Communication Breakdown on the NAT

OPSGROUP Team
20 October, 2021

Lost comm procedures in the NAT HLA (or when you're trying to get into the NAT HLA) are a complex and confusing thing, so here is our "Natter on the NAT" – **a recap on what to do when nobody wants to talk to you.**

You aircraft has lost everything it uses to communicate.

The likelihood of every communication system you have breaking all at once is fairly minimal, and given the equipment requirements to enter the NAT HLA, you are going to have more than just VHF onboard. You will also have HF, datalink, probably SATCOM…

But if it does happen (maybe a freak bolt of mega lightning or something) then the first thing to do is still **try each system, including back up boxes,** and your headset for that matter.

Still no luck? Don't panic. While you can't hear anyone, or talk to anyone, they can all still hear and talk to each other. So **you are the only uncoordinated thing out there** right now. First up, **let ATC know by squawking 7600.**

CIRCLE OF ENTRY
NORTH ATLANTIC AIRSPACE

START HERE & SEE WHAT YOU NEED TO GET IN

NAT REGION

BLUE SPRUCE

NAT HLA

NAT DLM 290-410

TANGO 9 & 290

COMMS

SURVEILLANCE

| VHF | VHF⁵ | HF | CPDLC | HF | PBCS TRACKS RCP240 RSP180 RNP4 | ADS-B | ADS-C | POSREP | POSREP² | MODE C |

RNP2

RNP10

RNP10 (2 LRNS)

1 LRNS

NAV

VOR DME ADF
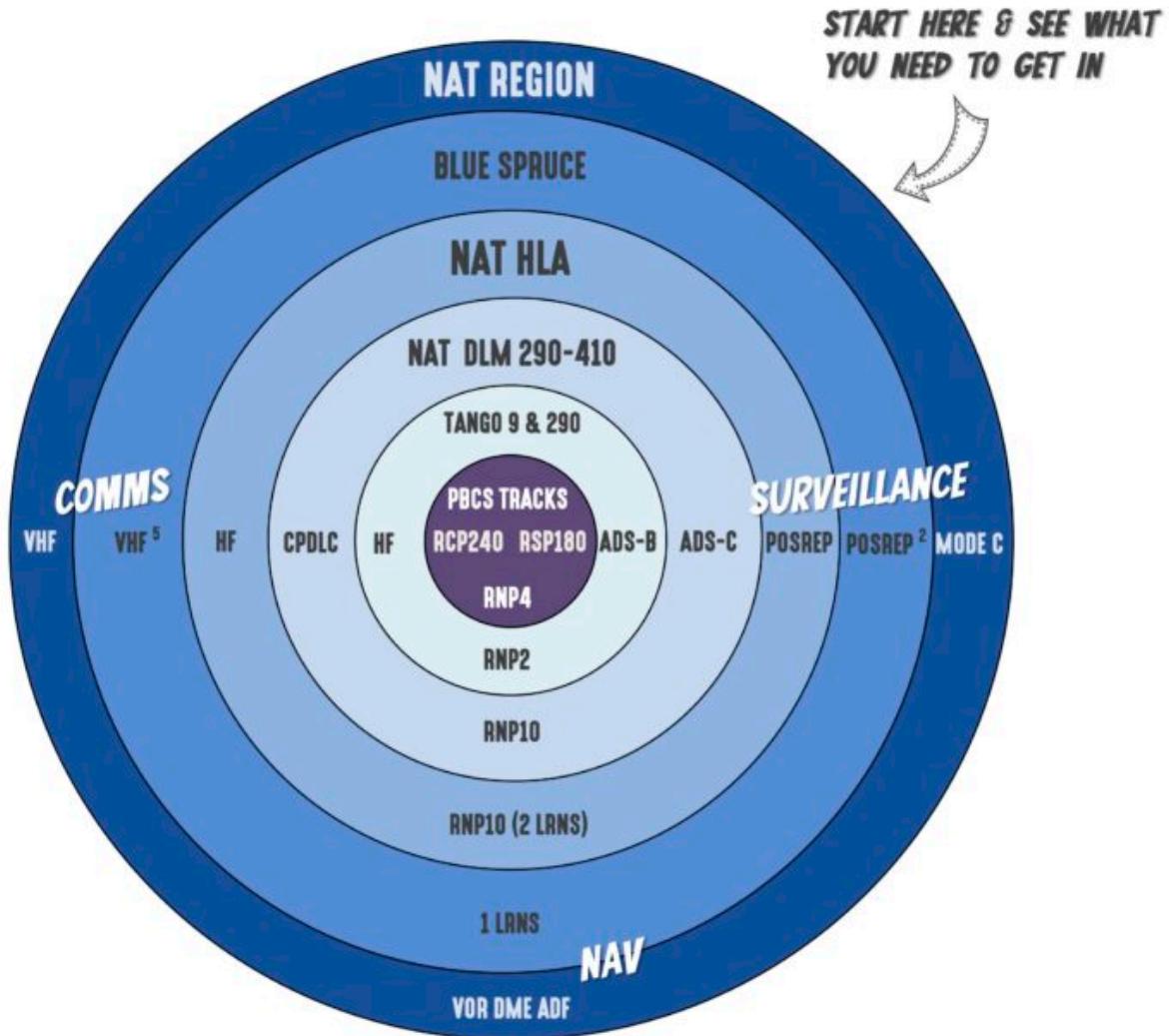
A FEW NOTES :

