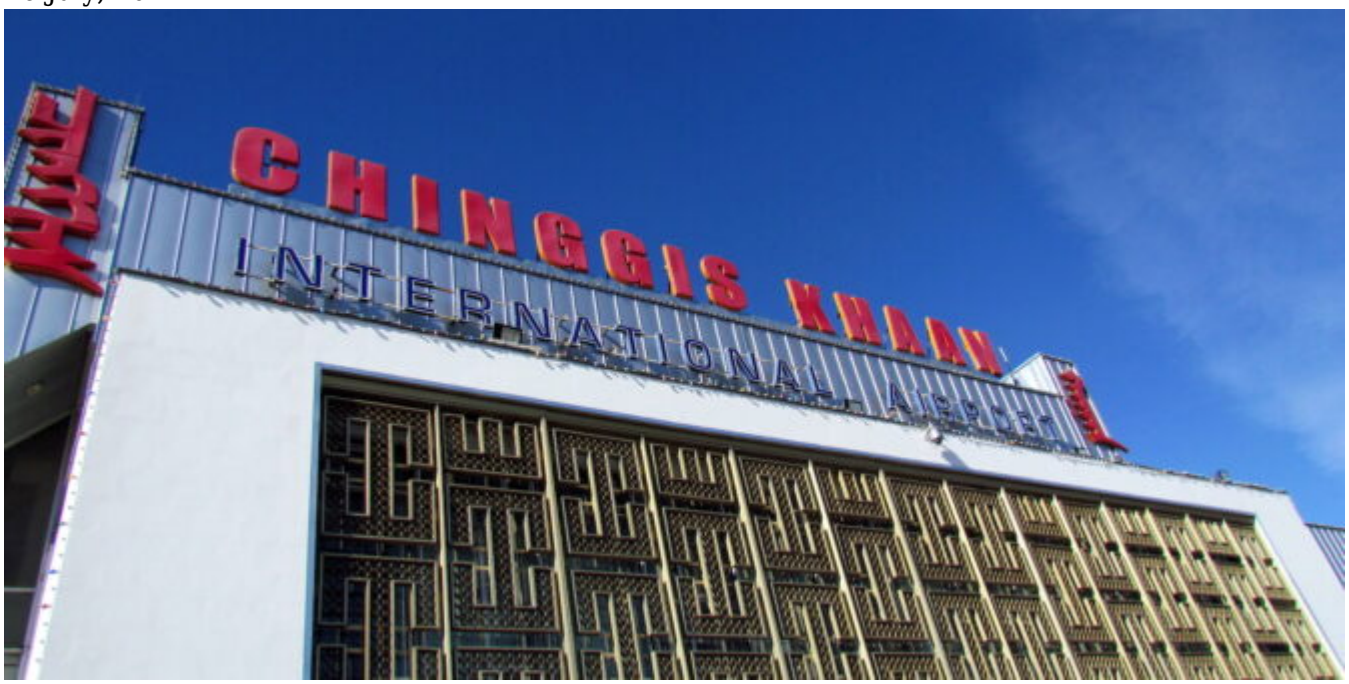
The only changes in this section are wording changes. Separation minima is no longer **“as low as”** – it is now **“as small as”**. *“How small can you go” doesn’t have quite the same ring to it…*

And that’s it!! That’s all the changes!! At least, we think so. If you have spotted any biggies not listed here, send us an email at: news@ops.group

And if all this is not enough for you, and you want a comprehensive timeline of all the old significant changes on the North Atlantic stretching back to the dawn of time (actually, just to 2015), then click here.

Genghis Khan’s Second Rising

OPSGROUP Team
26 July, 2021



There is a new airport in Ulaanbatar so we thought we would tell you a bit about it. But then we thought *“How many people operate to Ulaanbaatar?”* so we figured we’d throw in some information about Mongolia and a history lesson on Genghis Khan too because it’s all quite interesting.

So, Ulaanbaatar is in Mongolia.

Yep, it is the capital in fact. Mongolia itself is a country landlocked between China and Russia.

Mongolia has some tough terrain which means roads and railways aren’t so big there, but aviation has also remained relatively underdeveloped as well. **The country only boasted 46 airports** (this was back in 2010 so there might be a couple more now). Of these, only 14 were actually paved and the original Ulaanbaatar airport was the only one with a runway over 3047m long.

So aviation in Mongolia is mainly domestic, small traffic moving necessities and cargo from remote

regions. Mongolia does have its own Aviation Authority (MCAA) which also oversees the air traffic services in the country.

Do they need another airport?

ZMUB/Buyant-Ukhaa International Airport is the original one, built in 1957, and it sits just 18km away from the capital city. It sees around **18,000 traffic movements a year** and about 5,500 tonnes of cargo. That's just under 1.6 million passengers a year. Beijing sees just over 100 million for comparison.

It isn't a huge industry, Mongolia is relatively quiet in terms of tourism, and the Mongolian diasporas around the world are fairly limited too. The majority of flights come in from Russia and China, with some South Korean, Hong Kong and Turkish operators also routing there.

Buyant-Ukhaa has one main runway **14/32 which is 10,170 feet (3,100m)** and sits at an **elevation of 4,634 fee**t. There is an ILS CAT I approach to runway 14, and no approach to runway 32 at all actually. I suppose you could do a visual.

The New Airport.

The new Ulaanbatar airport **ZMCK/New Ulaanbaatar** is officially called **Chinggis Khan International (named after Ghengis Khan*).**

**Quick aside: yes, Ghengis Khan was a bit of a mean one. They reckon around 16 million men carry his DNA (that's 1 in 200!). But aside from his prodigious wife taking, he was also an amazing military strategist who helped unite much of Asia (and not by using religion). In fact, he banned torture, outlawed slavery, and established a universal law across his empire. He also developed what is considered one of the earliest universal writing systems and brought the early version of a postal system to Europe.*

So Mongolia feel he is worth celebrating with his name on their new airport.

Anyway, this has been built in collaboration between the Mongolian and Japanese government, and it looks good. The airport is 50km south of the main city, so **less accessible**, but will enable a **much greater capacity.**

It provides **RFF Category 9, operates H24 and has an 11,811 ft (3600m) runway** with both ILS CAT I and RNAV capability. A second runway is expected to be added to further improve capability, particularly in poor weather.

As with Ulaanbaatar the old, it also sits at a rather **high elevation of 4,485 ft** and has some challenging terrain around it with a highest MSA of 9,900 ft.

A bit more info.

Airport Admin are available on +976 71 287 300

The airport also has its own website – https://en.ulaanbaatar-airport.mn

You need permits to operate to Mongolia. The Mongolian CAA are pretty good to deal with. Call +976 1282101 / +976 71282016 or try their email fpd@mcaa.gov.mn

It is easier to use an agent for landing permits and we recommendAlpha One Mongolia on +976 9595 0212 or via email ops@alpha-one.mn

But why fly to Mongolia?

Well, it is a pretty safe place to go and has some interesting stuff to see and do. There are a lot of Buddhist

monastery ruins if you like your cultural history. There are some awesome national parks with hot springs if you like your nature.

They are also big into their bars – the drink of choice (for Genghis Khan) was fermented milk if you fancy trying it.

So, there you have it. Lots of reasons to visit Mongolia, the top one being they have **a shiny new airport for you to fly into.**

Red Sky at Night, Aviator's Fright

OPSGROUP Team
26 July, 2021

Summer in the Northern Hemisphere means a few additional challenges for aviation, particularly in the USA – Hurricanes (which we wrote about here) and **Wildfires**.

You probably read 'Hurricanes' and think *yeah, I get that, but fires?*

Wildfires do pose a fairly major risk to aviation though, so we thought we'd take a quick look at what those risks might be and what the forecast is for the 2021 Wildfire season.

Too hot to handle.

Wildfires are prevalent across the US during the hotter summer months, typically running from **May through October.**

Looking back to previous years, California saw 13 fires in 2019, but **over 30 major ones in both 2018 and 2017.** The 2018 fires led to over 1.8 million acres of land being burned. 2020 saw the first 'rain free' February (in San Francisco) since 1864 and the drier months, and warmer spring resulted in some of the worst wildfires in California's history.

The outlook for 2021 is not much better.

There have been extended dry periods with over **90% of the West now in drought conditions.** There have also been record high temperatures in the Pacific Northwest, Northern Rockies and northern Great Basin with warmer than normal conditions forecast for the summer. Add to that an increase in lightening activity and you are left with a recipe for significant wildfire risk.

In fact, the figures so far for 2021 are already **at a ten year high.**

Where can you monitor the fires?

There are multiple sites which track and monitor wildfires. This is a particularly good one and will link to specific info on the major fires.

But the risk to aviation is often not from the fires themselves. The big hazards comes from:

- **Smoke**
- **Increased traffic levels, diversions and ATC capacity**
- **Changes to localized weather conditions.**

Out of the frying pan and into the fire.

Major airports generally have good protection from wildfires, and are a distance away from areas which will readily burn. However, smaller and more remote airports may not and damage to infrastructure, or disruptions to ground transport has a knock on effect. Fires also lead to power outages which impact services at the airports.

The major hazard comes from smoke though, and this can cause **significant disruptions through reduced visibility.**

Smoke has been known to reduce visibility to around 200m. In 2005 all four major airports in Honduras closed because of limited visibility from wildfires. In 2010, the visibility at KBOI/Boise Municipal Airport reduced from **10 miles down to 1 3/4 miles in just 9 minutes** after a shift in wind direction carried smoke from nearby wildfires into the airport vicinity.

KSFO/San Francisco has also experienced delays and cancellations due to smoke from nearby Butte Country wildfires.

While Sonoma Country airports faced multiple closures in 2019.

Then there is the reduced Air Quality.

The health hazard this poses to ground workers means airports may find themselves understaffed and reduced resources lead to reduced services, which lead to more disruptions for aircraft and operations.

The smoke hazard isn’t just at ground level.

In 2013, a NASA satellite captured images of smoke from Canadian and Colorado wildfires which extended over the North Atlantic, and in 2020 an aircraft diverted into CYYT/St John’s after smelling fumes in the flight deck which were attributed to wildfires (again in Colorado).

What's cooking.

Disruptions at airports lead to increased traffic levels requiring ATC support for diversions.

Smaller, regional airports have less capability for dealing with the impact of nearby wildfires, and when small regional airports in areas like Oakland, San Jose, Silicon Valley which have a **high density of private jet traffic** close, this can mean a lot of diversions happening very suddenly, and **where they go can becomes an issue.**

In addition to diverting aircraft, there is the firefighting aircraft to factor in as well. They might operate low-level, but they are not small and they need to operate from somewhere and this is added pressure for ATC.

MD-10s and BAE 146s are commonly used. **The world's largest is a B747 Supertanker** which can carry up to 19,600 US gallons of fire retardant or water.

TFR zones are set up for major fire zone areas to allow for safe movement of the firefighting aircraft. You can check these here.

Where there are fires, the risks of incidents increases and **between 2000 and 2013 there were 298 wildfire firefighter fatalities** in the US. **26% of these were caused by 'aviation associated' activities** which occurred across 41 separate events involving 42 firefighting aircraft. Three of these were midair collisions.

Pyromania.

Wildfires can impact the weather environment as well.

When large enough, **Pyrocumulus cloud** (also called Flammegenitus clouds) filled with rising ash and aerosols can build. These aerosols often carry a charge that **increases the likelihood of lightning** and with that an increased chance of fires spreading rapidly.

The **"Station Fire' of 2009**, which burned more than 160,000 acres just outside of Los Angeles, also **produced a convective column estimated to reach around 23,000 ft.** Other majors fires have produced ones reaching as high as 40,000 ft.

These huge clouds are similar to cumulonimbus, only without rain. But they still contain **significant up and downdrafts** and can result in localized wind shear from gust fronts. The change in ground temperatures can result in significant thermals and large temperature gradients can result in **significant localized vertical and horizontal winds.**

There are ways to help.

Check those TFRs and check the wildfire maps. If you are operating into an area showing significant activity, consider how much busier ATC might be, and remember to check the capacity at your airport destination.

Report fires when you see them. Early notification of developing fires means the authorities can deal with them quicker, before they grow out of control.

Consider other ways to help. If you have an aircraft available, consider using it to help with evacuation flights. Airlines pulled together in 2016 following some major fires in Canada, and **helped evacuate more than 80,000 residents.** They also helped them bring their pets out safely. Be warned – you will have a tear in your eye after reading this one so open at your own risk!

The Forecast

There is a full seasonal outlook published here. But for a quicker summary of the 2021 Wildfire Forecast:

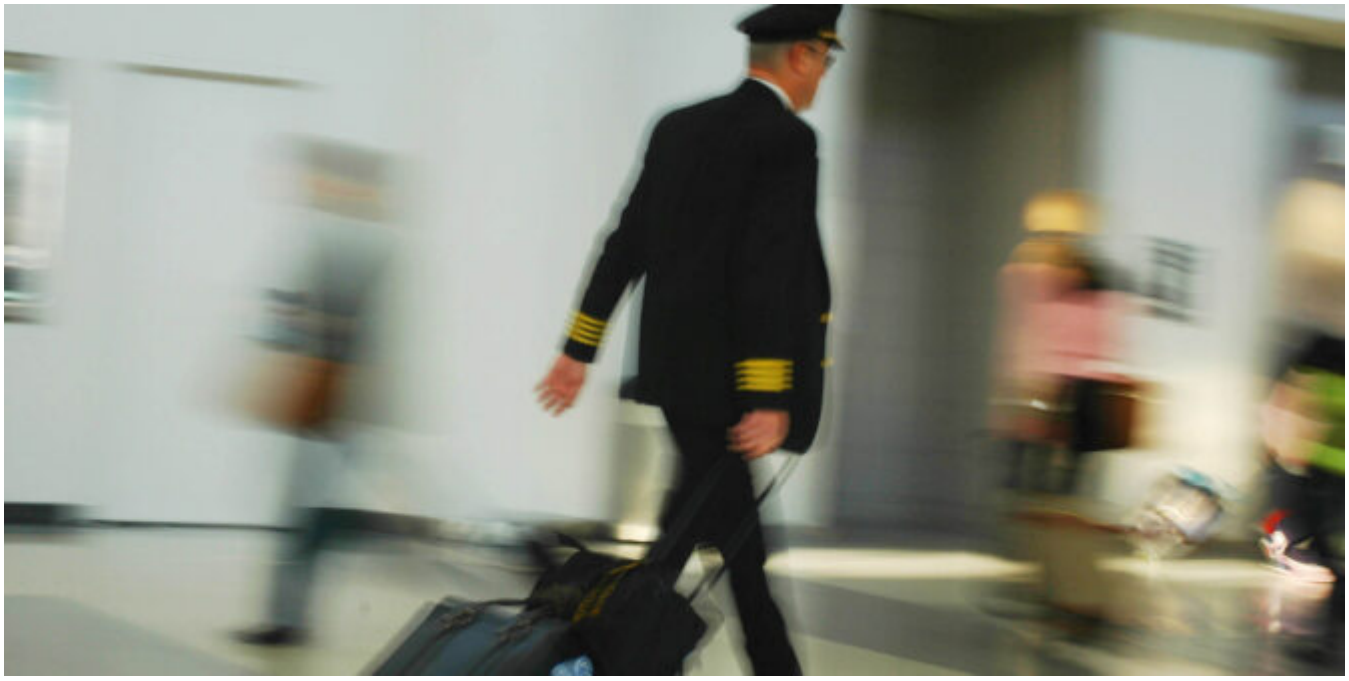
- **Alaska** has ‘normal’ fire potential through summer and into the fall.
- **The Northwest** is expected to experience significant and above average fire potential into September.
- **Northern California and Hawaii** also have above normal significant fire potential expected.
- **Southern California** will be at high risk through September (although this is ‘normal’ for the region).
- **The Northern Rockies** region is expected to be above normal through August and September.
- **The Great Basin** is expected to see increasing fire potential through August and possibly into September
- **The Southwest** is expected to remain normal.
- **The Eastern Area** is expected to be normal.
- **The Southern Area** is expected to be below normal.

Wildfires pose a significant risk to aviation operations. They also pose a huge risk to those living there, the infrastructure and the economy. The Fire Fighter pilots are an extraordinary bunch of aviators and **we wish them the best for this year.**

There is a very interesting podcast available here if anyone wants to hear more about what their ‘Day at Work’ involves.

All Stressed Out: Are We Ready to be Back in the Sky?

Chris Shieff
26 July, 2021



There have been some welcome headlines in the news lately.

In the US at least, people seem to be taking to the skies again. One US major almost tripled its scheduled flights in June when compared to the lowest points of the Covid pandemic.

