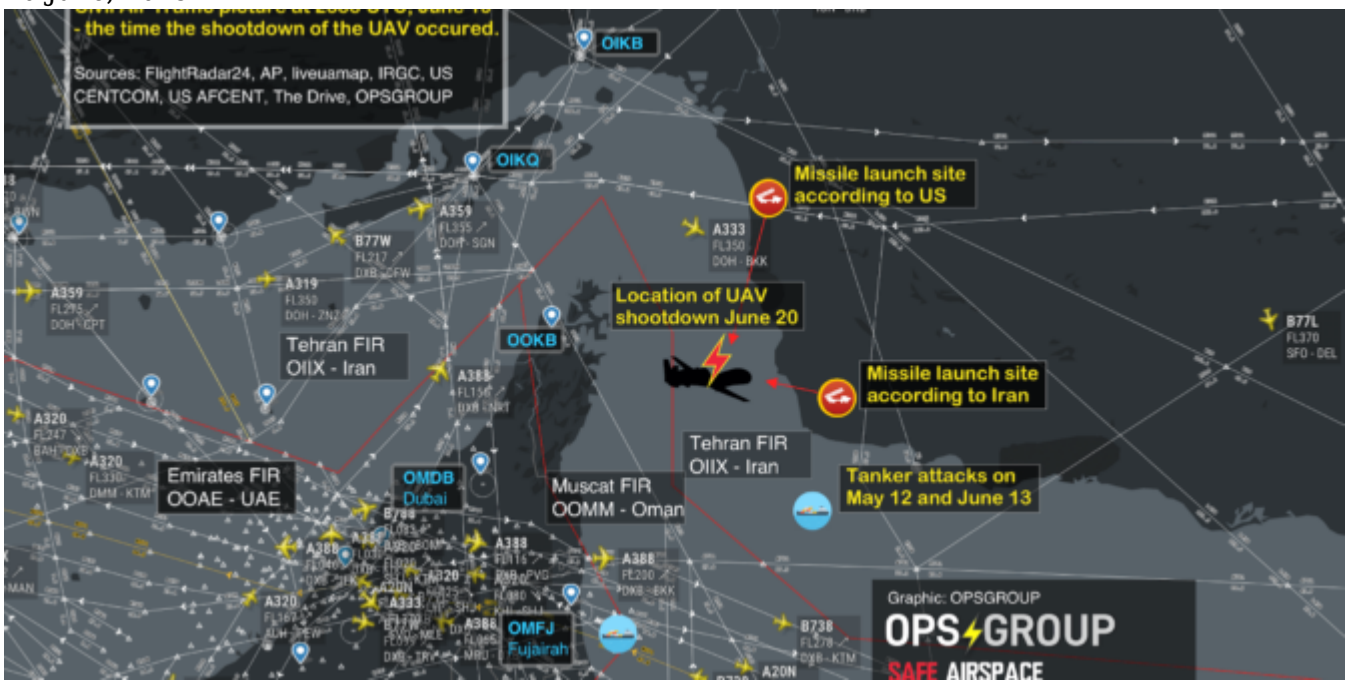
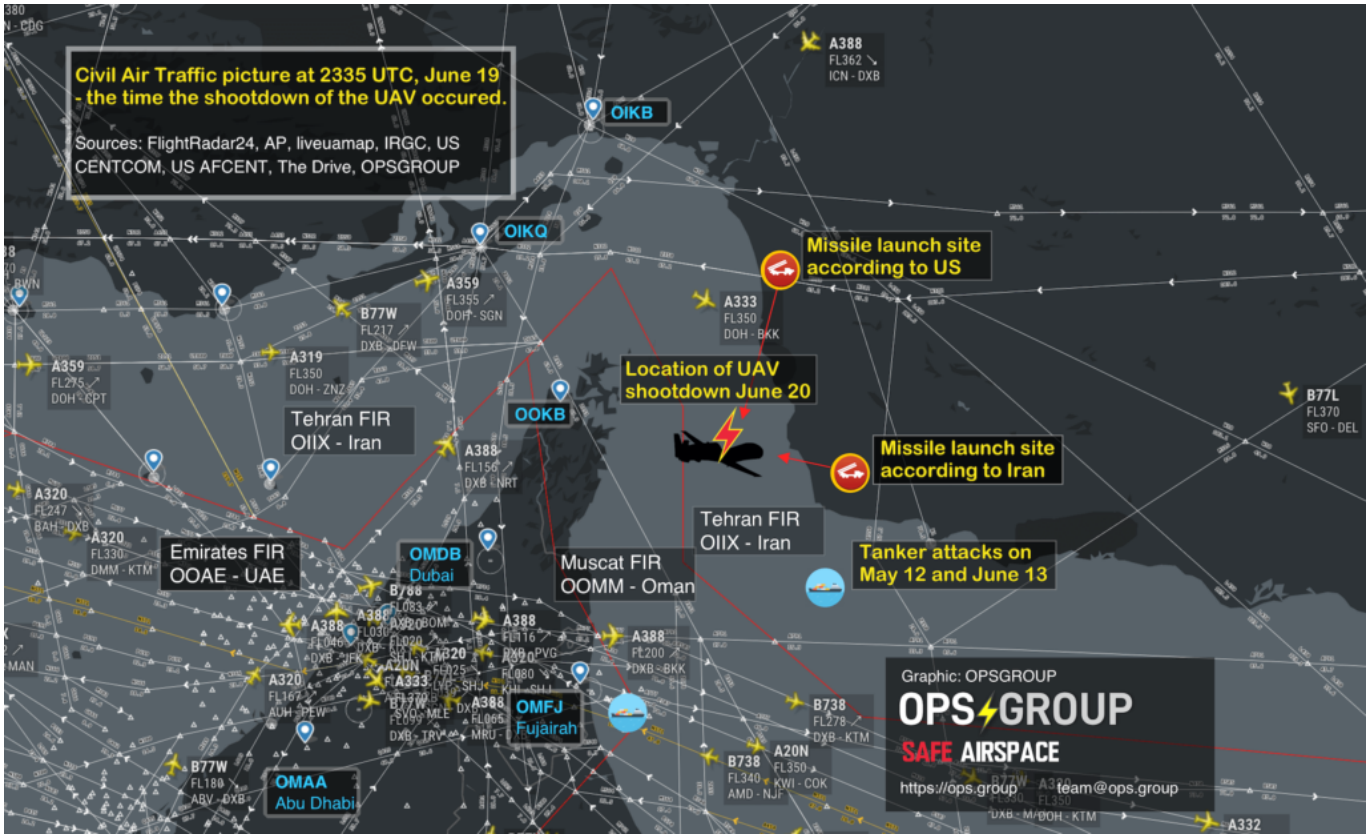
The Threat Of A Civil Aircraft Shootdown In Iran Is Real