1 : The **NAT HLA** (formerly MNPS) is FL285-420 and everyone needs HLA approval in this area.

2 : **Blue Spruce** routes: 1 LRNS ok, VHF ok on most, but since 2021 more restrictive: datalink needed FL290-410 on southerly routes, ADS-B over Greenland (if no ADS-C), and HLA approval FL285-420.

3 : **Datalink** (CPDLC and ADS-C) is needed from FL290-410 in the entire HLA, except for: North of 80N, NYC Oceanic, Tango 9 & 290, and 'surveillance airspace' over Iceland/Greenland (latter needs ADS-B).

4 : **PBCS Tracks** (half degree apart), when published, are FL350-390 requiring Datalink with RCP240 and RSP180, and RNP4. Normal NAT Tracks (one degree apart) just need HF, Datalink, and RNP10.

5 : **Shanwick OCA** needs HF, no exceptions (even Blue Spruce). **T9 & T290** need HF, RNP2, and ADS-B, but not datalink. You can normally **climb and descend** through most airspace even if you don't have the gear to cruise in it. You need **TCAS 7.1** everywhere in the NAT, and **RVSM** from FL290-410. **SLOP** right on all tracks, including random. Outside VHF areas **2 LRCS** are required – HF must be one, Satcom or CPDLC for the other.

This shows the minimum equipment you need for the NAT HLA.

The next thing to do depends on where in the NAT you are.

Already in it? Great, simple. You already have a clearance and you already know where you are going, so

carry on as you are, transmit blind, and once you exit follow the lost comm procedures for the place you are entering.

Not in it, but have a clearance? This is up to you really. You have your clearance (and have confirmed it) so ATC know that you know that they know that you know what you are cleared to do. So if you want to stick to in and head on in you can, but you are going to have to maintain your speed, level etc all the way through. **And if you have a weather issue or an emergency you are also going to be on your own.**

No clearance yet? This one is a bit tougher. It probably isn't the best plan to head in (following your flight planned route), especially if you are heading into Shanwick. **Shanwick have diversion procedures in place** to take you to Shannon and the best idea might be to head there and get yourself fixed.

The exact wording is *"it is strongly recommended that a pilot experiencing communications failure whilst still in SHANNON FIR/UIR/SOTA/NOTA does not enter SHANWICK Oceanic Control Area"*.