When it comes to airplanes in storage and furloughed pilots, as we've mentioned before, **the industry has inertia**. For a bunch of reasons, that big ol' wheel can't just start turning the minute we can get bums on seats. And the cracks are already beginning to show (no pun intended).

That same US major also had to cancel nearly one thousand flights recently due to staff shortages. Part of the problem was that a number of its pilots were still dusting off their stripes in post-furlough training.

The point is that renewed desire for travel is likely to (hopefully) one day soon outpace how quickly employers can get their pilots back in the sky. Is it possible that in this eagerness to get us flying again employers may overlook the mental health and wellbeing of their pilots?

Or in other words, even if they are ready for us to return to the flight deck*, are we?*

Aviation workers were among the hardest hit during the pandemic. And it wasn't just pilots – cabin crew, air traffic controllers, engineers and other aviation professionals were left facing **redundancy, loss of livelihood and financial stress.** This was then combined with all of the other sufferings that Covid created in our lives.

It's no surprise then, that one study found they suffered substantially more during the pandemic than the general population did. Is it then naive to think then that we're all mentally match-fit to get back in the game?

When you combine that with an **immediate need to be employed again** along with **reluctance to speak out about mental health** for fear of loss of medical is it time that employers take a moment to make sure their staff are fit to fly in other ways?

And it's not just about pilots who lost their jobs either – those who kept theirs faced **pay cuts, downgrades and constant anxiety about job security**. Then there is the constant testing, fear of catching Covid, and time away from family in isolation. In fact it's a fairly safe bet that almost all pilots have had a lot on their minds over the past eighteen months.

It's a stressful business.

And it's no secret. In fact, another study recently found that airline pilots have the **third most stressful job in the US**. *And that was before Covid...*

When it comes to what causes stress, there's actually a widely accepted measure. Just google Holmes-Rahe – according to it, here are some of the biggest things that stress us out the most (and we're talking life-changing here): **loss of employment, change in financial state and default on debt** all feature in the top twenty, and that's ignoring the more personal problems that those issues have a tendency to create. *Covid pandemic anyone?*

The point is that by the time we get back to the skies, we've already been through a number of factors that cause **chronic and prolonged stress**. Unlike short term stress, it's just not that easy to shake off. Even the toughest and most resilient among us will in some way carry that with them into the flight deck.

Here's the bottom line: **All of the hazards that were there before Covid will still be there.** But our resilience to deal with them will be reduced. **And that means risk.**

The problem of stress in the cockpit.

Although a little stress can be beneficial by making us more alert and task-orientated, the human body isn't designed to cope with chronic stress. For pilots it is well known to negatively affect our cockpit performance and increase our proneness to **poor decision making, bad judgement, loss of situational awareness and confusion** – all of which can be dangerous up there.

At its most basic level it can make us us feel irritable, fatigued and disengaged which can lead to a **break down in monitoring or communication** with other crew members.

Although the effects of stress may not be obvious when things are ops normal, they can greatly reduce our capacity to deal with whatever might be thrown at us **when something goes wrong**. This accident serves as a good example.

If not dealt with, chronic stress can also lead to more serious mental health problems such as anxiety and

depression.

So, what needs to be done?

Because of the ongoing pandemic, pilot mental health and wellbeing is arguably more of an issue now than ever before. We need to prioritise wellbeing as part of our recovery plan and it really is a shared responsibility.

Employers need to do provide more support to their staff. **Mental health awareness training, access to counselling and peer support programs** should become common place. The positive impact of other lifestyle changes on the job such as **flexible rostering, better crew pairing options and more time off** shouldn't be overlooked either.

And most importantly the inconvenience and cost of these things should **not be prioritised over safety**.

From an industry perspective we need to continue to **de-stigmatise mental health problems and encourage openness** so that pilots with wellbeing issues have the confidence to step forward and acknowledge their problems without fear of loss of job or medical. Regulations need to be improved to allow this.

Pilots themselves have a role to play too, particularly not to underestimate how much underlying stress can affect your performance at the controls and how you interact with your other crew. It's important to **self-diagnose and recognise the signs**. There are a bunch of steps you can take both physically and mentally that can help you overcome it.

Getting back to a 'new' normal.

As people take to the skies again and borders begin to reopen it's important to remember that **pilot mental health can have a big effect on safety**. And considering what we've all been through it's worth taking a moment to make sure the industry is doing enough to address it.

In that way we have a chance to use Covid as a catalyst for positive change even when the pandemic is one day far behind us.

More places to look.

ICAO Mental Health Working Group . They've been active throughout the pandemic and are doing a lot of work on the psychological effects that Covid is having on pilots.

Cleared for Takeoff. A handy and easy to read guide on how you can prepare mentally and physically for return to flying.

Article photo courtesy @vlkvojtech

Flying outside the Procedures

OPSGROUP Team
26 July, 2021

Aviation is full of procedures. We fly by them, sometimes we kind of live by them. But other times there are situations where we need to disregard them. So when is it ok to throw the rule book out the window?

In an airplane, never.

In the literal sense anyway, given the risk of opening a window mid-flight and getting sucked out. But what about in the less literal sense?

Procedures are not there to stop us just doing whatever we want. They are there to keep us safe, to make sure everyone is operating to the same standards and to provide pilots with a guideline of what they should do in ***most situations.**

Why the asterix?

I will come back to that. But for now, that reasoning makes sense. If every airplane did what it wanted, flew how and where it wanted, the sky would be a messy mass of chaos. So, we have procedures and we have them so we know what to do, when to do it and how to do it.

More importantly, everyone else knows as well. Which brings us back to the "most situations" comment.

We cannot expect there to be a procedure in place for every possible event. They are there to offer guidelines and standards, but they are not designed to cover everything.

And they are definitely not supposed to **remove the need to think.**

So what should we think?

Well, thinking about situations where we might be without a procedure, or where there is a procedure but it no longer leads to a safe outcome is a good place to start.

Let's take a look at **ICAO Doc 007** – the "bible" for the North Atlantic. It is quite clear on a lot of things – for example, what the **contingency procedures** are if you experience some sort of emergency while flying in the NAT.

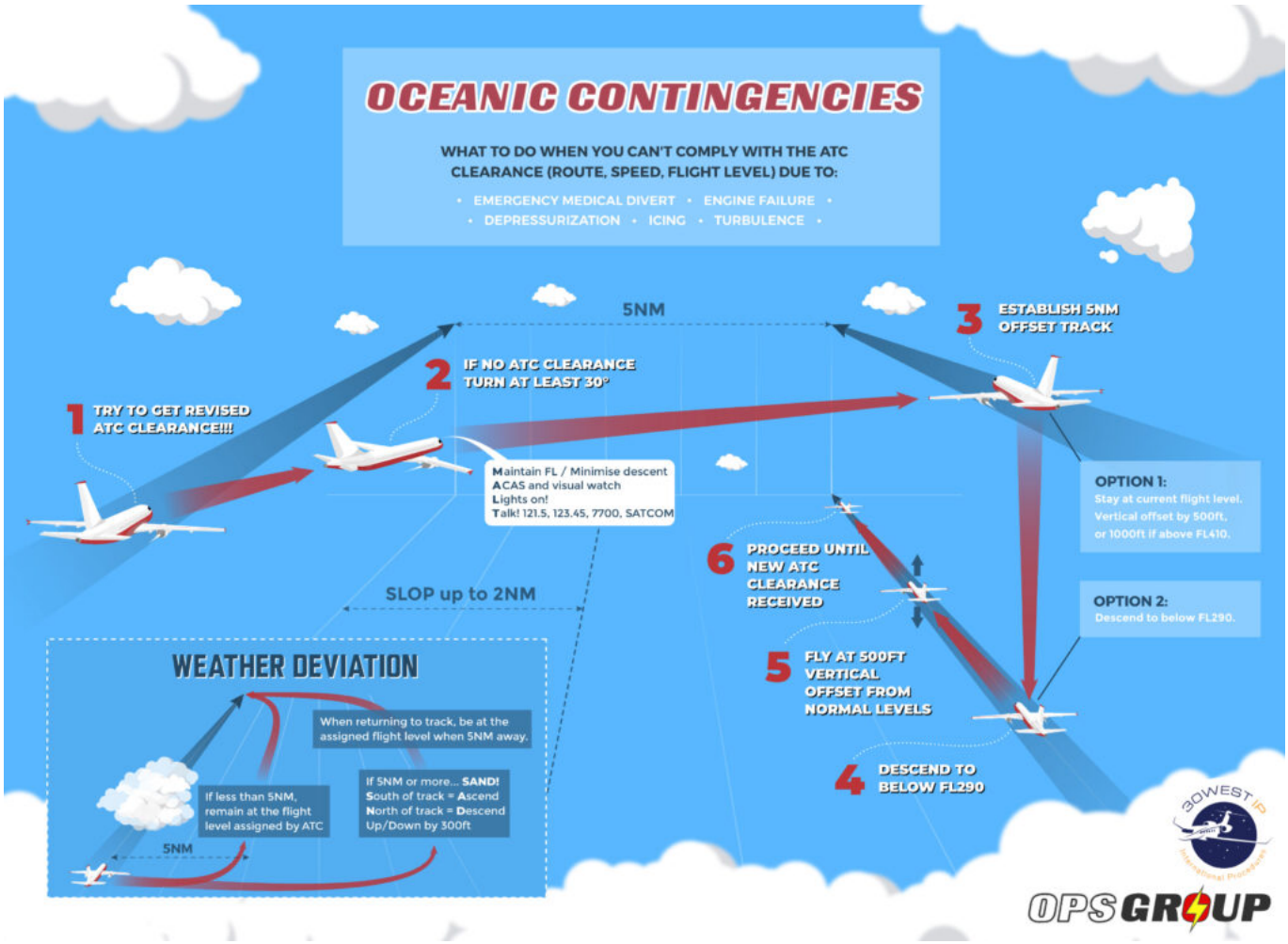
We are talking some busy airspace out there, with a lot of aircraft flying on specific tracks, and so the last

thing you want is aircraft barreling across them setting off TCAS warnings as they zoom off on a diversion.

So NAT Doc 007 lays out some procedures to follow. Things like turning **30 degrees off track and offsetting 5nm**. And one that says –

"*When below FL290, establish and maintain 500' vertical offset when able and proceed as required".*

Ok, great, it is pretty clear. Get yourself down to below FL290, establish on your offset, and now go where you need to go.



But…

What if our emergency is a decompression, and we are right out in the middle of the NAT where routing at 10,000ft the whole way to an airport might turn into a fuel problem?

Do we still need to get to FL95 before starting a diversion?

There might not be a black and white, right or wrong answer, **but this is the point** – there are situations where there isn't necessarily a procedure telling us what to do, or when to follow another procedure.

So this is something we should probably be thinking about a bit more. The "What If?" things that could happen.

So, what is the rule for breaking procedures?

Is there sort of **a checklist for when we can, can't, ought to or must?** Why isn't there a rule for every time you are allowed to break a rule?

Well, the reason is no-one can think through every situation, and more importantly they shouldn't try to!

The day pilots can only do something if a procedure tells them to is the day you might as well replace them with a computer. We need to retain the skill of weighing up risk and reward, consequence of actions, because there are so many situations out there which are **not going to be black and white.**

NAT Doc 007 document actually states quite clearly several times –

"The pilot shall take action as necessary to ensure the safety of the aircraft…"

And this goes for any procedure, any rule, anytime you are flying.

Just because the book says "No, don't do that!" never means you cannot do it if it is what you need to do to maintain safety.

The tragic Swissair Flight 111 accident is often raised in CRM discussions as an example of when following procedures to the book **might not lead to a safe outcome**.

But…

Not following procedures because you think there is a quicker, better, easier way to do something is probably not the best idea either.

A Qantas pilot experienced "incapacitating" symptoms after a technical malfunction where they decided to cary out their own troubleshooting, rather than following the checklist.

So, having a good reason to not follow a procedure is important because you are going to have to justify why you broke the rule. **If you need to break it for safety then break it,** but the key seems to be having a **valid, justifiable and safety related reason.**

That is airmanship, and that is why the Commander has final authority. It is also a cornerstone of our pilot licence that we "agree" to accept the ultimate responsibility for the safety of the flight.

Why are we even having this discussion?

Possibly because *we sometimes forget why we have procedures in the first place*.

Unfortunately none of us are immune to this. I can remember several times in my career when **procedure-following took over from common sense.** The time when we shut down an engine with 10 meters of taxi left, ran out of steam, and had to be towed the last 9… *But hey, we still ticked the one engine out taxi box.*

So, all of us stepping back and considering why the procedures are there, and then what we might do when we find ourselves potentially having to operate outside of them, is important.

Which brings us back to the debate about FL95 over the NAT.

Different folk might answer this question differently. It is going to depend on the day, on you and on the situation, and there probably isn't a definitive answer to be given.

What is clear is that at some point in our flying career we will all probably find ourselves in a situation where there is no procedure, no clear cut answer, no simple solution, and this is where our **experience, airmanship and judgement** will really be put to the test.

When we end up in that situation we should't be asking *"What is the risk of me getting into trouble if I do?"* but rather *"What is the risk to my safety if I don't?"* because all the procedures we fall back on were not

put there to be blindly followed, and were not written into stone to keep you out of trouble – they are there to be thoughtfully followed when they keep *your aircraft out of trouble.*

We Need To Talk: Some Comms Hot-Spots to Look Out For

OPSGROUP Team
26 July, 2021

Communications in aviation are meant to be standard. **Everyone speaking the same language, in the same way.** Alas, alack, and unglücklicherweise, we all know **this ain't always the case**. Some areas have their own ways of doing things, others just seem to be difficult on purpose.

So here is a rundown of some of the places you might want to listen out for on your international adventures.

Er-can't hear you

If you are routing between the **Ankara FIR** and **Nicosia FIR** then you are going to need to look out for **Ercan Control**.

Ercan want to control an area over Northern Cyprus, but ICAO don't recognise their authority. So you'll probably have to **call each centre separately** as they don't like to talk to each other directly.

To make matters worse, you need to coordinate with Ankara and Nicosia **ten minutes before reaching their respective FIR boundaries**, which often means relaying via Ercan because Ankara can't hear you.

The waypoints to look out for are **TOMBI** (125.5) or **DOREN** or **VESAR** (126.3). **Call the next FIR 10 minutes before you reach these.**

Southbound is the messiest – make sure you **keep following the instructions from Ankara**, (or relayed

by Ercan 126.7/ 126.9) until you reach these points. Once you do, there is a chance they will tell you you are now under Ercan control, which you should **politely acknowledge and then ignore.**

At this point, talk to Nicosia, **do what they instruct**, and once that's all sorted, then call Ercan as a courtesy to let them know what you're doing.

In Brief:

- **North** of TOMBI/DOREN/VESAR = **Ankara** controls you.
- **South** of TOMBI/DOREN/VESAR = **Nicosia** controls you.

You might have to relay info to Ankara via Ercan, and you might have to tell Ercan what you're doing in Nicosia airspace, but remember – **Ercan don't have control!**

Asia old politics

This is just a plain old case of political rivals. Pakistan and India don't like talking to each other, which often means **they won't hand over to each other between their airspace.** So be sure to have the frequency ready – and a call to let the previous know that you're changing over at boundary is a good idea.

Pakistan Air Defence need to hear from you at least 15 minutes before you enter their airspace, and often ask for your ADC number.

There are different frequencies depending on where you're entering, but the main ones are Karachi 128.350 and Lahore 124.100.

A run in with Iran

Tehran are another strict **"call us first" airspace**, and they take it pretty seriously if you don't get in touch.

The Air Defence want a **10 minutes heads-up**. If you are departing out of a UAE airport, this probably means calling as soon as you pass 10,000ft.

ADIZ can be found on 127.900 and they're going to want to hear:

- Who you are
- Where you are going
- When you'll be reaching them
- What altitude you reckon you'll be at when you do
- Your squawk code

After relaying all this info to them you will probably get a cursory "call xxx", and that's that.

IFBPolite

Over some parts of Africa, there are more giraffes than there is radar coverage. **Big swathes of Africa have little control**, so you are going to need to do some **in-flight broadcasting** here.

It might sound like a chore, but numerous heavy and super jets route through here, and **not hitting their wake** is probably one the best reasons to work out where they are and when. (And if you're one of the big 'uns, then thinking of the little ones is a nice thing to do as well!)

Generally, one IFBP seems to wake everyone else up and triggers a bunch of others, and then you can get a good idea of where everyone is routing.

More info can be found in IATA's IFBP document, but here is a little **IFBP script** in case you need it:

Mumbai, Mumbai HF etiquette

The HF radio over Mumbai airspace is the bane of many a pilot's long-haul life. It often seems to defy all logic of night versus day frequencies, and is usually a trial and error situation to try and work out which one is working.