Mark Zee
20 June, 2019



As we know by now, at 23:35Z last night (June 19, UTC), Iran shot down a US UAV on a high-altitude recon mission in the Straits of Hormuz. This was no small incident. The UAV was a $200 million aircraft, weighing 32,000 lbs, with the same wingspan as a 737.

Although Iran and the US have slightly different versions of the position of the shooting down in the media, the approximate area is very clear, and marked on the map below, which shows the airspace picture at 2335Z, the time of the shootdown.



A high-res version of this map is available here.

For civil operators, the Straits of Hormuz have always been an area of high military activity, so it's tempting to mark this as 'more of the same'. However, over the last few weeks tension between the US and Iran has heightened, and the launching of a surface to air missile by Iran represents an escalation in the current situation that crosses a threshold – warranting a very close inspection by airlines and aircraft operators overflying, or using airports like Dubai, Abu Dhabi, Ras Al Khaimah, Muscat, and Fujairah.

As we approach five years since MH17, we should remember the build up to that shootdown took several months, and there are the warning signs here that we must pay close attention to. In the lead up to MH17, 16 military aircraft were shot down before MH17 became the 17th. Look closely at the map. Civil aircraft were very close to the site of this incident.

This morning, we sent this out to our members in OPSGROUP:

OIZZ/Iran *Earlier today, a large US military drone was shot down by Iran over the Strait of Hormuz. The US say it was over international waters, Iran say it was within their FIR. Either way, it means that SAM missiles are now being fired in the area, and that represents an escalation in risk. It appears a 787 was very close to the missile site this morning. Avoiding the Strait of Hormuz area is recommended – misidentification of aircraft is possible. If you are coming close to Iran's FIR, it's essential that you monitor 121.5, as Iran uses this to contact potentially infringing aircraft. Local advice from OPSGROUP members says 'Even if the operator/pilots think they will come close or penetrate Irans Airspace they should contact Iran Air Defense on 127.8 or 135.1'. If the Iranians have an unidentified aircraft on their radar and not in contact with them they will transmit on guard with the unidentified aircraft coordinates, altitude, squawk (if there is one), direction of travel and then ask this aircraft to identify themselves as they are approaching Iranian ADIZ. Monitor safeairspace.net/iran for the latest.*

Last September, when Syria shot down a Russian transport aircraft, we published an article on that risk, and noted "*50 miles away from where the Russian aircraft plunged into the sea on Monday night is the international airway UL620, busy with all the big name airline traffic heading for Beirut and Tel Aviv. If Syria can mistakenly shoot down a Russian ally aircraft, they can also take out your A320 as you cruise*

past." That same risk of misidentification exists here in the Straits of Hormuz.

Apart from the misidentification risk, is the risk of a problem with the missile itself. The missile used by Syria in September was a Russian S-200 SAM, which was the same missile type that brought down Siberian Airlines Flight 1812 in 2001. The missile can lock on to the wrong target, and this risk is higher over water. The missile system used by Iran last night was a domestically-built Raad Anti-Aircraft system, similar to the Russian Buk that was used against MH17. Any error in that system could cause it to find another target nearby – another reason not to be anywhere near this part of the Straits of Hormuz.

Bear in mind that as an aircraft operator you won't be getting any guidance from the Civil Aviation Authorities in the region. As we saw with Syria, even when an aircraft had been shot down on their FIR boundary, the only Notams from Cyprus were about firework displays at the local hotels. It won't be any different here. **You need to be the one to decide to avoid the area**.

A further risk, if you needed one, is retaliation by the US. It seems probable that the US will at least try to find an Iranian target to make an example of. If you recall the Iran Air 665 tragedy, back in July 1988, which occurred in the same area, the US mistakenly shot down that aircraft thinking it was an Iranian F-14.

Bottom line: we should not be flying passenger aircraft anywhere near warzones. That's the lesson from MH17, and that's the lesson we need to keep applying when risks like this appear on our horizon.

The Iran risk is being monitored at Safe Airspace – the Conflict Zone & Risk Database. The Iran country page also has more information on further overflight considerations in other parts of the Tehran FIR.

Further reading:

- The FAA published guidance in May that we have previously reported on and is still very much valid.

Sources for this article:

- The Drive
- The Aviationist
- The New York Times
- Safe Airspace
- OPSGROUP members
- Medium: Why are we still flying airline passengers over war zones