The Irish AIP have the procedures for comms failure if planning on entering and they are worth a read. They have a pretty handy summary of what to do for Shanwick in there.
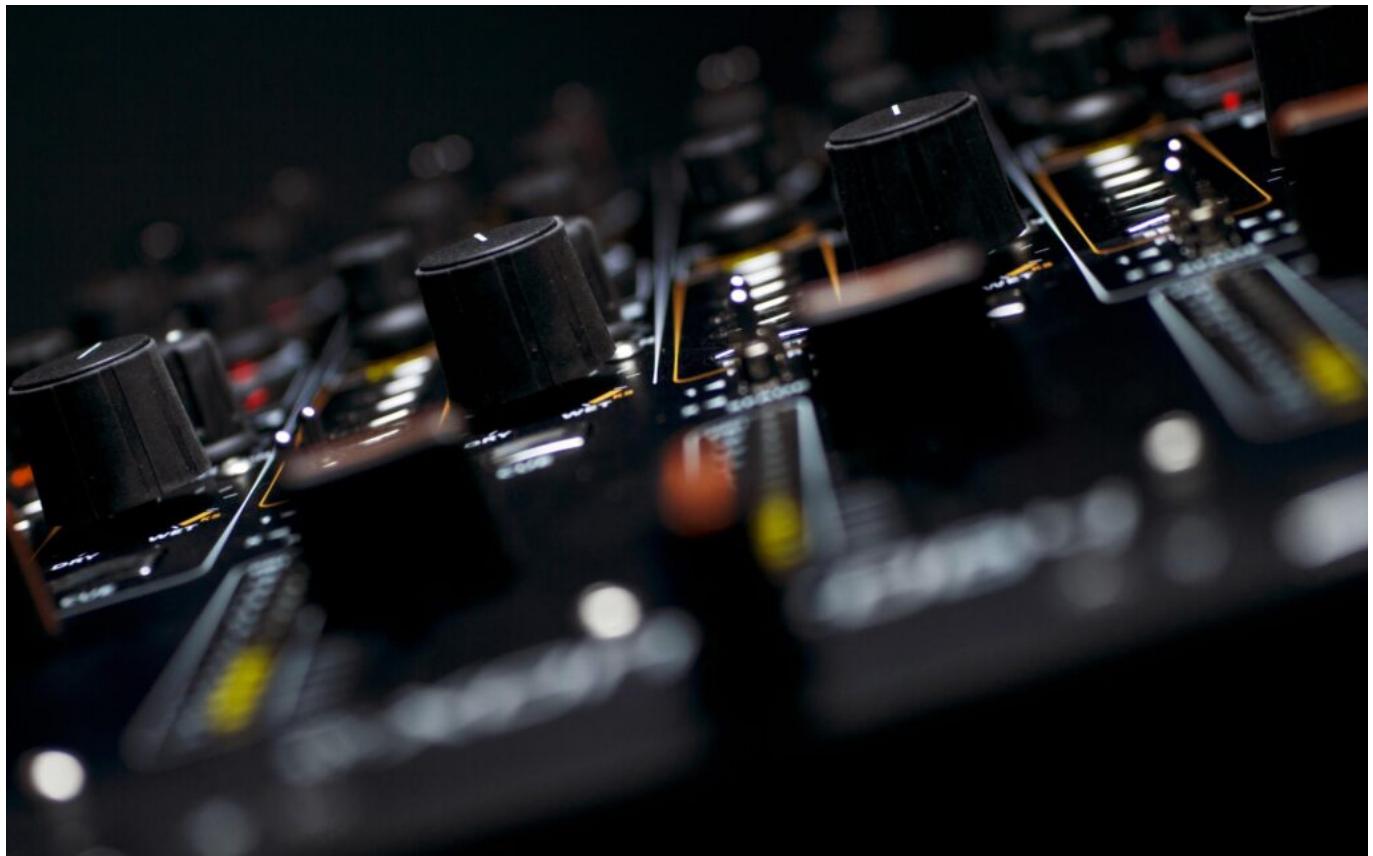
It is unlikely you will ever lose every system. Check backup boxes and attempt contact via other methods.

You have lost HF

If you're already in, there isn't much you can do. Stick to your clearance and keep in contact on CPDLC. Remember, HF frequencies are pretty rubbish at the best of times so if you discovered the failure while trying to make an HF call, then try a different frequency.

Lower ones work better at night, higher ones by day, and always try the middle ones for good measure. Have a quick glance at space weather too because if there are geomagnetic storms forecast it

could be there is a general HF blackout going on that is affecting everyone.

Collins Aerospace publish a **daily list of HF frequency assignments** for their side (the US side) of the North Atlantic and you can find them here. Worth a look before you fly, if you're going to be in the US North Atlantic area.