We found 10018 / 8879 / 5658 tend to have the best reception.

You will know when you do find the golden frequency, because you will hear the ear-aching scratchy hissing, overlaid with a dozen airplanes all calling at once and not listening out for each other.

So try to **avoid talking over another aircraft**, but be ready with your finger on the mic trigger for when a tiny pause occurs and you get your call in. The radio is rarely good at the best of times so **headsets are recommended.**

Mumbai also have CPDLC. The logon is VABF. But they only use it for specific routes. If you cannot get a hold of them, give their SATCOM a go on 441901 or 441920.

The lingo Down Under

Australia are like teenagers – **happy to text, but rarely do they actually want to talk to you.** Nearly all of the Upper Preferred Routes in Australian airspace use CPDLC. Which is actually great. But only if you've got it, and only if you get it right (you do need **RNP10** and **ADS-C/CPDLC** to route along these).

You can logon to YMMM/Melbourne or YBBB/Brisbane (15-45 minutes before) and when you enter, they like to receive a **position report**. From then on its very straightforward.

A593: The Akara Corridor

There's a bit of airspace off the coast from ZSPD/Shanghai known as the 'Akara Corridor', where **different ATC centres are responsible for the control of aircraft at various different crossing points.** South Korea (RKRR/Incheon) controls north-south flights here, while Japan (RJJJ/Fukuoka) controls east-west flights.

This area has always been unusual in that more than one center has had responsibility for controlling aircraft at different waypoints.

But on 11 Jan, 2021, ATC authorities in Japan, China and South Korea agreed to implement a proposal from ICAO regarding ATC management in this area – **so from 25 March, 2021, South Korea will control all flights in this area.**

Wild comms in Idlewild (JFK)

No briefing on 'The Comms Hot-Spots to Look Out For' would be complete without a mention of KJFK/New York controllers.

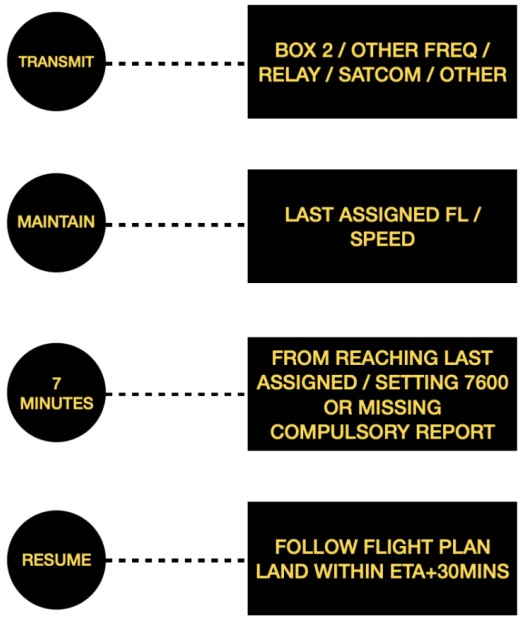
Granted, this is a busy airport, in busy airspace, but operating into JFK is not for the faint-hearted.

Controllers speak fast, only say what they need to say once, and get very mean very fast if you mess up.

Expect multiple runway changes for landing, and on departure keep an eye on the ATIS because they won't always tell you if your departure runway changes, you'll just find out on the taxi.

There are quite specific when's and where's to call on the ground as well – once clear of the runway, check in with ground, but also apron to find out your gate and entry to the apron, because ground will probably want to know this, and sometimes the two don't seem to talk to each other.

Lost Comms



ICAO Doc 4444 contains the **standard lost comms procedure**. Some countries have their own versions too.

If you're in IMC:

- Maintain last assigned speed and level (or minimum flight altitude if higher) for 20 minutes after the point you failed to report at.
- Then follow your flight plan.

If you're in IMC and in an area with ATS surveillance:

- Maintain your last assigned clearance (minimum flight altitude if higher) for 7 minutes. The 7 minutes runs from when you first reach the last assigned altitude (because you lost your comms in the climb), from when you set 7600 (because you realised you'd lost comms while cruising), or from when you were unable to report at a compulsory point (you tried and it didn't work because your comms aren't working…)
- Then follow your flight plan.

Safety on the NAT: B+ with room for improvement

OPSGROUP Team
26 July, 2021

The eighth Annual Safety Report for the North Atlantic Region is out, and it looks good. **A solid B+ for pilots and ATC alike.**

But there is still room for performance improvement, so here are the highlights from the report to focus on.

Did anyone fly in 2020?

The number of flight hours in the NAT HLA through 2020 was **892,137** which was unsurprisingly a decrease on the 2019 hours (2,063,908 in case you're wondering).

The **peak week** was July 15-21 when it saw 5,621 flights crossing, compared to 13,733 for the peak week of 2019.

If you want to check and compare all the stats to 2019 then here is our post on that.

What have they been monitoring?

Safety Performance in the NAT HLA is monitored and measured in **12 areas**. The targets for 6 of these were achieved in 2019, while **2020 achieved an impressive 8.**

The biggest improvements seem to be:

- Less Large Height Deviations where Datalink was **not** in use
- A reduction in the amount of time aircraft **with** datalink spent at the wrong flight level

- A reduction in the number of GNE events involving aircraft **with** datalink

How likely are you to fly into someone else?

Much of the safety focus in the NAT really boils down to this – **it is an area of reduced separation and high density traffic**. So, they also worked out **the risk of collision** and in 2020 it reduced by **74%**, which is probably down to less aircraft but also to less mess-ups.

SLOP is one of the main factors in reducing this number. And it doesn't just reduce the risk of collision, it reduces your risk of running into wake turbulence as well. So keep up that slopping, up to 2nm right (and 0.1nm increments).

Who's to blame for the times it did go wrong?

Ok, ok, the purpose of the report is not to point fingers, but to understand where improvements can be made.

The Top 10 factors in errors haven't really changed – ATC coordination errors are top, closely followed by "crew other" (which pretty much means crew not doing what they're told, messing up etc) and then interestingly **application of contingency** (other than weather).

So here is a quick recap on those Contingency Procedures to follow

Some facts and figures

Since 2019, **70%** of core NAT traffic has been using **ADS-B**.

There have been **no accidents** in the NAT since at least 2017. 2020 also saw **no losses of lateral separation** for the first time since 2017.

They did see 47 LHDs, 57 Lateral Deviations (15 were GNEs, the other 13 were caught and corrected by ATC), 26 coordination events, 1 longitudinal loss of separation and 30 events they prevented where someone was basically just flying the wrong flight profile.

18% of events were down to **ATC coordination** between different ATC sectors.

18% also came down to **fight plan versus clearance** issues.

11% were **weather** related.

Issues with **dispatch** contributed another 8% and everything else was down to, well, lots of other things.

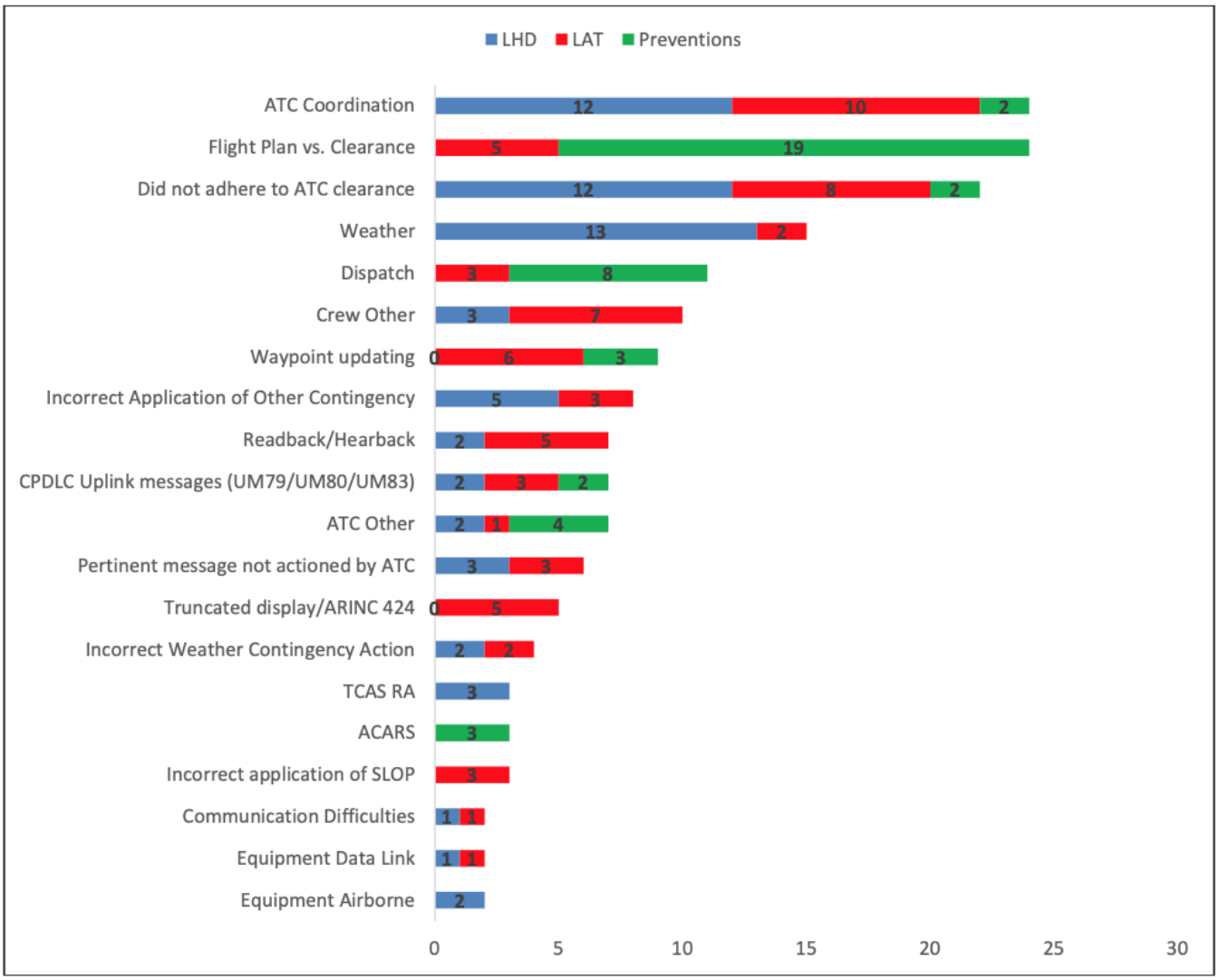


Figure 2: Contributing issues to events in the NAT HLA in 2020 (subject to change – see Note 1)

How can we improve?

Follow the **Golden Rules** of operating in the NAT HLA:

- **Have the Right Equipment:** If you ain't sure then check out our Circle of Entry.
- **Have a Clearance:** If you can't get it on CPDLC then have those HF or VHF frequencies ready for a voice clearance, and make sure you read it back and confirm it correctly.
- **Check your Route:** This means flying what you've actually been told to fly which means checking what is in the airplane box matches what is in the clearance. It probably should say 'flight profile' because it means route, altitude and speed.
- **Know your Contingencies:** We added the picture above to help. Read more about this here.

And don't forget to **SLOP.**

Keep up to date on NAT info

- Here is your link to the full report for 2020.
- ICAO Doc 007 is your go to guide.

- We also try to keep you up to date with changes on the NAT. See our latest update here from Feb 2021.

Photo @Algkalv from Wikimedia Commons

Please be Wary of Malicious Phish

OPSGROUP Team
26 July, 2021

There is a new threat to flight ops security, and it might not come from where you think it would.

The Hack Attack

We talked about the threats of airplanes and control towers being hacked before. But now we want to talk about cybersecurity.

Anyone who works for a big company has probably had to do their cybersecurity training at some point. If you haven't, here is an example. Answers at the bottom of the page.

The trouble is, the scams we have been seeing are getting more and more, well, *smart.*

The Nigerian Prince

The good old Nigerian Prince who wants to give you One Hundred Million Gazillion Dollars scam. **As old as the internet itself.**

How does it work? (And yes, these do still work. Apparently they **rake in over $700,000 a year** from unwitting victims).

In a Kola nutshell, you receive an email from someone overseas (and there are different iterations of this

now but it is always along the same lines) – a royal prince is **wanting to give you money,** or a disgustingly rich recluse of a distant uncle has passed away and mentioned you in their will.

Whichever they use, the trick is the same – they supposedly have money for you, and all you need to do is **provide your bank account details** and they will transfer it all over, for a small fee.

Only here is the catch (sorry to break it to you) – There is no Prince, there is no money, and **now they have your bank details** and maybe even a payment you have sent them.

This doesn't affect Flight Ops though?

No, it doesn't. Not really. Unless you count the **Nigerian Astronaut stuck in space** one.

There is also the recent one which the NBAA warned about involving **Imposter CBP Agents** who call private residences and businesses and attempt to gain banking information.

And then there are the **fake websites** offering free tickets or special deals, and steal "passenger" information which they freely provide. [https://deltaairlines-flights.com] is not a legit website. Don't buy tickets from there.

The ones that we want to bring up though are **Phishing scams and Malware emails**.

So, what do you need to be on the look out for, and how do these even **impact Flight Ops and Security?**

Be Wary of Malicious Phish

This is when an email is sent which looks legit. You open it, maybe it tells you there is an iTunes bill you need to pay. You wonder what you bought on iTunes, you can't remember, so **you open the attachment and BAM!**

Malware is sophisticated nowadays. It doesn't always just shut your computer down, or flash up a retro laughing skull icon. It might destroy data, it might steal data. It might install ransomware on your systems.

Hackers recently took hold of an oil pipeline in the USA.

The Colonial Pipeline supplies half of the east coast's fuel supply. Hackers managed to shut it off, probably via an email. The impact was **no fuel supply from Houston to New Jersey** and this affected all the airports along that route. It also led to **increased fuel prices and ongoing impacts** even after the fuel supply was re-established.

Phishing is a similar scam.

An email, or a phone call from **a "trusted source"** appears in your inbox and somehow cons you into into giving login data, passwords, user info. Once access has been "granted" the hacker can do a lot of damage. From **stealing confidential information, to taking control of systems.**

I.T. Operator SITA which serves major Star Alliance airlines such as Lufthansa and Singapore suffered a **data breach in Q1 2021** with hackers gaining access to ticketing and baggage control systems which led to the information of thousands of passengers being stolen.

In 2020, major European regional airline EasyJet admitted an attack may have **compromised data of around 9 million passengers.** Several thousands had their credit and debit card details accessed.

What are we seeing at OPSGROUP?

We are seeing scammers getting more cunning, scams which are more targeted and ones which are **worryingly specific.**

First up, the **Nav Fees scam.** This one has been around for a while – we reported on it here. They send you an email, pretending to be from Eurocontrol or IATA or some government agency, with a new bank account to send your Nav Fees to. Pretty standard stuff. Fortunately, most of these emails are poorly written, and easy enough to identify as bogus – but that's only if you are on your guard.

Then there's the **charter quote email scam**. These have believable company names. Some of the names are even "real" people, so the email looks legitimate, and **all it does is ask for a quote.** So you open the email attachment and now they have you.

Thankfully, **OPSGROUP is not in the charter quote business** (and our email system is fairly good at spotting these now), but for some of you reading this, who do see real emails for quotes, this might pose a problem.

The more concerning ones come from very specific, and **very genuine aviation linked companies** such as 'Airbus'.

These are worrying because they are **so specific, so targeted,** that it is often hard to spot the real from the scam.

Microsoft put a warning out earlier in 2021 saying they are tracking this 'dynamic' campaign which is targeting the aerospace and travel sectors with **spear-phishing emails**. When the PDF in the email is opened it delivers RevengeRAT or AsyncRAT to your computer.

RATs it seems are the new worms. A Trojan is installed and user credentials, webcam info, statistics about the system are pilfered and pillaged.

Your OPSGROUP Cybersecurity Assessment

1. If you receive an email from an unknown sender, or for something you haven't signed up to – should you open the attachment?
    - Yes
    - No
2. You receive an email or a call asking for details that involve passport info, bank details or anything else sensitive – should you share it?
    - Yes
    - No
3. There is a Nigerian Prince/Princess who really wants to marry you and send you several million dollars – should you trust them?
    - Yes
    - No

If you answered "Yes" to any of these questions, go back to the start of this article and read it again.

What's the deal with China crew visas?

OPSGROUP Team
26 July, 2021

The process for obtaining a crew visa for China can be very confusing. We definitely recommend using an agent to assist with this, and with the permits for your aircraft. G3Visas are a good one – they really know their stuff. But if you are determined to go it alone then here is what we know.

What's the deal?

Crew need a C-type visa. This are usually valid for 7 days.

Simple so far.