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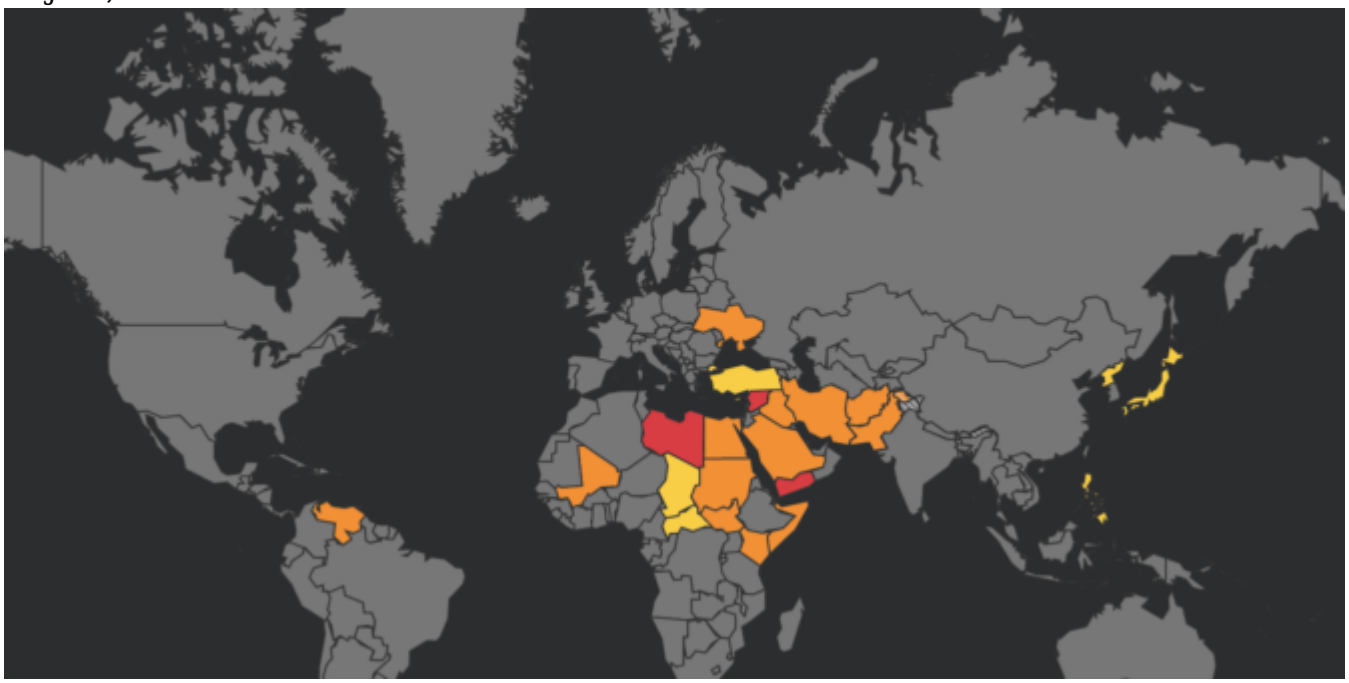
New features – Conflict Zone & Risk Database

David Mumford
20 June, 2019



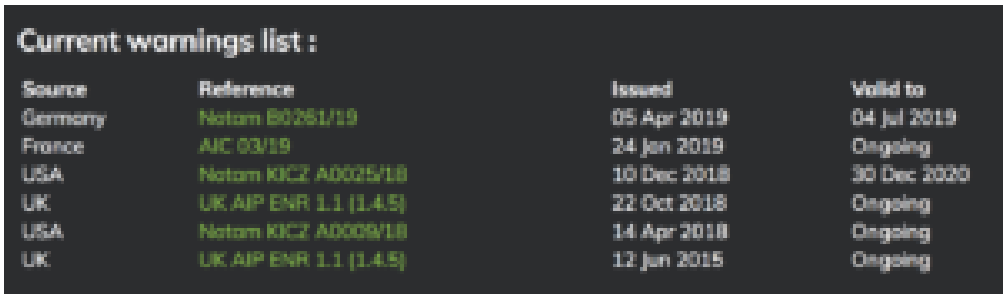
To make it even easier to get a current risk picture for International Flight Ops, we've added a bunch of new features to the **Conflict Zone & Risk Database** at SafeAirspace.net.

Thank you to all OPSGROUP members – all our airlines, aircraft operators, pilots, dispatchers, and industry colleagues who've made this possible. Now we have a simple, single source of information for all risk warnings, analysis, that includes our Risk Radar project (so **for the first time** we can see what other operators are doing), all state warnings, and the ability to auto-generate a live Summary PDF of the current situation.