The Comms requirements changed a bit in February 2021, and basically, what they say, is that **you need two long-range comms systems** if routing anywhere outride VHF coverage. **One of these has to be HF.**

Here is a particularly horrible picture of where VHF has got you covered.
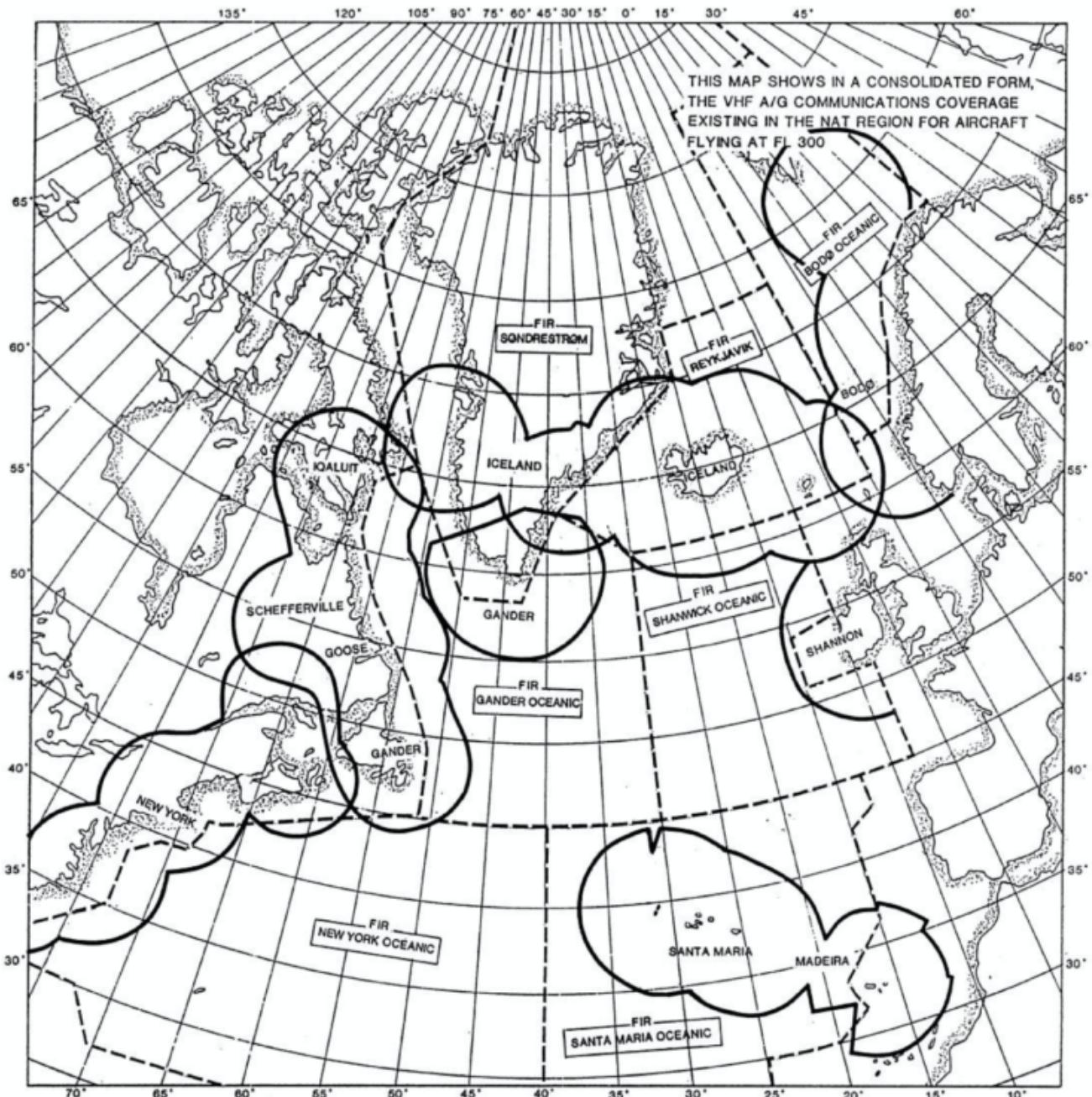
If you're flying at FL300, this is your VHF coverage.