However, crew can actually enter China on different visas at certain locations, if pre-arranged. And if you rock up with the wrong sort, you are probably going to get a fine or be asked to go home again.

In fact, for **crew entering as a passenger on a commercial flight** (heading in to ferry out an aircraft for example) **you cannot enter on the Crew C-Type visa.** This means you are going to need a **business or a tourist via.**

In 2013, they added in a **new immigration policy for transit passengers.** If you are from one of the 45 countries on their approved list, and you transit in via **ZSPD/Shanghai Pudong, ZSSS/Hongqiao or ZBBB/Beijing** to a third country, then there is a **72 hours without a visa regulation.** The US is included on this list and we are mentioning it because of the above point about crew entering (as a tourist) to ferry an aircraft out.

You can also obtain **multi-entry visas** depending on your operations, but you are going to need a schedule showing the multi-operation and some sort of official company letterhead proof of why you want multiple entries. We definitely recommend having an agent assist with this because the paperwork can be daunting.

What are the Visa types (that you need to know about)?

- **C –** The standard crew visa
- **L –** Tourist visa generally valid for single, double or multiple entry. US and Canadian citizens may be eligible for a 10 year L-Visa
- **M –** Business visa useful for folk visiting regularly or work reasons (and who aren't employed by a Chinese company)
- **Z –** Work visa (if employed by a Chinese company)
- **G –** Transit visa. It is basically the same price as an L visa so probably better to just go for that one if you need one

The Bilateral Agreement

China and the US have a bilateral visa agreement and it can be a little tenuous.

Back in December 2020, the US put in new rules to try and "curtail" travel by member of the Chinese Communist Party and their immediate family members. It limited them to one travel visa a month. Prior to this a 10 year visa could be obtained.

All very political.

This didn't impact crew visas. However, we have heard recently that:

"Due to unilateral change of the visa application arrangements by the US side, a large number of crew visa applicants from Chinese airlines are unable to obtain US visas through the previous channel. In response, we are compelled to take necessary reciprocal countermeasures for crew visa applications from the US side."

We have not been able to verify this, but it comes from G3 Visas who are a bit of an authority on Chinese visa getting. So get in touch with the agent you are using to help you organize your visas, and leave a little more time in case of delays. So far, there has been no further update on what the deal is at the moment.

Are there other options?

Some operators who are ferrying aircraft out report that they have flown in via Seoul or somewhere else close and not part of China (**so not Taiwan or Hong Kong**), and then simply hopped from one aircraft to the other and flown it out again. This circumvents the requirement for the visa since you are not really entering the country…

We are not recommending or advising against it. We will say that a fair few operators have reportedly done this, and it has worked fine. But you might want to think about **what will happen if you have to divert** and go into a Chinese airport because then you are going to visa-less and this could get messy.

Customs and Immigration

Don't have any mistakes on your Gen Dec. It will cause BIG delays.

Also, be aware that certain nationalities are going to be asked a few more questions. This includes crew.

Turkey

For reasons unknown, if you have been to Turkey and have a visa or entry stamp in your passport, then you are going to have to explain yourself. Actually, it might have something to do with the Turkic Uyghurs in Xinjiang / the Uyghurs diaspora living in Turkey…

Uyghurs

If a crew member is from the Xinjiang region, expect them to be taken aside for additional checks. Nothing to be alarmed about, but good to know in advance that it will happen.

Chinese Citizens working outside of China

They can be a little "funny" with Chinese citizens who work for a foreign airline. Again, it tends to lead to additional immigration "chats" so be prepared for a brief delay.

What about permits?

Getting a permit is **notoriously intimidating.** They require use of AFTN/SITA, have specific routings and are only valid for exact timings given. If you want to land then you need a sponsor letter written in Mandarin by the receiving party…

Basically, use an agent. The authorities are not always the most patient or helpful. You'll be paying around $75 for a one way overfly, $100 for a round trip landing and some extra depending on handling.

Mainland Ground Express are a helpful bunch and you can get hold of them on **+86 20 8111 7474** or via email at operations@groundexpress.aero

Useful links for more info

- The US government travel resources site has some handy info on general visa and travel stuff.
- G3visa is a really handy agent for helping obtain any type of visa.
- Universal Weather maintain some pretty up-to-date info on the situation as well.
- **The OPSGROUP member Forum and Slack channels**. Yeah, we're going to throw this one out to our members and say ask on there because the rules and procedures seem to change a lot and often the **best info comes from someone who has just been there.**

And finally…

If you have been to China recently, experienced issues (or good things) with the visa or permit getting process, or have any tips for other operators then please let us know! Your up to date experience would be very handy to pass on to everyone!

Any Single Pilots Out There?

OPSGROUP Team
26 July, 2021

The big talking point of the moment – Airbus and Cathay Pacific's project to have **only one pilot in the cockpit during cruise.**

So let's take a look at what this might mean for **safety**, **operations** and **pilots** worldwide.

The headlines are misleading

Cathay and Airbus have **not** designed a new A350 which no longer needs pilots operating it. There is **no** mega computer AI robot involved which is stealing our job.

The plan is to simply allow **one pilot to go and rest during "quiet cruise" phases**, while another pilot remains in the cockpit vigilantly monitoring (and probably with toothpicks propping their eyes open). This will allow them to potentially reduce the number of crew required on long haul flights, and while it means a change to procedures it is not really, as many are reporting, a leap towards pilotless flight decks.

Maybe just a small step

So, what are the considerations here that people are talking about?

GermanWings

The GermanWings accident resulted in a rule that there must be two persons in the cockpit at anytime. So if a pilot needed a bathroom break, a cabin crew member was required to come in. This was fairly contentious at the time because, as many pointed out, **what is a cabin crew member going to do** if a "situation" arises?

This **rule was eventually revoked**, in part because EASA and other authorities brought in new regulations relating to pilot psychometric testing. However, with only one pilot in the flight deck, this does raise various safety concerns – from events similar to the GermanWings accident, to the question of pilot incapacitation or even, what do they do if they need the loo?

What about the AF447 accident?

AF447 was, in part, **attributed to the experience levels of the two crew in the flight deck** – both First Officers while the Captain was out sleeping.

Using cruise relief pilots is not a new thing though, and in order to operate with a single pilot, that pilot will presumably need to meet a minimum experience level. Additionally, the Captain will maintain the decision as to when they leave the flight deck in their First Officer's hands.

The lonesome pilot can also recall their colleague to the flight deck should a situation require it. So the question really comes down to whether a situation is likely to arise where, by **having only a single pilot the result is more critical or catastrophic** than if two had been present and therein lies the problem – because years of aviation safety studies have shown time again that there is a reason we operate with two crew.

Safety in numbers

Modern aircraft, and the A350 in particular, have **many levels of safety and redundancy** to support the crew. They can automatically fly TCAS maneuvers. They can carry out an emergency descent at the push of a button. In addition, Airbus are working to demonstrate that their aircraft and systems are robust enough to basically not really fail. They are also designing them to be able to **autonomously handle any situation without pilot input for 15 minutes.**

This will be a big deal. It will mean, should something fail, *and* the single pilot be incapacitated, that there is time for the second pilot to wake up and make it to the flight deck to solve the situation. However, **recent aviation accidents involving malfunctioning systems** (designed to minimize pilot workload), and ongoing concerns about automation complacency highlight the potential downside of such advancements.

Can ETOPS can teach us something?

The A350 was certified for 370 minutes ETOPS. That's a long time. It is over 6 hours. 6 hours on one engine potentially. So what leads to this?

ETOPS is given to the operator, not the aircraft, and it is based on the operator's ability to demonstrate necessary airworthiness, maintenance and ops requirements. **It is really a statistical thing.** If an operator hasn't had an engine issue in a really long time then they are probably going to be able to get a better ETOPS approval.

So what does this have to do with only one pilot in the flight deck?

Well, it boils down to the same thing – statistics and procedures:

- How often does something go wrong in the cruise (which requires two pilots to handle it)?
- What procedures will be in place for ensuring safety and redundancy levels are maintained?

The answer to Question 1 might be *"hardly ever"*, but aviation safety improvements are built on the fairly simply idea that **if there is a risk, find a way to mitigate it.**

Even if that risk is minute, if it can be removed it should be. This is why astronauts have their appendix out before heading into space. This is why we have redundant systems onboard, or each pilot eats a different meal. Statistics might suggest an event occurring which a single pilot cannot deal with and which then results in a fatal accident or hull loss is tinier than a hair on a fleas back…

But if a risk exists that can be mitigates simply by retaining two pilots in the cockpit, then two pilots should remain.

A Disco onboard

They gave the A380 a bar and showers, now the plan is to have Discos…

DISCO actually stands for Disruptive Cockpit (I am not sure that sounds any better). This is the Airbus project looking at enhanced cockpit design to enable single-pilot operations on new aircraft.

The DISCO concept is looking to place core technologies into the flight deck in a 'multi modal' way. Things like pilot monitoring systems which track eye movement, voice recognition for commands, improved ground collision avoidance systems, new navigation sensors.

And of course pilot health monitoring systems.

An integral safety aspect of this concept lies in the monitoring of the sole pilot, and the availability of a system to detect if they become incapacitated, and to alert the remaining crew member.

It is only happening in 2025

The plan is to implement this in 2025. That is **3 and a bit years of procedure writing, regulation making, testing and trialling** before it is put into action, and there are a fair few obstacles that stand between now and that day :

- Regulators will be looking at their procedures with a fine tooth comb
- The pilot will probably need monitoring, particularly to ensure incapacitation does not occur (or if it does, the other pilot can quick-foot it back)
- There will need to be pilot training in place
- Airbus need to hit that 15 minutes of safe autonomy.
    - And these systems will also need to deal with situations where 'Black and White' failures do not occur. When you consider the multiple, varied and often "illogical" failures which can arise from a lightning strike, a bomb onboard, or multiple computer failures this does not look as simple as Airbus might say
- The approvals for this do not just sit with the Hong Kong authorities. Any state that the airline might overfly with only one pilot in the driving seat is going to have to be convinced as well
- Passengers will need convincing…

And they still need to answer the question of the toilet. We all want a little more information on how that 'specially designed unisex toilet' to be used 'in coordination with ATC' will work.

If this happens, they won't need pilots anymore

This is a contentious one to raise right now. Say 'single pilot' or 'autonomous systems' and a lot of pilots break out in a sweat, seeing themselves replaced by AI computers. But aviation has always been very innovative and those in it have always had to adapt to new technologies. Take a glance back to the 1980s and flight engineers were still a relatively common site in flight.

Ignoring the rather decimating impact of Covid though, **aviation was growing, and it was growing fast.**

Chances are it will again.

There are around 200,000 active pilots and forecasts suggested upwards of 500,000 would have to be trained over the next two decades to meet forecast growth demands. Even if every (long haul) flight deck sees the number of crew in it halved, it is still probably safe to say none of the current or new generation of pilots will be out of work anytime soon.

But we still are not convinced

There are unresolved questions here. **The main one being "Why?"**

You see, there is already this rather marvelous thing in an airplane – it can watch the pilot, it can monitor aircraft systems, and it can take over no matter what the failure or the complexity of that failure might be…

It is called "the other pilot".

There is a good reason why aircraft are multi-crew machines. So why are Airbus and Cathay Pacific investing millions into developing systems which can do this?

It isn't for safety…

This is being driven, not by manufacturers looking to increase safety, but by **an operator looking to reduce costs.** And for many, that appears an unwise and arguably unethical reason. Even if the statistical impact on safety is a 0.0001% decrease, that is still an unacceptable decrease when it is made for business reasons. There are also a great many places within an airline or operation where costs can be cut, and when cuts are made these should never occur at the price of safety, even if that price does seem negligible.

The main photo is of a pair of VietJet co-pilots who got married – because we think that's nice, but also because we liked the play on 'single pilot' in the flight deck idea. Congrats to them both for their lovely day!

Intercepted: What You Need To Know

Chris Shieff
26 July, 2021

There are several reports that amidst the events surrounding the forced diversion of Ryanair Flight 4978 to Belarus last month, at least one MiG-29 was scrambled to intercept and escort the 737 to Minsk airport.

While military interceptions of civilian airliners are very rare, they *can* happen and for serious reasons. Which poses an important question – **if a jet were to appear off your wing tip tomorrow, would you know what to do?**

Each interception is **potentially hazardous** which is why ICAO publish rules and procedures (Annex 2) that both military and civilian aircraft *should* be following to minimise the risk. Each state is responsible for its own airspace, but where possible they should be following ICAO's guidelines. For crew this includes knowing the actions to be taken and the visual signals to be used.

Here's a break-down of what you need to know.

Why do they happen?

ICAO are very specific – an interception should be avoided and **only used as a last resort**. ATC must try and establish communications with you first. The primary reason is that they **haven't been able to talk to you.**

There are lots of simple reasons why this can happen – usually a wrong frequency or perhaps they've forgotten to hand you over. In this instance they will try and contact you on 121.5 (which is one reason we monitor Guard), or via another aircraft. If that fails, ATC have a problem. You're flying through their airspace and you're not talking. It is not clear what is happening on board.

Incapacitation is a biggie, the crew may have fallen asleep or perhaps something more serious has happened as Helios 522 tragically reminds us. Or the aircraft may have been hijacked. Either way, they need to get someone up there to check things out.

What will they want us to do?

One of three things, depending on what the problem is. They'll either want to **identify** you, **communicate** with you or **re-direct** you. The latter may be because you have strayed off-course or busted some kind of restricted airspace. Far less often it is because authorities may believe you are involved with illegal activity (such as drug smuggling) or or you are for some reason hazardous to other aircraft.

The Interception Manoeuvre.

ICAO have a standard procedure for military aircraft to follow to minimise startle factor for you and decrease collision risk. A standard interception will take place in three phases, here's how it works.

Phase I.

Intercepting aircraft should approach you from **astern (behind)**. They will disable pressure reporting on their transponders – not to hide from you, but to avoid triggering a nuisance RA. They should still be visible on your TCAS but only as a TA. The lead aircraft will take up a position on the left, ahead and slightly above at a distance so as not to cause startle and to be clearly visible to the captain. It is likely there will be an accompanying aircraft which will remain behind you throughout. They will be **trying to contact you on guard frequency (121.5)** using the callsign 'INTERCEPTOR' or 'INTERCEPT CONTROL.'

Phase II.

The lead aircraft will close slowly with you but not closer than needed to establish communications. All other aircraft will remain well clear of you.

Phase III.

What happens next depends on the situation. If they have finished their interception (they have identified you, re-established your comms with ATC or understand your intentions) they will perform a break away procedure to clear you.

Or they may need to divert or re-route you. In which case they will remain in position and **clearly visible at all times**.

What you need to do in the flight deck.

Stay calm. You'll likely be startled. Slow it down and remember the following:

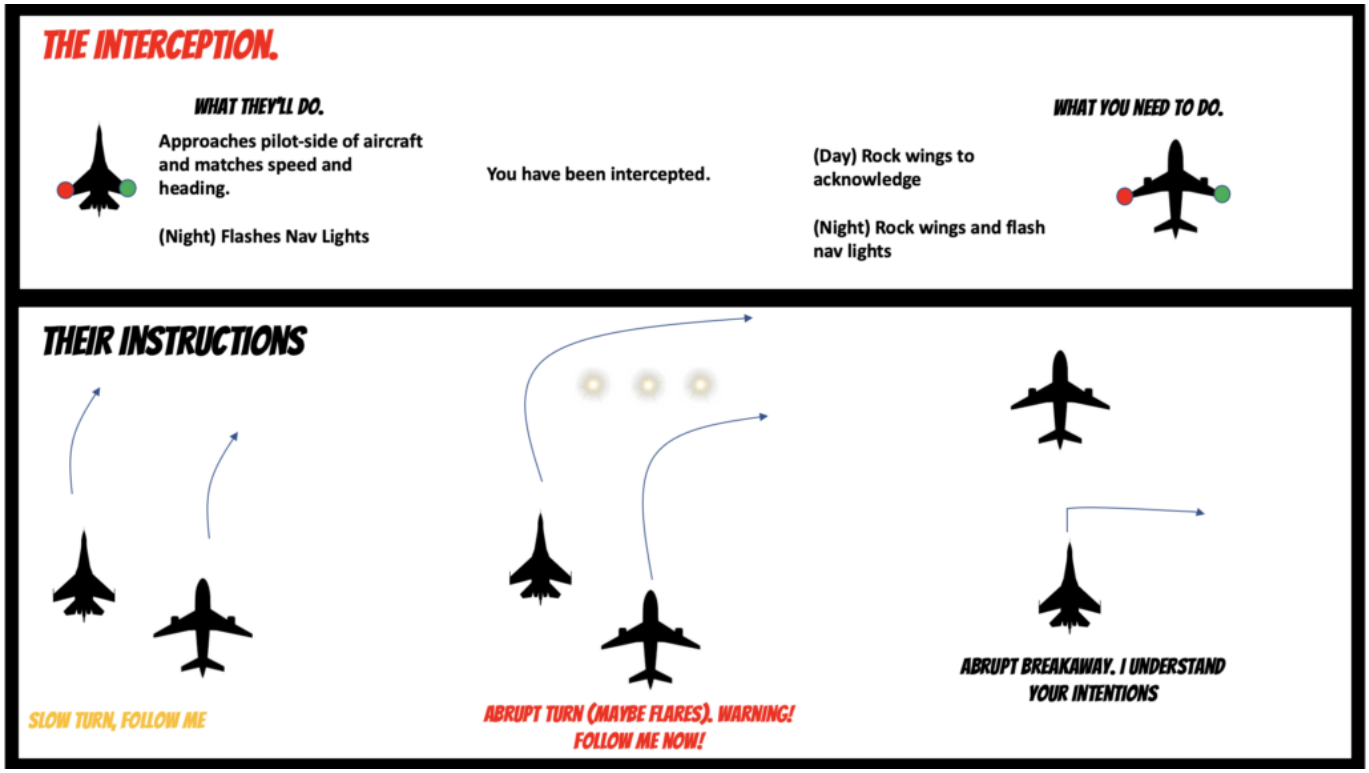
- **Notify ATC (if possible).** Make sure you have 121.5 active, the volume turned up and that your headset or speaker is working. Try and establish contact with them. Listen out for the callsigns above.
- **Select Mode A** on your transponder and **squawk 7700** (unless ATC tell you otherwise). If you have ADS-B or ADS-C onboard, select the appropriate emergency function.
- **Communicate** (more on that below).