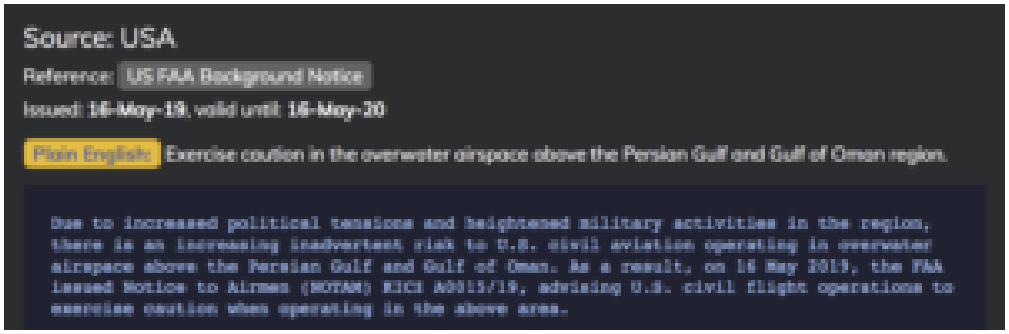
Start at SafeAirspace.net, where you have the current risk map, and feed of Updates and Alerts:

On each country page, you will now see Risk Radar information like this:

For each country, you'll see the current list of warnings, both from the country concerned and other states:



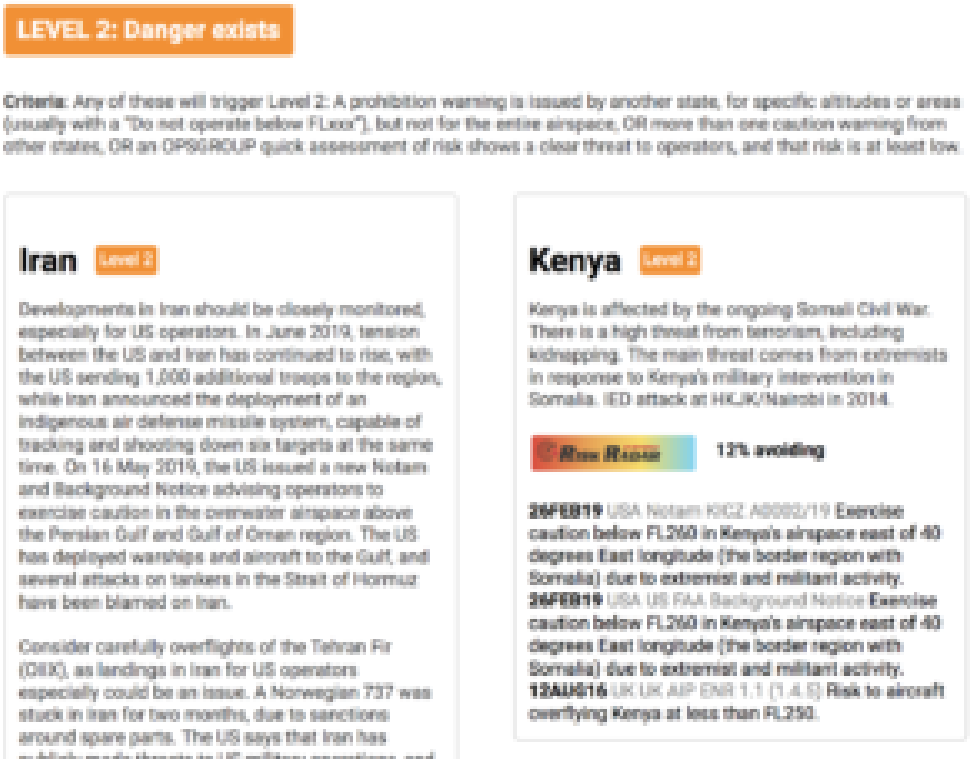
Scrolling down, you'll get the current Notam/AIC/AIP reference and a copy of the text:



For each country, there is a Summary and Analysis, so you get some background on why these warnings exist:

A new feature is the ability to generate a **live summary** into a PDF, so you can print out everything into one document to share with your crew, dispatchers, and security team:

World airspace risk map at SafeAirspace.net as at Jun 19th, 2019



You can download an example of the PDF, generated on June 19th, 2019, here:

PDF Summary – World Airspace Risk at SafeAirspace.net

Download PDF, 800kb

You can generate your own live PDF here.