You can route through if your HF was already broken and you told ATC in advance (Item 18 on

the flight plan) and they gave you the thumbs up, but if you are heading there and it goes suddenly before entry then you are going to need to talk to ATC.

Shanwick OCA needs HF, no exceptions (not even the Blue Spruce routes that fall within the Shackwick OCA) so don't go diverting immediately but do get talking (on whatever else you have available) to sort it out before you enter.

We might as well cover HF blackouts while we're here.

These happen when space weather happens. They aren't super common and they are **usually minor (lasting 10 minutes or less)**. But when they do happen, everyone can lose HF, including ATC.

You probably should **make position reports on 123.45** to be on the safe side because there might be **no coordination between traffic and ATC for the period of the blackout.** Keep trying different methods to get hold of ATC as well (but don't get all crazy at them though – they will be busy and will contact you when able).

Now, because coordination between ATC and everyone else is an issue, they actually don't want everyone diverting all over the place, so stick with your clearances. The big point here is – **if you don't have a NAT clearance yet, you need to stick to your DOMESTIC clearance.** That means you have to stick with what you were most recently told to do, not what you filed for on your flight plan.

Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
R 5	Extreme	**HF Radio:** Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. **Navigation:** Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	X20 (2 x 10-3)	Less than 1 per cycle
R 4	Severe	**HF Radio:** HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. **Navigation:** Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	X10 (10-3)	8 per cycle (8 days per cycle)
R 3	Strong	**HF Radio:** Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. **Navigation:** Low-frequency navigation signals degraded for about an hour.	X1 (10-4)	175 per cycle (140 days per cycle)
R 2	Moderate	**HF Radio:** Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. **Navigation:** Degradation of low-frequency navigation signals for tens of minutes.	M5 (5 x 10-5)	350 per cycle (300 days per cycle)
R 1	Minor	**HF Radio:** Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. **Navigation:** Low-frequency navigation signals degraded for brief intervals.	M1 (10-5)	2000 per cycle (950 days per cycle)

The NOAA scales – anything above R1 or R2 is rare.

Datalink problems.

So your texting system is on the blink? Unfortunately, the **Datalink Mandate is in force** now so you need this to enter. If you ask ATC nicely (and have everything else working) they might still let you in.

You don't need it if you are **north of 80N, in NYC Oceanic, on Tango 9 or 290 route, or in the 'surveillance airspace' over Iceland/Greenland**. So if you can re-route via any of this, that might be a good plan. Otherwise you do also have the option of flying above or below the NAT HLA (so below FL290 or above FL410) if your aircraft (and your fuel) can do that.

Remember, **datalink uses CPDLC and ADS-C** so if either of them is broken, your datalink probably is as well.

SATCOM

Most datalink systems also require SATCOM – so while you don't need it to use it, if your aircraft needs it

for the Datalink to work, then what we said above applies.

Let's talk ATC – Strikes.

An ATC strike is *usually notified in advance. The chances of them walking out without warning is fairly remote. So if you know about it beforehand, plan accordingly. If it happens while you're there, **treat it as an ATC Zero event.**

ATC Zero.

There is no-one out there. Maybe they had to evacuate? There was some sort of emergency or major technical issue that's has taken down an entire ATC provider? Occasionally it is Notam-ed, but in that case you won't have been given clearance to head through, so we are talking those **unforeseen sudden zero events.**

Each region has its own **contingency procedures** which you can find in their AIP, or better still in NAT Doc 006, which was also updated in Feb 2021.

These routes are really for when big stuff happens – the entire ATC for a sector is evacuated for example. In most cases, other units will try and manage control as best they are able, but it will be fairly limited.

So, if you're already inside, continue and start trying to make contact with the next sector (as they will hopefully be managing control as much as they can). If it is a big ATC zero event you are probably going to have to follow the contingency routes to exit the NAT HLA (rather than your clearance) but this will be 'activated' by whichever ATC is taking over control.

If you already have your clearance to enter you can, and you can transmit position reports on 123.45, but it is not really advisable. The best plan is to organise a re-routing.

If you don't already have a clearance then you aren't going to be able to enter the ATC zero bit and you will need to plan a re-route around the affected sector.

Feeling the need to read more?

Here are some handy links to things on the subject.

Changes to NAT Doc 006 – our blog post summarising what these were.