How do we talk to them?

The primary way they will want to talk to you will be **in plain English on 121.5.**

If they can't raise you on that, they will use **visual signals** which is why they need to get so close to you.

There are ICAO standard signals used across most member states (including the US) that you need to know (or at least know how to find quickly). Here's how they work:



When they want you to land.

If they can't talk to you and want you back down on the ground they will direct you to an airport, turn on their landing lights, lower their gear and begin to circle.

If you intend to land you should lower your own gear and land. If the airport is inadequate, you should continue to circle 1000 – 2000ft, raise your gear and flash your landing lights until your escort re-directs you some place else.

What about if their instructions contradict someone else's?

According to ICAO, if you receive contradictory instructions from other sources you should **continue to comply with those from the intercepting aircraft.**

Their duty of care.

You have to do as you're told, but they should be looking after you. ICAO are very clear that nothing can be done during interceptions to unnecessarily put your aircraft or its passengers at undue risk. So, when they are requiring you to land, it is important to know they must take care to **ensure your safety.**

Firstly, they **should not divert you to an airfield which is unsafe for your aircraft type**. For civil aircraft this means the runway must be equivalent to at least 2,500m long at sea level, and have a bearing strength that is strong enough. The surrounding terrain must be suitable to allow for a safe approach and missed approach.

They must also take steps to ensure that you have **sufficient fuel** and if possible the airport they want you to land at is published in the relevant AIP.

Finally, they should give you **sufficient time** to prepare for the landing, including giving the crew a chance to check landing performance and brief.

Should I be worried about being shot at?

Seeing a fighter on your wing is an intimidating sight. **But t**he **use of weapons is very unlikely**, especially if you are complying with instructions or are obviously unable to respond. ICAO have asked all contracting states for a commitment that all measures will be taken to refrain from the use of weapons **(including to attract attention)** as they endanger the lives and safety of everyone on board. However, that's not to say they *can't* be used. So the best defence is always to follow instructions.

Military interception of a civil aircraft is extremely rare.

While the diversion and alleged interception of Ryanair last month raises valid concerns throughout the aviation community it is important to remember that ICAO's procedures have been designed to minimise risk across a broad range of scenarios. It's important that we stay aware of them and how to apply them.

Saudi Ops for Hajj 2021

OPSGROUP Team
26 July, 2021

Hajj is the annual pilgrimage to Mecca, which means a change in traffic density and also some flight restrictions into Saudi Arabia.

The Hajj period this year is July 17-22

However, with current quarantine measures (1 week in a hotel if you haven't been jabbed), the increase in inbound traffic might start a little sooner.

Where in Saudi?

OEJN/Jeddah and **OERK/Riyadh** airports are the two main entry points to Saudi Arabia for those attending Hajj. In fact, to fly in here during Hajj period your passengers may well need special Hajj visitor visas, or will likely experience some **pretty long delays in customs.**

Use these airports as alternates with caution during this period because traffic is going to be much higher even this season (2021) when visitor numbers are restricted. You might also experience delays if a VIP is landing as they tend to add in security measures (which can include holding other aircraft if there are enough "V"s before the "IP")

Where else?

OEMA/Madinah can also see more traffic since those holding Visit or Seasonal Work visas are often transferred via here instead.

OETF/Taif Regional airport is also apparently open for Hajj flights if you are moving people domestically.

If you are planning on operating a Hajj charter

You are going to need to **get a request in with the GACA (General Authority of Civil Aviation)** Administrative Liaison Center. There are quite strict quotas because they want a 50/50 split with Saudi air carriers so an early request is a good plan.

We suggest doing it through an authorized agent like fbo@spa.sa – these folk are nice and responsive.

Operations requests have to be sent to GACA through official channels. Hajj flight schedules should sent via e-mail to: hajflights@gaca.gov.sa

You can find a bunch of useful info on how to apply for that here. Actually, if you are thinking of operating a Hajj flight then definitely read this since there are a lot of things you need to be aware of. **It is the official GACA produced 'Hajj Instructions Governing the Carriage of Pilgrims by Air'.**

Airspace Warnings

There are a fair few in place for the south-western region of the Jeddah FIR. The general view is to avoid that part of the Jeddah FIR, and **avoid Yemen, and anywhere near the Yemeni border.**

It is also worth reading up on the **ESCAT procedures** Saudi Arabia have because an escalation in attacks is possible during Hajj season, particularly with a focus on Riyadh and Dammam airports due to the higher numbers of traffic. Basically, if they activate, you will have to **follow exactly what ATC tell you** and will probably be required to **land at the nearest suitable** aerodrome, or **leave Saudi Airspace** right away.

Any other alerts I should know about?

We have a few alerts out at the moment for Saudi Arabia including one about hotel room shortages. Anyone who is unjabbed needs to quarantine for at least a week so these have been filling up fast.

Crew are exempt from quarantine but do still need a PCR test less than 72 hours old.

Hajj Routes

Usually, **ASECNA put out an AIP SUP for Hajj routes through Africa**, because the number of Muslims routing from Africa to Saudi Arabia means changes to the traffic flows and standard routings are required so ATC can deal with it all.

Normally, traffic is very much **north-south predominant**, with Europe-Africa flights being the main flow. When Hajj operations start up, a good amount of traffic starts operating east-west (ie. Africa-Saudi Arabia and vice versa), and this is something to be aware of when cruising along at **FL330 with spotty HF comms.**

However, we haven't seen one published yet this year, possibly because **numbers are so restricted.** So

keep on a look out, and listen out if routing through Africa just in case.

Where can I find more info?

You can find it right here with this handy list:

- Useful Info on Hajj and Umrah travel conditions
- The official GACA site
- The official GACA info pack on Hajj flights

Finally, if you are flying any Muslim passengers and they ask which direction Mecca is in, then there is a waypoint **MECCA** which you can use to find the bearing.

Wake Turbulence: See You On The Flip(ped over) Side

OPSGROUP Team
26 July, 2021

We last wrote about this back in 2017, after the en-route wake of an A380 flipped a Challenger 604 upside down over the Arabian Sea. But as the skies start to grow busier again it's worth having a think about **how to avoid** wake turbulence or **deal with it** when you come across it.

If you are going to run into wake turbulence, there is a good chance it will happen **near the ground**. Not the ideal place to suddenly find yourself banking sharply without warning.

The levels of **traffic operating in close proximity** (and in configurations specifically designed to produce lots of lift which is what basically leads to wake) can make the approach, departure, takeoff or

landing **a gauntlet of swirling vortices of doom.** Added to that, aircraft are generally operating at low speed with lower controllability margins.

A study in Australia looked at the vortices of an A380 and in 35 knot winds, at 2,400ft, it took **72 seconds for the vortices to cover 1300m**. They move, and they take a while to dissipate. This study took place after a Saab 340B temporarily lost control, dropping 300-400ft in altitude and **rolling 52 degrees left and 21 degrees right.**

An ILS calibration aircraft crashed in OMDB/Dubai after breaching minimum separation distances from commercial traffic. Hitting wake is not fun and can lead to catastrophic consequences.

Thankfully, wake turbulence is taken seriously. In fact, in 2016, wake turbulence categories were rethought.

They used to just be based off MTOWs:

- Super (the A380 held this spot)
- Heavy (anything with a MTOW more than or equal to 136 tons)
- Medium (7 tons to 136 tons)
- Light (anything under 7 tons)

Nowadays, the categories are a little more complex and consider **both weight and wingspan,** because wing design is a big contributor to what sort of vortices roll off the tips. **Now we have 7 categories: G-A.** Ultimately, the important thing to remember is the distance you need from each depending on what you are in.

Get woke about wake.

So, we have our 7 categories, and we have our distance based separation (which ICAO allows to go as low as 2.5NM).

Something to remember – these have been designed to allow **maximum runway capacity and operational efficiency.** You won't be ATC's favorite pilot if you ask for more separation (you might even lose your spot in the sequence) but safety is ultimately up to you.

If you need more space, say something.

There are a few other things you can do to help avoid wake in the airport area:

- Consider requesting a **SLOP on arrival** – yes, this is possible. Except where they have super strict NABT routes.
- Consider asking for an **extended holding pattern, or opposite direction hold** – just check where that might fly you (if you're close to the border with another airspace you might run into another sort of trouble).
- Try and **remain above the flightpath** of the preceding aircraft, and avoid long level sections by flying a **CDA**.
- **Watch those speed margins** – if you think you might meet some wake, think about taking some flap a little earlier so you have more margin.
- If you are a 'heavy' or a 'super' then **ATC might not want you to fly a CDA**, especially in

high density airspace. JFK are one such spot.

- **Look at what the wind is doing** – if it's light or variable then those vortexes are going to sit there, waiting for you to fly into them…

Is there any technology to help?

There is indeed. In fact, there are several interesting projects and technologies being tested to help with wake.

Vortex modelling is playing a major part in the EU's Single European Sky ATM Research and has led to some rather clever folk in Germany discovering that if you **build a "plate line"** (basically a wall of large wooden boards) this effectively cancels out most of the wake. This is being tested at EDDF/Frankfurt and EDDM/Munich airport using smoke and lasers.

Turbulence can really CAT-ch you out.

Going back to the 2017 **Airbus 380 vs Challenger 604** battle – the Challenger came off a lot worse.

The big takeaway from this: **the risk of wake in cruise is a pretty big one as well**. So what can you do about it?

- **SLOP** – It is one of the things it was designed for.

But use a bit of common sense here – if the wind is from the left (and slopping to the left is not available), then flying to the right of track just means when you get to abeam where the aircraft in front was, their wake has probably been blown right of track as well. **Maybe ask them to SLOP!**

Of course, **severe turbulence isn't only caused by wake**. Weather, mountains, atmospheric stuff are all to blame as well.

There are technologies out there to help with this as well. **Lidar is just such a thing.** The Japanese Aerospace Exploration Agency and Boeing have discovered that if you stick one of these onto the side of an airplane then it can detect aerosols on the air. These are tiny particles, such smaller than water droplets so a conventional radar won't detect them. The Lidar system does though, and can **provide up to around 70 seconds warning (about 10 miles).**

This might not always be enough to avoid, but it's **enough to switch the seatbelt sign on** and warn everyone down the back.

So, sometimes there are warning signs, but sometimes there aren't. We aren't going to bore you with a science lesson on Clear Air Turbulence or how to check your shear rates. **What we do think is worth talking** about is what ICAO, EASA, the FAA et al. have say about what to do when you have inadvertently come across something that has *really* upset your airplane.

UPRT

Upset Prevention and Recovery Training. **This is a big (and very good) thing.** Since the AF447 accident it has become mandatory for crew to be trained in UPRT.

But what actually is it?

Well, it is one answer which is hoping to solve the issue of **LOC-I incidents** amongst other things. Loss of Control in flight is the biggest cause of fatal accidents over the last two decades (on commercial jet

aircraft), having led to **33% of fatal accidents.**

It is designed to **solve the "startle" factor** by giving a clear, defined method of what to do if you don't really know what is going on. Basically, when you experience an "unusual attitude" (with the airplane, not with a strange co-pilot).

An unusual attitude is anything outside your aircraft's normal limits. For a large transport category aircraft we are probably talking **nose up more than 25 degrees of pitch, or down more than 10, a bank angle greater than 45 degrees** or any flight within these parameters but with airspeeds "inappropriate for the conditions".

What has changed here from the old-school stall recovery type training?

Well, the big change is what we are really learning during the training. Upsets are not "some aerodynamic phenomenon lurking in the atmosphere to grab pilots following well structured procedures" – they happen when things have gone very, very wrong and procedures have flown out the window.

So, UPRT is about **training to deal with the startle and the confusion** – giving a method to right the airplane when that startle and confusion is likely preventing you from doing so. It is also about learning how to **recognize a potential threat** that might lead to an upset, and it is about **better monitoring** to prevent the startle.

Tell me how to do it.

Probably more for a trained instructor, but the general gist is this:

- **Push**
- **Roll**
- **Power**
- **Stabilise**

(Sometimes Roll and Power might want to go in the opposite order.)

Pushing does not mean ramming the stick forward. It means unloading the wings. And once they are unloaded you want to stop the push, but that **doesn't mean yanking the nose back up into a negative-G maneuver.** You are going to have to trade some height for speed (and safety) here. When the aircraft is back under control, that means *gently* returning it to the horizon.

Roll is similar – it is all about **giving the wings the best chance of performing**, and that means getting them level and not barrel-rolling around the sky. But… if your nose is mega high, and you have power on, then pushing forward is going to be tough to do. So adding some roll can also help us out here, getting the nose to drop, and giving us control of, well, the controls.

UPRT is about monitoring, recognizing and handling.

Fancy some further reading?

- Here is a link to the FAA Advisory telling you all about their **recommendations for UPRT.**
- Here is a big old document on **Wake RECAT,** by EASA.

I Feel The Need For Reliable Speed

OPSGROUP Team
26 July, 2021

Speed is a big thing when it comes to flying. Lift is, after all, equal to half of something multiplied by something else and, oh yeah, velocity squared…

Now, with so many airplanes being hauled out of storage complete with **bugs, beetles and other nasties nesting in places they should not be nesting in**, there has been what EASA described as "an alarming trend" in the number of aircraft experiencing unreliable airspeed indications.

So we thought we would take a more practical look at what unreliable airspeed might really mean for you.

What are we talking about?

Airbus reported that in the period from January 2020 to March 2021, they had **55 events of unreliable airspeed**. But 55 in a 14 month period (considering how many Airbus are out there flying) doesn't sound that many.

So why is everyone so worried about it?

Well, we wrote a bunch of stuff about it here. We also talked about startle factor because that really is one of the big danger elements of the unreliable speed problemo. You see, if you get unreliable airspeed, there is a good chance you will do so at a **horribly critical moment in flight**. Like takeoff when you are near the ground, don't have much speed, and have even less time to deal with it.

So, we are talking about you (the pilot) or it (the aircraft) not knowing what airspeed is reliable, and everything getting fairly confusing, very quickly.

What happens when it happens?

Airplane systems are clever. They use teamwork. They don't just rely on one sensor or one probe,

instead, they have independent probes talking to independent systems, and then these talk to each other and on a good day everything matches. On a bad day they might not.

But air data computers don't argue, they get logical. If two are receiving the same information then chances are number three is wrong and then majority rules and the other systems effectively vote it out. Of course, they tell the pilot when this happens so you can judge for yourself, and maybe try to work out why there is a discrepancy.

The situation gets **more complex when the computers cannot determine which is reliable** and which is not. When we talk about 'Unreliable Airspeed' this is the situation we are really referring to because now you are going to have to troubleshoot, pretty quickly, in order to work out what to trust. More critically, you are going to have to decide pretty fast whether or not your airplane is in a safe condition.

So your first action needs to be that 'Aviate' bit of those **Golden "ANC" rules.**

Don't forget the first line…

The memory items for 'Unreliable Airspeed' are going to vary between types, but the general gist is probably the same: *decide if the airplane is safe and if it isn't, make it safe before you do anything else.*

Airbus, for example, say **"if safe conduct of flight impacted".**

So what they mean is don't go hurling on thrust and yanking the airplane nose about unless you actually need to (but if you need to, then do!)