About the Conflict Zone & Risk Database

The Conflict Zone & Risk Database provides a single, independent, and eternally free resource for all airspace risk warnings, so that airlines and aircraft operators can easily see the current risk picture for unfamiliar airspace.

Safe Airspace is an initiative from OPSGROUP, an independent organisation with 5000 members, made up of airlines, corporate flight departments, private operators, charter operators, military, and government.

The Conflict Zone & Risk Database was launched in September 2016 as the lifespan of the ICAO CZIR was

coming to a close, keeping the work ICAO did on the project alive, and providing the autonomous platform needed to make the concept work.

Objective – one single source

A single source for all risk warnings issued about an individual country, independent of any political or commercial motivation, so that a pilot, flight dispatcher, security department, or anyone responsible for flight safety can quickly and easily see the current risk picture.

Oversight and independence

The CZ&RD is managed by OPSGROUP. Because we are outside the chain of government, we are responsible only to our member airlines and aircraft operators, and more importantly, to the people ensuring a safe flight operation, and to the passengers that fly on our aircraft. For this reason, all information pertinent to a country can be assured to be carried here.

Eternally free

To remain completely independent of any bias, and to ensure that everybody has access, the Conflict Zone & Risk Database is completely free of charge. We have no commercial interest in publishing this information, it exists as a public service because our members care deeply about flight safety.

Contacting us

We rely on your input. If you have information to add, please email report@safeairspace.net. You can also use this address to discuss any content here. The collaborative effort is our focus. We're still a team of humans, and we miss stuff. If you see something missing here, please tell us!

All submissions are anonymous, and our only concern is for the safety of all airspace users – the crew and the passengers. We appreciate your help.

The risks posed to civil aircraft by surface-to-air missiles

OPSGROUP Team
20 June, 2019

> **In Short:** Worldwide the SAM threat is deemed to be “low” by ICAO with the caveat that this can change quickly when flying over or near conflict zones. The best risk mitigation is centred around which airspace you are operating over and what information you have access to. As we have explained before: **There is no safe altitude from a large SAM**.

What are surface-to-air missiles, and who has them?

Surface-to-air missiles (SAMs) are large, complex units, with the capability of reaching aircraft at cruising levels well above 25,000 ft, and they are designed to be operated by trained military personnel.

They are distinct from Man Portable Air Defence Systems (MANPADS), which are the smaller, shoulder-launched systems, the most dangerous of which being the **FIM-92 Stinger** which has an operational ceiling of 26,000 ft.

SAM systems vary but they are all designed to track and destroy military targets in flight. Due to the size and predictable flight paths, civil aircraft represent easy and highly vulnerable targets.

Many SAMs are mobile and can be moved quickly between locations. Many are located on warships. It is estimated that more than 70 States around the world have acquired SAMs as part of their military capability. A small number of non-State actors (i.e. militant groups) have also reportedly acquired SAMs, but as they require a radar system as part of the mechanism, they may not have the technical capability to use them. To date, SAMs have never been used by terrorists.

What has happened in the past?

There have been three documented occurrences where aircraft destruction has occurred due to SAM attacks.

- **Iran Air flight 655 (1988)**
- **Siberia Airlines flight 1812 (2001)**
- **Malaysian Airlines flight 17 (2014)**

The risk of intentional attack

To date, no documented case of intentional SAM attack on a civilian aircraft has been identified. In the case of MH17 and Iran Air, both occurred during periods of military conflict or high tension, whilst Siberia flight 1812 was shot down during a military training exercise.

ICAO say that "with regard to the States and non-State actors that currently do have access to SAMs, there is no reason to believe that the intent currently exists to target civil aviation deliberately." And with regards to terrorist groups (as opposed to militarized forces), they say that "even where intent may exist there is currently no evidence of capability (in terms of hardware and trained personnel)."