The Irish AIP (again) in case you missed the link earlier.

The GOLD Manual (2017 edition) – for all your Datalink info.

Opsgroup Member?

Then click here to download our handy little **Comms Issues on the NAT "Opsicle"** – a refreshing bit of ops info, just for members.

EVERYTHING IS LOST — UH OH

INSIDE, WITH CLEARANCE
Stick to **clearance**, transmit blind, **squawk** 7600, follow **lost comm procedures** for country you enter (as you leave NAT HLA). Follow **contingency** for weather or emergencies. Keep trying all **other systems.**

NOT ENTERED, WITH CLEARANCE
Continue (do the above).
Or divert and land.

NOT ENTERED, NO CLEARANCE
Consider diverting.
If entering through Shanwick follow their published procedures and **divert to EINN/Shannon.**

HF IS LOST — NO NO

INSIDE, WITH CLEARANCE
Stick to clearance, try **CPDLC** and **VHF.** Try other HF frequencies. **Ask for relays.** Check there is no space weather causing **blackouts.**

NOT ENTERED, WITH CLEARANCE
HF is now a requirement) as one of your two LRNS) so tell ATC.
Shanwick (even Blue Spruce routes) mandates it.

IT BROKE EARLIER
You can get **pre-approval** to enter without HF if its for a maintenance flight (going to fix it.)

DATALINK ISSUES — HI OR LO

INSIDE, WITH CLEARANCE
Let ATC know. There isn't much you can do about it now.

NOT ENTERED
There is a **Datalink Mandate** for a lot of the NAT HLA. ATC might still let you in if you ask nicely.

You don't need it if north of **80N**, in **NYC Oceanic,** on a **Tango 9** or **920** route, in the surveillance airspace over **Greenland/Iceland** or **below FL290/ above FL410.**

SATCOM is usually needed for datalink, as is CPDLC and ADS-C.

HF BLACKOUT — SPACE GLOW

INSIDE
Everyone has lost it. ATC and aircraft. Continue with clearance (domestic if that is the last received) and **don't divert** - there is no-one to coordinate.

NOT ENTERED
Chances are you won't know, you're probably **still on VHF.** ATC might let you know though.

ATC ISSUES — HELLO?

UNFORESEEN AND SUDDEN
Stick to your clearance, or until you reach the point where a **published contingency procedure** applies.
Try the next sector until contact made.

NOT ENTERED
You are unlikely to get a clearance to enter an ATC zero region.
Plan to **route around** the area.

COMM ISSUES IN THE NAT HLA

OPSGROUP members: click to download PDF.

If you're not an OPSGROUP member, but you'd like to be, you can join here.

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

OPSGROUP Team
20 October, 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

TRANSMIT — BOX 2 / OTHER FREQ / RELAY / SATCOM / OTHER

MAINTAIN — LAST ASSIGNED FL / SPEED

7 MINUTES — FROM REACHING LAST ASSIGNED / SETTING 7600 OR MISSING COMPULSORY REPORT

RESUME — FOLLOW FLIGHT PLAN LAND WITHIN ETA+30MINS
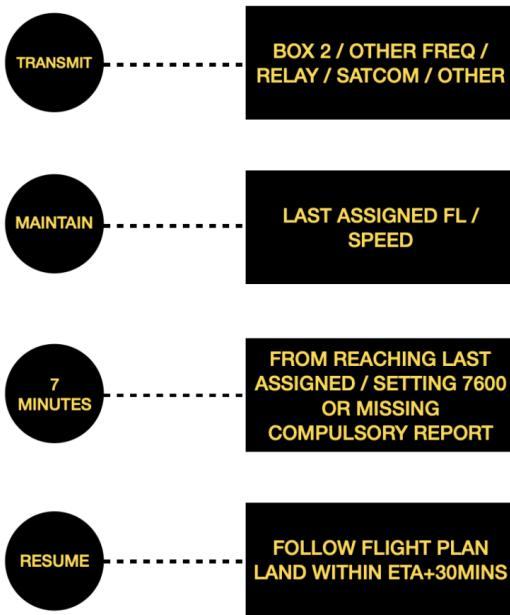
ICAO Doc 4444 contains the **standard lost comms procedure**. Some countries have their own versions too.

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.