If you are in cruise – **straight and level, with a sensible pitch attitude and thrust setting –** and your autopilot disconnects because it ain't sure about the speed, then **do you actually need to do anything?** Other than making sure you have control, probably not. The speed hasn't suddenly become unsafe just because you cannot say exactly what it is.

The same goes for a nice, stable approach. If you're configured, heading down the ILS, and your autopilot disconnects, but the airplane is still on the ILS, descending at a normal ROD with a normal thrust and pitch setting, **why not continue** (or at least see if it is safer too before you throw it into a go-around)?

Destabilizing it is potentially just going to give your a whole load more work, and the airplane a whole load more trouble.

But don't forget the first line…

There are also **instances when you do not have time** to think about whether it really is or isn't reliable.

V1 is determined during your performance calculations. This is the speed by which **you need to have made the decision to stop, if you are going to.** But it is not "just" the speed that matters. What your performance calculations are actually thinking about is how long (and by how long, really *how far*) it will take you to accelerate to that speed, and then how much runway you will need to decelerate back down from that speed if you reject.

So we sort of need to think about **V1 in terms of the point on the runway** we will pass when we reach that speed. If our airspeed indications are unreliable, then we cannot really say if we are at the point, before it or past it, and if we don't know that and don't know our actual energy then…

Can we stop?

Common sense and airmanship will probably tell you when rejecting versus taking TOGA and setting a pitch attitude is the best option.

Why does it happen?

Aircraft coming out of storage with stuff stuck in their probes seems to be the most common reason. Of Airbus' 55, **44 of them were due to things "obstructing" the probes.** One fix is to put covers on to stop stuff getting in. Unfortunately, this also led to a few situations where covers were *left on* stopping the air from getting in and resulting in, well, unreliable airspeed.

Icing if you fly into **adverse weather is also a common cause.** This can be incipient and hard to spot. Combined with high altitude handling differences, half asleep pilots, and a few other factors and you have a scenario starting to sound similar to the one Air France 447 encountered.

Damage to probes (hail stones, birds and things flying into them at high speed are probably to blame here) and **Volcanic Ash** are less common but equally possible reasons.

What can we do about it?

Well, EASA, ICAO and other wise folk say to try and avoid it happening in the first place with some **decent maintenance checks** if pulling your aircraft out of storage. They also recommend **good procedures and good monitoring** as a good way to not get caught unawares.

The general advice is:

- **Know your pitch and power settings.** Old school, back to basics flying, but having an idea about these will **a)** help you notice when something just doesn't look right and **b)** might just save the situation.
- **Don't ignore your stall warning.** This works off Angle of Attack, not airspeed. Think of it like your wife/partner – it is probably yelling at you for a (very valid) reason.
- **Follow your aircraft memory items and checklist.** This means getting the airplane into a safe flying condition and then troubleshooting.
- **Make life easy for yourself.** Talk to ATC – ask for a block altitude. If you are heading in to land, ask for a long descending final so you can take your time configuring. Remember there are other resources onboard as well – GPS gives approximate altitude and speeds.

Breaking the Barrier: Sonic Boom or Sonic Bust?

Chris Shieff
26 July, 2021

Two big pieces of supersonic news have hit headlines in recent weeks.

The good news was that a US major has agreed to purchase fifteen Boom supersonic jets still in development, with the option to purchase many more. All going well, they'll be gracing the upper flight levels by the end of the decade. Cool stuff right?

But then **the bad news** was that Aerion Supersonic, widely regarded as being the closest to delivering a viable supersonic business jet, shut down after seventeen years and many millions of dollars spent trying to make the dream a reality.

This emotional roller coaster poses an important conundrum: purchase agreements are one thing **but are we really that close to commercial supersonic flight?** When you start digging it becomes clear just how much the sound barrier becomes a hurdle for the industry as it stands today.

And it's not just about shock waves either – **even though it's possible, will it ever be profitable?**

The iconic Concorde to this day remains one of only two commercial supersonic jets that was were in service (the Tupolev briefly being the other). In its twenty-seven year career of rattling windows at JFK and Heathrow, its profits were certainly subsonic. It's possible that in its legacy it leaves an unpleasant truth: *is it really worth flying faster than Mach 1?*

The aviator inside me hopes so, but the writing may already be on the wall.

We know we can build it, but here are the issues.

Ironically the formula to going supersonic appears quite simple: take a super slippery airframe, make it heat resistant and then liberally apply loads of power. *But if only it was that easy.*

When things go boom.

Firstly there's the issue of sonic booms. ICAO's current policy says that operators have to ensure that no 'unacceptable situation' is created for the public by the sonic boom of a commercial aircraft. The FAA have taken it further and said **no-bueno to <u>any</u> commercial ops above Mach 1 over the US** unless you have very special permission.

Low-boom technology is real, using special shapes to reduce the impact of the big bang on the ground **but**

we're still a ways-off going zero-boom in the near future. You might be thinking – why not go subsonic over land and wind it up over the ocean? That works for trans-continental flights but not so much for long legs over land. To make matters worse, supersonic airframes don't fly efficiently at subsonic speeds. It would just not be viable to fly subsonic for hours burning copious amounts of gas.

What's that noise?

All sonic booms aside, there is still an issue with noise. As speeds become supersonic, jet engines must lose bypass to stay efficient. The huge N1 fans we see on modern subsonic jets would only cause huge amounts of drag at high speeds.

Unfortunately this means they have a tendency to be **ear-splittingly loud when they take off and land**. Just listen to a video of Concorde – cool, yes. But legal? Not with today's regs. Here's what I mean.

Although this is set to change, **ICAO** hasn't yet published specific noise guidelines for supersonic aircraft. Instead they say that noise levels for subsonic aircraft can be used as the guideline. **The FAA** say that commercial supersonic aircraft are banned unless they meet stage 2 noise limits – what are those you say?

They're about as loud as older aircraft like the 727. For comparison, they used to produce around 90 decibels on the roll. Concorde once recorded 120 – about the same as a clap of thunder.

It's clear that engine technology needs to be drastically different and **new regs will need to be written** to let the supersonic birds fly.

What about the trees?

The industry is in the midst of **a massive move toward sustainability** and the goals are ambitious. ICAO for instance is tasked by the Kyoto Protocol to control aviation's burn-off that affects global warming. They're now targeting carbon neutral growth until 2050 despite how quickly things once again begin to expand. There is an industry-wide push toward alternative fuels including hydrogen and Sustainable Aviation Fuel which can be run in conventional turbine engines using waste products that need to be seen to be believed.

The world is worried about global warming, ozone depletion and air quality and super-fast jets *just don't fit this mould.* The future wants us to be squeaky-clean. This is a big barrier to supersonic aviation as the industry is unlikely to give the thumbs up to new technologies without knowing whether they are playing their role in keeping emissions down.

But how will she handle?

Then there's the airframe. We're going to fly these things which means **they need to perform on several levels**. First of all they need to have acceptable handling and ride qualities – and delta wings are different. They need to be safe, and the passengers comfortable.

And how will they perform at **high altitude?** They have to be recoverable from jet upsets. Finally it's safe to assume that if one of these aircraft makes it to the line (and I hope one does) it will be packed full of technology. But it's important to remember that advanced technologies need to be approved and reliability becomes a pressing issue. This all takes time.

The Elephant in the Room – The Profit Barrier.

That old chestnut. It gets in the way of all the fun.

The shutdown of Aerion Supersonic raises some serious questions about the viability of these spectacular flying machines. All of these technological challenges are certainly boundaries but money talks. Perhaps

the biggest challenge of all is economic.

Concorde first flew in 1976. Since then no one has come to market with a solution that would make them affordable to airlines and corporate operators alike. Companies like Boom, Spike and Exosonic are certainly weighing in on the challenge, *but is the model missing the mark?*

How do you put a dollar sign on time? Before Aerion left the market it estimated its AS2 jet would cost $120 million off the production line. Market leading subsonic jets like the Phenom 300 or Challenger 350 cost substantially less – not only to own, but to operate.

Supersonic jets will also use more fuel per mile than conventional aircraft, with far reduced range. In an environment where profit margin is based on the scent of an oily rag, what is a few extra hours enroute and how do you actually quantify that when signing on the dotted line?

At what point do time savings account for the extra cost? That is the crux of the issue.

Industry heavy weights Airbus, Lockheed Martin, GE and Boeing were all at one time or another onboard with Aerion. If they couldn't make it happen, what challenges lie ahead for those who think they can?

The answer may lie in volume (more bums on seats), which is where Boom may get it right where Aerion and other corporate jet concepts did not. Only time and the bottom line will tell.

Supersonic commercial flight will be here one day.

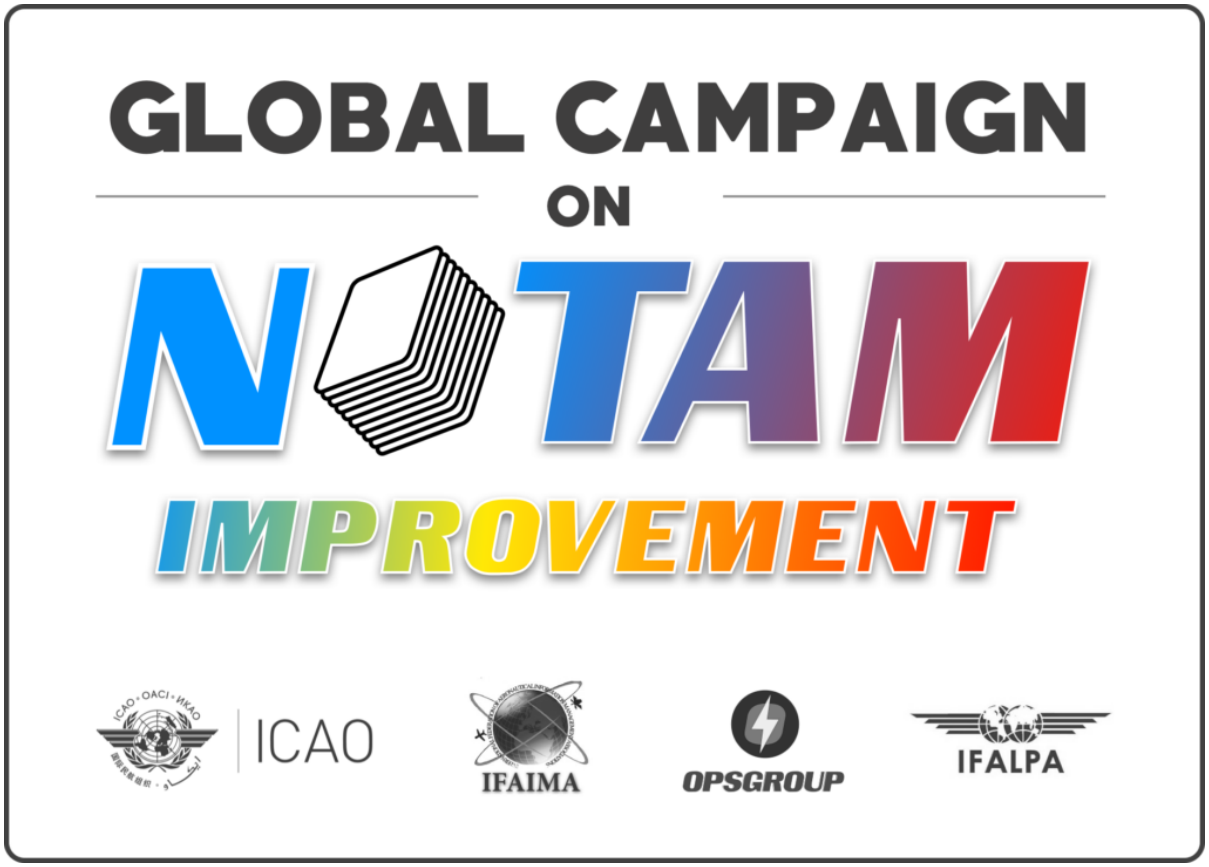
But we have a ways-to-go yet. There is no doubt that some of the smartest brains in the world will solve these challenges but from an industry perspective a lot will have to change in a hurry if supersonic commercial travel is to become a reality within the next decade.

Global Campaign on NOTAM Improvement

Mark Zee
26 July, 2021

Update: The NOTAM campaign was launched with 1,500 attendees on April 8th – and yes, it was the largest virtual event in ICAO history! The first update webinar on progress being made is on **June 16th at 1200Z** – register with this link, and join the call.

The **Global Campaign on NOTAM Improvement** is being launched on April 8th, 2021. Spearheaded by **ICAO**, and supported by **OPSGROUP**, **IFAIMA**, and **IFALPA**, the campaign will focus on making significant improvements to the NOTAM system to **enhance its effectiveness, usefulness, and reliability** as a mechanism for pilots to receive critical flight information.



Kick-Off Webinar, April 8th 2021

At 1200Z on April 8th, 2021, we will launch the campaign with a worldwide webinar. So far, we have 600 registered participants. We are on track to make this **the biggest virtual event in the history of ICAO**. If you think about it, that's pretty amazing for a meeting about NOTAM's!

This webinar is open to everyone, and we would be delighted to have you join it – to show your support for the Notam Improvement campaign, to learn more about what the plans are, get the latest update, and see how you can get involved: this is a collaborative, shared mission that needs your help, whether you are a pilot, dispatcher, AIS officer, software developer, Flight Planning provider, ANSP, CAA, or are in any other way a user or provider of some aspect of the Notam system.

So, **please join us** – it's open to all:
Register for the Worldwide Webinar on Thursday, April 8th, 2021 – 1200 UTC

1200 UTC = **7am** Lima, **8am** New York, **1pm** London, **2pm** Berlin, **4pm** Dubai, **7pm** Bangkok, **10pm** Sydney, **12am** Auckland.

Why should I join the Webinar?

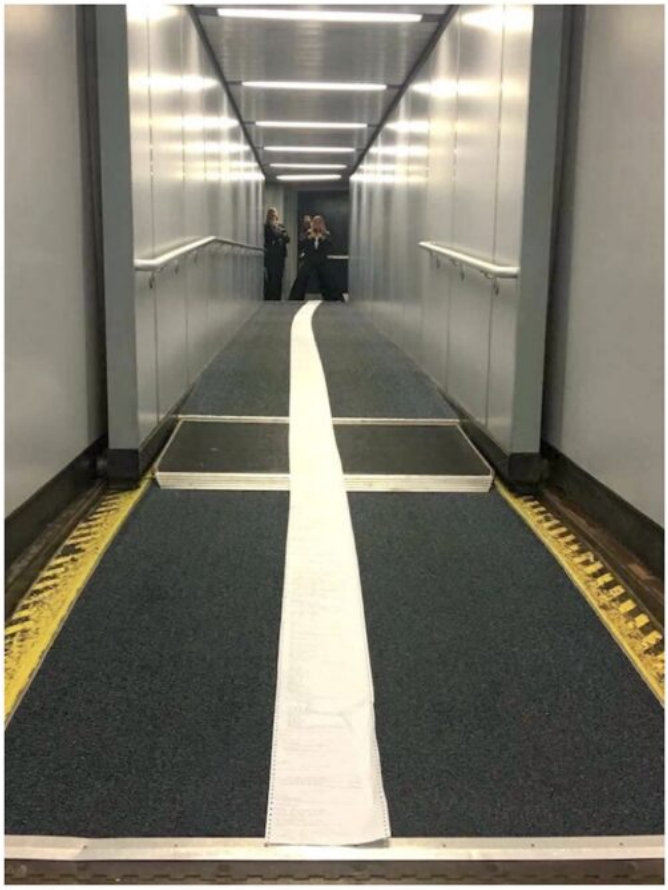
Over the last few years, as many as 10,000 pilots and dispatchers have supported a move to fix Notams – through petitions, surveys, comments, emails, and joining the OPSGROUP Notam Team to help fix the problem. Your voice has been heard: this work is the result. Now, we need your support for this campaign – to reinforce the message that as an industry, **we really care about this**. Your presence will encourage those working on solving the Notam Problem, and you will get the full picture of where we stand in the progress to fix things.

We will speak about the mission, demonstrate the problem with some real world examples of pre-flight briefings, showing how these impact the daily lives of pilots and dispatchers, clarify the definition of "Old NOTAM's", and show how AIS staff can use the existing regulatory framework in Annex 15 and Doc 8126 to become a gatekeeper for NOTAM quality, demonstrate the Notameter, address regional challenges, and have a Q&A session.

Our presenters and speakers will include **Stephen Creamer** (Director of the Air Navigation Bureau at ICAO), **Alex Pufahl** (ICAO Technical Officer), **Mark Zee** from OPSGROUP, **Capt. Lauri Soini** from IFALPA, **Fernando Lopes** and **Antonio Locandro** from IFAIMA, **Marco Merens** from ICAO, and ICAO Regional Officers.