Overall, the current risk to aviation from intentional SAM attack is therefore currently assessed to be low, the key caveat being to avoid overflying airspace over territory where terrorist groups tend to operate – normally areas of conflict where there is a breakdown of State control.

The risk of unintentional attack

Past events show us that the higher risk to civil aviation is from unintended and unintentional attacks when flying over or near conflict zones – **missiles fired at military aircraft which miss their target, missiles fired at civil aircraft which have been misidentified as military aircraft, and missiles fired by State defence systems intended to shoot down other missiles.**

Areas where there are armed conflicts going on clearly present an increased risk of an unintentional attack. But when assessing the risk of overflying a particular conflict zone, here are some more specific questions to consider:

Are there increased levels of military aircraft flying around in the region?

This could be anything from fighter jets being operated in a combat role, or for hostile reconnaissance; remotely piloted aircraft; or military aircraft used to transport troops or equipment. If military aircraft are one of the most likely targets for **intentional** attacks, then the chances of civil aircraft being mistakenly targeted increases in those areas where there are lots of military aircraft zipping around.

Are there likely to be a bunch of poorly trained or inexperienced personnel operating SAMs in the region?

This may be difficult to evaluate, but the risk is likely to be highest where SAMs may have been acquired by non-State actors. The risk is also likely to be higher in places where there is less of a robust command and control procedure for launching missiles, thus increasing the risk of misidentification of civil aircraft.

Is the territory below the airspace fully controlled by the State?

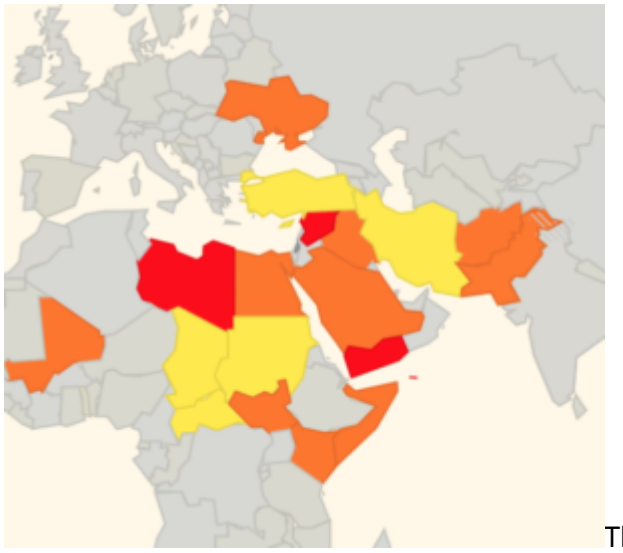
If not, and there are some areas controlled by militant or terrorist groups, the information on the presence and type of weaponry in such areas, as well as the information on who controls them, may not be readily

available. In such regions, the information promulgated by the State about the risks to airspace safety may therefore not be 100% reliable.

Does the route pass over or near anywhere of particular importance in the context of the conflict?

These could be areas or locations that may be of strategic importance or sensitivity in the conflict, such as key infrastructure or military sites, which might be considered potential targets for air attack and would therefore be more likely to be guarded by SAMs.

Ultimately, risk mitigation is centred around **which airspace you are operating over and what information you have access to**. But as has been **reported in the past**, history has shown us that badly-written information published by the State often does little to highlight the real dangers posed by overflying conflict zones.



There is some evidence to suggest that more States are starting to provide better guidance and information to assist operators in making appropriate routing decisions, but we think this still has some way to go.