What is the Notam Campaign all about?

First, the problem: Pre-Flight NOTAM Briefing packages are often far too big to be fully read and understood by pilots before a flight. The result: **critical information is missed**. Finding safe ways to decrease that volume is the key focus of this campaign.



In the **Global Campaign on Notam Improvement**, our aim is to solve the Notam Problem in manageable chunks, gathering energy as we solve them and make progress. Rather than re-invent the wheel, we will fix the system from within, starting with the easier aspects and progressing from there. **The first phase** of this campaign focuses on Old Notams. At any one time, there are about 35,000 active Notams globally, and 20% of these – one in five – are old; in other words, not respecting the existing rules of Notams being issued in principle once only for a maximum of three months (everything else should go into the AIP, an AIC, or some other publication).

We are drawing on the collective cooperation of the AIS community – the Notam Officers – to uphold the rules and get rid of Notams that don't follow them. The result will be a potential decrease of 7,000 Notams per month, and a 20% reduction in the size of the average briefing packet. For more on the Notam Problem itself, have a look at "Why pilots are reading a Reel of Telegrams in the Cockpit".

Who is behind it?

The Global Campaign is a meeting of minds, agreeing on one thing: **Notams need fixing**.

ICAO is spearheading the campaign, in the recognition that the Notam Problem is a worldwide issue that affects flight operations in every country.

Providing support, energy, and huge enthusiasm to help solve things are **IFAIMA**, representing the Aeronautical Information community, **IFALPA**, voicing the concern of Airline Pilots, and **OPSGROUP**, whose pilot, dispatcher, and flight operations members have been tirelessly involved in the mission to fix Notams since 2017.

What can you do to help?

Thank you for asking! If you are in the **AIS community** – perhaps as a Notam Officer, AIS Officer, Publisher, or Promulgator – please tell your colleagues, join the webinar, and get involved in this Campaign. If you are a **Pilot or Dispatcher**, join the webinar, share the news of this campaign (#NOTAM2021), voice your support, and monitor progress – we'll want your help down the track as well. If you are a **Flight Planning Provider or Software Developer** – again, join the webinar, and when the time comes, get involved in the collaboration around technical improvements. If you work for an **ANSP or Civil Aviation Authority** – join the webinar, encourage your colleagues to join too, and help support the Campaign. If you work for an **Organziation**, tell your members, and share news of this campaign (#NOTAM2021). Oh, and join the webinar!

How we got here …

This is a Global Campaign for a very good reason. We only solve this problem when we solve it for all countries – so we take the lessons learned domestically from those countries that have seen NOTAM wins, and amplify that across the rest of the globe.

In terms of change so far, most notable is the work done by the AIS Reform Coalition in the United States, chaired by Heidi Williams from the NBAA. This group of people from NATCA, ALPA, AOPA, IATA, A4A, ACI, the NBAA and others have been working feverishly in partnership with the FAA to drive change and improvement. And it has had remarkable results – the US has radically improved NOTAMs in the last 2 years: NTAP gone, a big reduction in PERM Notams, a single office for AIS, a transition to the FNS, and NOTAM Search replacing Pilot Web. Canada has transitioned to ICAO format for Notams, and provided a new delivery mechanism through CFPS.

We must also recognise huge efforts from the members of OPSGROUP, who as pilots, dispatchers, and other flight operations specialists have made their voice heard, sharing support, input, ideas, and enthusiasm for change; the efforts of IFALPA to bring attention to the issue, and IFAIMA who have given full support to solving things on the AIS side.

An important distinction to make here is that this work is on "**NOTAMs, Now**". There is separate, ongoing work in the field of the "Future of NOTAMs". You may have seen acronyms like SWIM and AIXM, and terms like Digital Notams or Graphical Notams. The FAA, ICAO, Eurocontrol, and other agencies are building a model for the future, when NOTAM's will change from the current AFTN format and transmission into an internet, IP based, transmission and follow a service-oriented approach. This work is valuable, but with a target implementation date of 2028, has a different focus. Even if it goes smoothly, it would not instigate change until 2028. Needless to say, if we don't fix the underlying issues now, it may not even solve them then, either.

The AIS Community, Pilots, and Dispatchers, working together

Here's the really exciting part of this Campaign: for the first time we are seeing pilots, dispatchers, and AIS staff working together on solving the issue. This is a core tenet of the campaign: only when you have all parties involved, do you have a shot at success.

The AIS Community is invaluable in solving the problem, but they need our help. First, they need to know exactly the impact of the Notam Problems we describe – this drives their will to make change and improvement. Second, they need the support – which this Campaign will provide – to stand as gatekeepers for Notams. They themselves are often under pressure to publish Notams that they know don't align with

the rules, but have no alternative.

Phase One

So, once the Campaign is launched, what does the roadmap look like? Logically enough, we start with Phase One. A simple, bite-size chunk of the problem – **Old NOTAM's**. In volume terms, it's a lot more than bite-size – it's actually 20% of the problem. The key is that it's easy to understand, and therefore easy to work on. We don't need to make any structural changes, or change how the system functions. This is simply about focusing on a known issue – that 7,000 of the 35,000 active Notams that should not be there.

Even more importantly, the focus is also on the **energy, enthusiasm, and goodwill** to make the changes necessary. As we gain momentum, we get encouragement from each and every Old NOTAM that is removed forever. We see that through collaboration, community, and support for each other, we can make change happen.

Remembering that this is a decades old problem that has been on the agenda since 1964, and that there are 193 countries on this journey, progress may feel slow at first. But we're going to learn from each other, and go as fast as feels right. We'll be celebrating the small wins!

Phase Two

The next phase will look at **technical improvements**. In other words, what structural and systemic changes can we make to NOTAM's to leverage quick improvement.

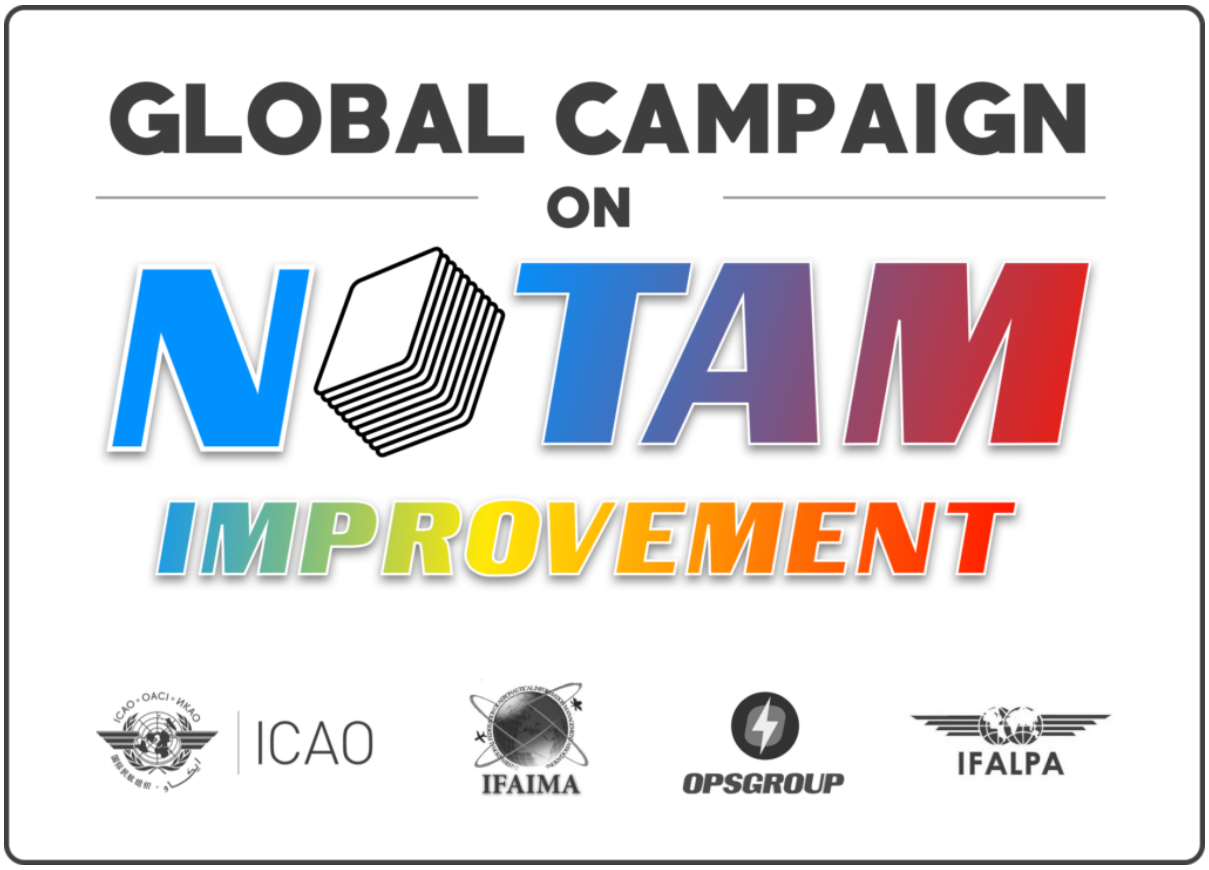
We envision that this stage will be best served by a great deal of **collaboration and discussion**. One of the key groups here will be Flight Planning software providers. The vast majority of NOTAM briefings today are provided by these companies. As things stand, each one has a different, in-house method of processing the Notam flow – usually with algorithms, keyword searches, date/time validity ordering, and some Q-code assessment. So we might ask, how can we best structure the Notam data to provide a robust, reliable format with metadata that allows sorting and filtering – the two big asks from the pilot community. In other words, **show me the critical stuff first**, and skip the fluff.

We also, again, need full collaboration with AIS to see what the impact of those technical improvements will be, and whether they support them. Adding pilots and dispatchers into the mix will allow us to verify that the changes being discussed will actually have an impact by the time they reach the cockpit. If they don't, then we're not doing it right.

More about #NOTAM2021

- **Kick-Off Webinar**: Register for the event on April 8th, 2021 at 1200 UTC
- Progress Webinars start on June 16th, 2021.
- ICAO information page on the Global Campaign.

- OPSGROUP
- IFAIMA
- IFALPA
- FixingNotams.org – the journey so far



The Mexican Downgrade: What's the impact to ops?

OPSGROUP Team
26 July, 2021

Mexico have recently found themselves downgraded by the FAA under their IASA program.

So, what does this mean for Mexico, and what does everyone else need to know about this?

First up, what is the IASA program?

It might sound confusingly like a combination of EASA and IATA, but 'IASA' is actually the International Aviation Safety Assessment Program run by the FAA, and used to determine the safety standards in foreign countries.

It was set up in 1992 to monitor air carriers operating in and out of the US – not to monitor the operators specifically, but to **check the authority in the country is up to scratch** with ensuring their operators are up to scratch. If not, the US don't want to let them into their airspace.

What do they look at?

They are focusing on the country (not the operators in the country), to see how well they adhere to **international aviation safety standards and recommended practices**, as suggested by ICAO in Doc 9734.

There are **8 elements** that the FAA/ICAO reckon a decent aviation safety oversight authority should be doing well:

- Legislation
- Operating Regulations
- The State civil aviation system and safety oversight functions
- Technical personnel qualifications and training
- Technical guidance, tools and provision of safety critical information
- Licensing, certification, authorization and approval obligations
- Surveillance obligations
- Resolution of safety concerns

I feel like they combined a few there, and its actually more than 8. But there's the list.

How do they do the assessment?

If you visit the IASA site, on the FAA main site, then you'll find each of those areas has its own checklist. These are **thorough, lengthy things.** The Operating Regulations alone is 19 pages with a whole bunch of points to check off per page. Oddly, all that checking **leads to only two possible outcomes.**

A country either meets the standard or it doesn't. There is Category 1, or there is Category 2, no in-between.

- Category 1, **Does Comply** with ICAO Standards
- Category 2, **Does Not Comply** with ICAO Standards

Basically, if one or more deficiencies are identified, it's a Category 2 ranking, and Santa won't be bringing you a present that year.

What does it mean to be on the naughty list?

Well, if you already have air carriers flying to the US then you can continue but they are going to monitor them pretty closely. If you don't already have air carriers operating in and want to, then you're going to have to improve before they give you permission.

But why should we all care?

After all, the oversight is to do with their air carriers and nothing more? Surely it just means their aircraft might be a risk coming into US airspace, or their pilots might not follow procedures properly?

Well, actually no. The problem is these air carriers **share airspace with you**. If their pilots are not licensed or trained correctly (think Pakistan's recent problem) then this can **degrade the safety for all aircraft operating in their vicinity.**

If a state is failing to ensure minimum safety standards in areas such as the promulgation of safety critical information (notams), technical personnel qualifications (the maintenance folk who might be fixing your aircraft, or the CAA inspectors checking compliance) then this is something any **international operators might want to be aware of as well** because there are potential knock-on safety impacts for those heading into the country in question.

So does it tell me if another country is safe to fly to?

No. The FAA is **not saying every country ranked 1 is safe**, no issue, no problem.

It also isn't telling you a country is **unsafe** to operate to if they **don't** meet compliance standards. Remember, it is purely looking at the **regulatory and safety oversight** and asking if they ensure minimum ICAO standards. There are countries out there that pose significant threats (just not because of any deficiencies in the authority's oversight).

It might also mean that **the FAA have not ranked that country**, because no-one from that country is flying or planning on flying to the US.

Remember, these rankings are looking at **how a state ensures its air carriers are safe and compliant**. It does not consider whether services or infrastructure within the state itself are safe or compliant.

How should operators and pilots use this list?

For operators and pilots, if a country is ranked Category 2, it means you **might want to be doing your own risk assessment** before heading in. No-one is saying that country isn't going to be safe, but they are saying there are **deficiencies with the authority**, and since that authority looks after a lot, it is worth asking whether there **might be other deficiencies** as well.

You should be looking at the following:

- What are the standards of the handling agents and maintenance services you are going to require there?
- How reliable are Notams, and are they providing the information required?
- What level of service and safety will ATC provide?
- Will procedures and regulations be correctly adhered to there, and if not, what will this mean operationally for your flight safety?

You can get this info from sites like Safeairspace, Airport Spy, and through talking with colleagues who have operated into there before.

Who is on the Category 2 list?

So the big news this week is that Mexico were downgraded. Again, actually.

Along with Mexico the FAA also have the following countries ranked at Category 2:

- Bangladesh
- Curacao
- Ghana
- Malaysia
- Eastern Caribbean States
- Pakistan
- Thailand
- Venezuela

It changes though.

In 2014, the FAA downgraded **India**, citing inadequate oversight by local regulators, and in 2001 **South Korea** found themselves downgraded due to unskilled technical staff, pilot screening problems, issues with flight operations rules and a lack of objectivity in air crash investigations.

Both made it back on again relatively quickly.

Let's take a closer look at Mexico...

The FAA have not yet given the reasons for their downgrade. However, Mexico was downgraded previously – back in 2010 – due to **shortcomings in technical expertise, trained personnel, record-keeping and inspection procedures.**

Actually, Mexico has a pretty decent infrastructure in terms of airports, although these do pose some operational challenges of their own (things like high terrain, high elevation). The CAA was actually "revamped" back in 2019. We put out this post about ramp checks.

Mexico's political problems seem to be at the root of most issues here for the aviation industry. A project to build a new airport was recently cancelled (Texcoco airport was partially constructed already.) Now the government are instead looking to improve **MMTO/Toluca** and build new runways at an Air Force base near Mexico City. Plans are also under way for a third terminal at Mexico City Juarez, but given it is already congested and operating over its designed capacity, this might not be any solution.

Combined with Covid Pandemic problems, the latest downgrade will mean a big financial impact for various Mexican airlines now unable to access the **major Mexico-USA market**, and the knock on effect from this might be further felt in the aviation industry there as a whole.

The Big Taco-way?

If you are operating into an FAA IASA Category 2 ranked country, **doing your own risk assessment** on the standards and compliance you can expect to experience there might be worthwhile.

Go / No-Go: Why Are We Rejecting Above V1?

Chris Shieff
26 July, 2021

Rejected take-offs aren't new

Every time we open up those thrust levers and accelerate down a runway there is a risk that something will go wrong and that we will need to stop again. Which is why we brief before every departure.

But they are also **pretty rare**. One study found that they happen on average once in every two thousand take-offs. For a long-haul pilot that's about one every twenty-five years, and for short-haul folks once every four years. And of those RTOs, **ninety percent happen below 100 kts**. So when they happen at speed they are usually accompanied with a healthy serving of startle factor.

Common sense and physics tells us that the faster we go, the more dangerous it becomes to reject, rather than get airborne. Once we hit V1 we go, because there may not be enough of the hard stuff in front of us to stop anymore. The problem is that reports continue to tell us that **avoidable accidents are happening because crew are still rejecting take-offs above V1.** Which poses an important question: why?

There is no simple answer. But accident and incident reports may hold some clues…

The Real World is Different

The vast majority of high speed RTOs we practice in the sim are related to **engine problems**. Failures, flame-outs, bird ingestion, compressor stalls. Those sorts of fun things. They are generally easier to identify and illicit a strong and confident decision to reject the take-off.

But here's the kicker: **Most high speed RTO's are not caused by engine problems.**

In fact historically, less than quarter of them are. Which means when something unexpected happens that we haven't seen before, the Go/No-Go Decision suddenly becomes a lot more difficult.

Here are some of the other leading causes:

- Wheel/tire failure
- Config warning
- Bird strike

- ATC
- Noise/vibration
- Directional control issues
- Crew coordination
- Malfunction Indications

A lot can go wrong and the process of detecting, deciding and acting takes time. **At high speeds close to V1 this is a problem.** Here's why…

V1 is not a Decision Speed

V1 has been redefined a number of times over the years and has ultimately ended up with the current FAA definition:

'…..V1 means the maximum speed in the take-off at which the pilot must take the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the airplane within the accelerate-stop distance. V1 also means the minimum speed in the take-off, following a failure of the critical engine at VEF, at which the pilot can continue the take-off and achieve the required height above the take-off surface within the take-off distance….'

I know what you're thinking – *that's a lot of words.* Which is why it is still casually referred to as 'take off decision speed.' It just rolls off the tongue better. But hidden amongst all those words is this key concept – **by the time you reach V1, the decision must have already been made and the first action taken.**

Here is an easier way to put it: **V1 is the end of the go/no-go decision making process, not the beginning.**

It may seem like a technicality, but it's not. It has been shown that with a balanced field length, if an RTO is initiated just two seconds after V1 an aircraft will exit the end of the runway at between 50 and 70kts. On average it takes pilots between 2-4 seconds to react. In other words, **time is critical**.

But there's more to it than that. What does 'unsafe to fly' actually mean?

We know that the faster we're going, the more dangerous it is to stop. Which is why we become **'go-minded'** at higher speeds (usually above 80 or 100kts). It is in our efforts to embrace this go-mindedness that we have adopted the philosophy that there are four things that could trigger a high speed abort: **engine failure, engine fire, windshear or an unsafe condition.** Makes sense right? We brief them every sector.

But what constitutes an unsafe condition? Or in other words, **what are the signs that an airplane is unable to fly?**

Accident reports show that pilots are having difficulty recognising these conditions and that is leading them to **stop above V1 when it would be safer to go**. They often interpret anomalies (like a tire blow out) as events that threaten the safety of the flight and decide to reject at any speed. The overrun of a Learjet departing KCAE/Columbia Metro in 2008 serves as a tragic example.

In fact one study found that almost half of all high speed rejected take-offs were the **wrong decision.** That's a startling statistic.

And to make matters worse, sometimes it *is* the right decision as the accident of an MD-83 in 2017 certainly proved.

The Decision Isn't Easy

Go/No Go – if only it was as straight forward as it sounds. From a pilot's perspective, it is difficult to make the right decision. Given any number of failures, the incredibly short timespan we have to make the decision and the lack of information at hand, it's no wonder that that not all rejected take-offs go to plan.

But there is still room for improvement if we continue to train for them and brief them using lessons learned from accidents past.

The Joint Industry/FAA Takeoff Safety Training Aid was published in 1993 as a guide to pilots and operators on how reduce the number of RTO related accidents and improve the outcome of go/no-go decisions. We still widely use those same principles today. There were four key takeaways identified from accident reports which might prove as a decent starting point:

- **We must be prepared to make the decision before V1.**
- **We need to be able to differentiate between 'safe to fly' and not.**
- **Crew must be ready to act as a well co-ordinated team.**
- **We have to be well practiced and able to fly RTO procedures proficiently.**

It may be unrealistic to think that we can get rid of RTO related accidents entirely. But with more training and a focus on what is going wrong out there we can certainly work toward keeping everyone safer on the roll.

Close Encounters Of The Third Kind

OPSGROUP Team
26 July, 2021

Back in April, the Pentagon confirmed that **some leaked photos and videos of UFOs were, indeed, legitimate**. Of course, 'UFO' just means "unidentified flying object" – it doesn't necessarily mean extra-terrestrial. In fact, these days the US government generally use the term 'UAP' (unidentified aerial phenomena) which makes us think of old, retired aliens…

Reports of UFO's/UAP's, or whatever you prefer to call them are relatively common though, and over the years there have been **numerous sightings directly from airline pilots**.

So, do we need to be wary of alien spaceships in our airspace? **What sort of risks do the other possible explanations actually mean for aircraft safety?**

What is out there?

First up, let's take a look at what sightings have been reported in the past, including the recently acknowledged ones.

The Metallic Blimp

The videos the Pentagon recently acknowledged were actually taken back in 2004 and 2015, and they show objects moving at mega speed. In one, a pilot is heard exclaiming "Look at that thing, dude! It's rotating!"

But is that a UFO, or is there a more reasonable explanation?

The most obvious answer would be that it is **a military aircraft of some sort**, but given the videos were made by military pilots who were not aware of other military traffic operating in the area, and considering the Pentagon confirmed the videos' authenticity, but not what they were showing, the mystery continues…

The New Mexico Sighting

In February 2021, a radio transmission from an America Airlines crew was picked up by a random blogger who happened to be listening in on a radio scanner. He apparently just 'stumbled across' the transmission.

The aircraft was routing over New Mexico at 37,000ft when they reported seeing an object zooming over them. On querying it with ATC, they were informed that the controllers could see no object on their radarscopes.

The Bright White Light Flight

In 2018, a British Airways crew called in after seeing a ‘very bright light that disappeared at very high speed’. The sighting was backed up by a Virgin Airlines pilot who said they also witnessed multiple ‘exceedingly bright’ objects.

New Age Reporting

The US Government is certainly taking sightings more seriously, and in 2019 announced they would bring in a new ‘data driven’ approach to reporting and recording them.

You can visit the official US NUFORC site here. NUFORC stands for the **National UFO Reporting Center**, and they have a database of all reports. In fact, the number of reports is quite impressive, as are some of the things written in them.

Here are the Other Theories (and the real risks)

The other possible explanations for many of these sightings actually have some i**mportant risk considerations** to think about if you come across them in your airplane.

First up, **meteor showers** and **falling space debris.** These are pretty common and appear bright and fast-moving for more than a few seconds, particularly if they are entering the atmosphere at a certain angle and are big enough to withstand being immediately incinerated.

The American Meteor Society has a ‘Fire Ball Log’ which you can check to confirm whether your ‘UFO sighting’ was spotted by someone else and logged as meteor.

You can also keep an eye on the calendar for the reoccurring meteor showers which light up the skies each year.

The real risk here is fairly minimal. Aside from being a distraction, these are not going to hit an aircraft. Space debris is potentially another matter, and something we talked about here if you want to read up on it. The recent “return” of a Chinese Satellite gave some cause for concern just because of its size, and unguessable re-entry point.

The second theory (well, theories) are more earth-based. **Atmospheric balloons** and **Chinese lanterns** have been mistaken for UFO’s in the past – and these are often released without regard for how close they might get to aircraft. In 2018, an airplane narrowly missed a lantern while cruising at 20,000ft and despite being relatively thin these can still cause damage if ingested into engines.

In 1970, Aeroflot 1661 crashed shortly after take-off after colliding with a weather balloon. However, Radiosonde balloons are generally Notamed given their size and proximity to airports when released, so you should be aware of these in advance.

Rocket Launches. And other launches for that matter. An experimental rocket test in Norway caused concern after atmospheric conditions produced a bizarre illusion in the skies. It was in fact a missile test from Russia which went wrong, resulting in a spectacular (and presumably quite expensive) cloud.

Rocket launches mean prohibited airspace, so when they are going up they shouldn’t be an issue to aircraft. The FAA are reporting rocket launch site on charts nowadays, and you can find launch dates published on their Temporary Flight Restrictions page.

Clouds. Yep, weird clouds have confused people into thinking a spaceship is loitering nearby. Lenticular clouds often form over mountains when moist air is pushed up over them. The time to watch out is when you see lines of these sitting beyond the mountain crests because they can mean some pretty serious

mountain waves are out there – and this means turbulence.

Other planets, even the Moon, have been mistaken for other flying objects by pilots.

A crew once took evasive action because they mistook Venus for another aircraft. In all fairness, they didn't think it was a UFO so much as a C130 known to be in their near vicinity. This incident boiled down to a loss of SA, and a lot of fatigue.

Then there are **drones, UAVs, UASs.** The FAA have a website dedicated to reports on sightings of these, and it is important to report them because they are a genuine threat to aircraft when they encroach on airspace they should not encroach upon.

So, do we need to keep an eye on the sky?

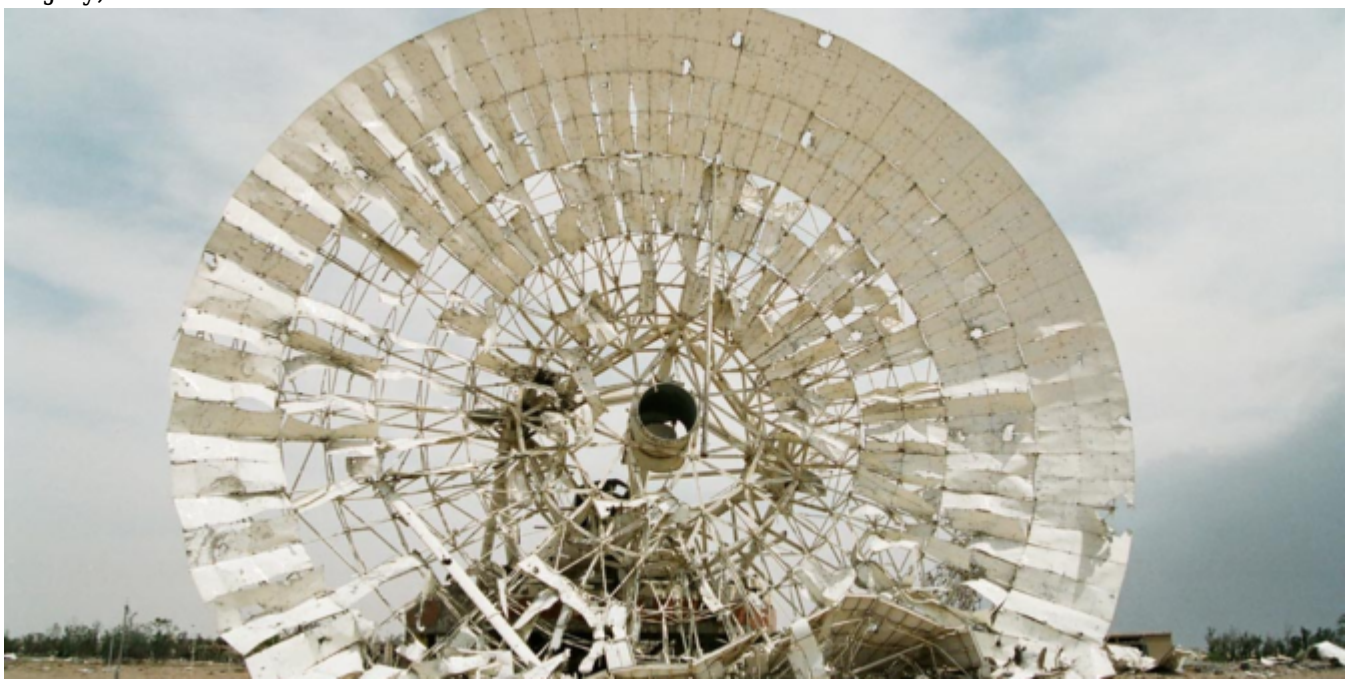
Regardless of whether you think something is terrestrial or extra, **if there is an unidentified object in your airspace – report it**. It might be a real and immediate hazard to other aircraft, and recognizing what you see out there for what it really is will also help avoid the real threats.

A preliminary US intelligence analysis of unidentified aerial phenomena has concluded that such incidents are at least a threat to flight safety and potentially present a broader hazard. Particularly because they are often physical, and are one more thing inside already cluttered airspace.

Of course, UFOs might really be aliens coming to say hello. Some of the mysteries are still, after all, unsolved…

GPS U/S in the US

OPSGROUP Team
26 July, 2021



We have written a fair amount on worldwide GPS Jamming issues. Here is what we said about it in 'GPS Jamming: All the Wrong Signals'. But there is another GPS problem though which is a little closer to home

(if your ‘aviation’ home is in the US anyway).

What’s the deal?

Let’s take a step back to 2017, when the NBAA and a bunch of other stakeholders took part in the 2017 RTCA tactical operation committee. That’s the **Radio Technical Commission for Aeronautics** and they are great – they try and help find compromises amongst the competing interests on critical aviation modernization issues.

One of these very issues is with GPS.

The FAA’s NextGen modernization program is using more and more GPS ‘stuff’. Stuff that is critical for commercial flight operations safety and efficiency. The US Department of Defense on the other hand is sort of doing the opposite – they are running GPS Jamming tests which are critical for National Security and the **big problem** with this is that the jamming tests often interfere with the GPS signals civil aircraft are using.

What was the 2017 outcome?

After they talked about it in 2017, the compromise was that the DoD will notify the FAA at least **120 hours before any planned tests.** This should give the FAA time or put out Notams to warn crew and operators.

Problem solved?

Unfortunately not. The 120 hours notification is given, **but the information which filters down to the pilots and operators who need to know about it often not sufficient.** One of the difficulties is that the Notams have to provide information on different outage locations and this means **looooooooong Notams** filled with lots of Lat and Longs and times and dates. And this means critical information can sometimes get buried inside and makes it difficult or confusing for the crew to find it, extrapolate it (or even be aware of it in the first place).

What’s the plan now?

Well, the NBAA have reported on this, and say that the FAA are taking their concerns onboard. They plan to revisit the idea of producing **visual representations of the outage areas.** These will be much easier to digest than lines of lat and longs, and would hopefully enable crew to use them in conjunction with planning apps in the future.

There has also been a reminder issued to crew asking them to **report outages and issues.** If you find yourself in a jammy area, let ATC know. Tell them what you have lost so that they can warn other aircraft in the immediate area. The reminder has been sent to ATC as well because in the past, when aircraft have made these reports, the information has not always been shared out to other operators in the near vicinity.

What do you need to look out for?

What an outage means, practically, is interference to the GPS signals which your navigation system is using. The result can be a **degradation in accuracy, or a full loss of the system** (GPS primary).

If you are enroute, let ATC know your capability has been degraded so you can get the support you need to continue navigating safely.

Some aircraft are particularly sensitive to disruption in the GPS signals, and it can lead to you losing that system until it is reset on the ground. **This means RNAV/RNP approaches might not be flyable anymore.** Having an awareness of what this means for your aircraft is important. Think about your plan B for approaches in case you do loose GPS navigation capability.

Notams are out there and it might be frustrating picking out the areas which could impact you, but knowing about the outage spots in advance will help.

Where can you look for info?

- The Navigation Center website is run by Homeland Security, and this is where you will find notices of GPS service interruptions and a link to their GPS Testing Notices. You can also file reports here if you encounter unexpected disruptions.
- This will take you to the Official government page on GPS.
- Your WAAS monitoring site is here. There are some good real time maps of current coverage
- The FAA also have a site where you can find Notams specific to GPS outages.

The 5G Update

We thought we'd throw in a little update in on this as well.

Last year we saw increasing concerns about possible **interference from 5G networks** because they operate on the same slice of radio spectrum usually reserved for Radio Altimeter signals (the 3.7-3.98 GHz band).

The big concern here is that interference could result in degradation of accuracy from spurious emissions, or outright failures in the radio altimeters. Not sure how much of a risk that means? Well, Turkish Airlines TK1951 crashed in EHAM/Amsterdam Schiphol in 2009 and one of the primary factors was attributed to a malfunctioning radio altimeter which sent an erroneous -8ft reading to the autothrottle system, commanding it to idle.

The NBAA are fronting a campaign here as well. Twenty organizations have joined forces to send the FAA a letter raising their concerns over this, in response to a report issued on March 3 that they don't feel addresses the threat with enough analysis.

You can read the letter here.

Military aircraft and UAVs are also at risk here. Their radio altimeters use the same C-band frequencies, but they tend to fly a lot nearer the ground a lot more often. A very good summary of the issue can be found here.