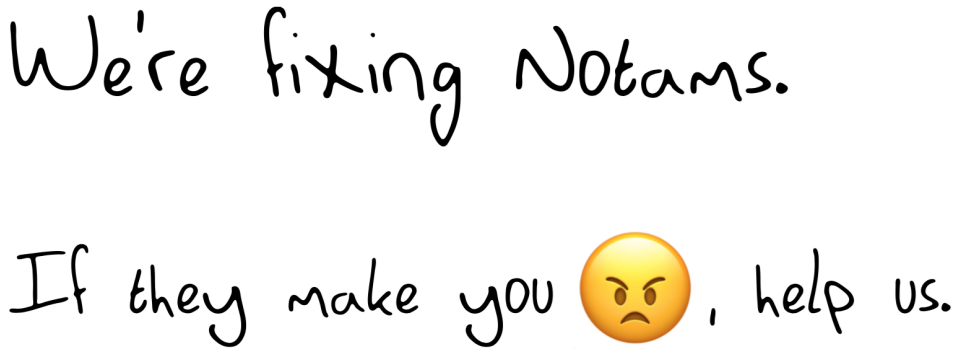
That is why we have been running our **safe airspace map** to provide guidance to assist operators in determining whether to avoid specific airspaces around the world.

Extra Reading:

- ICAO Doc 10084, Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones
- What altitude is ‘safe enough’ to overfly a conflict zone?
- Intercept Avoidance and Missile Evasion

Fixing Notams – we're on it. Help us.

Mark Zee
20 June, 2019



Update: *November 1st, 2019*: **The Notam Team is up and running** – we're fixing Notams. Follow our progress at fixingnotams.org.

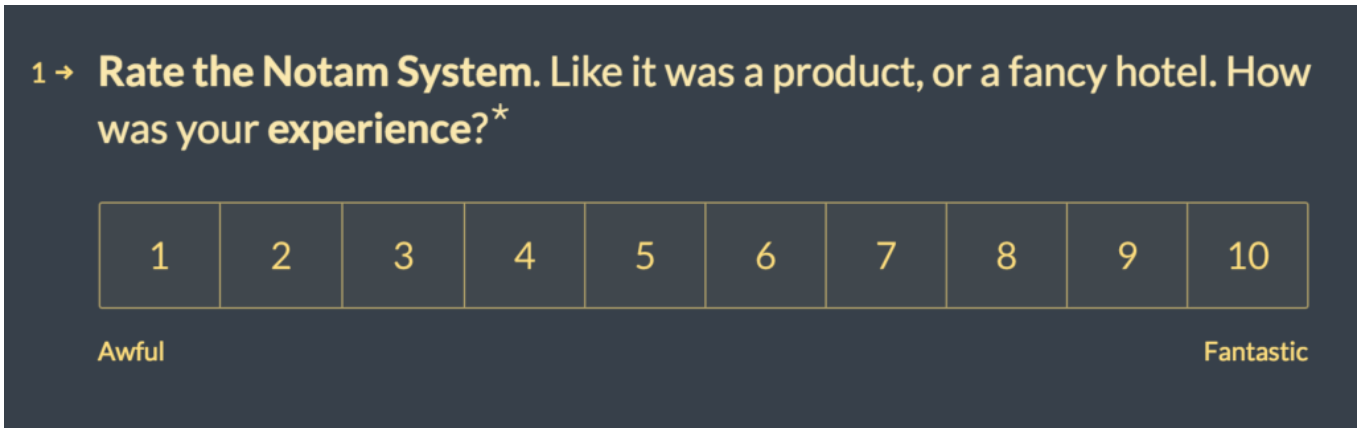
OK. We're done writing articles about it, and making goat jokes – we've moved the "**Fixing Notams**" job to the top of our list..

OpsGroup is all about information – getting the **essential risks and changes** that flight ops personnel need to know about into their hands without delay. Our group agrees – plenty of colourful comments on Notams from members.

Now we want your **ideas and opinions** on the fix.

Here's our ask:

1. Rate the current system – and then click the things you would like to see.



2. If you're **in charge** of a group of people – whether you are the Chief Pilot at Lufthansa, the Tower Chief in Shannon, or manage an Ops team of two – **Get this out to your people and ensure everyone has their say**.

Forward this to your team of ATCO's, Pilots, Dispatchers:

We especially want to hear from pilots, controllers, and dispatchers, and if you read on, you'll see why.

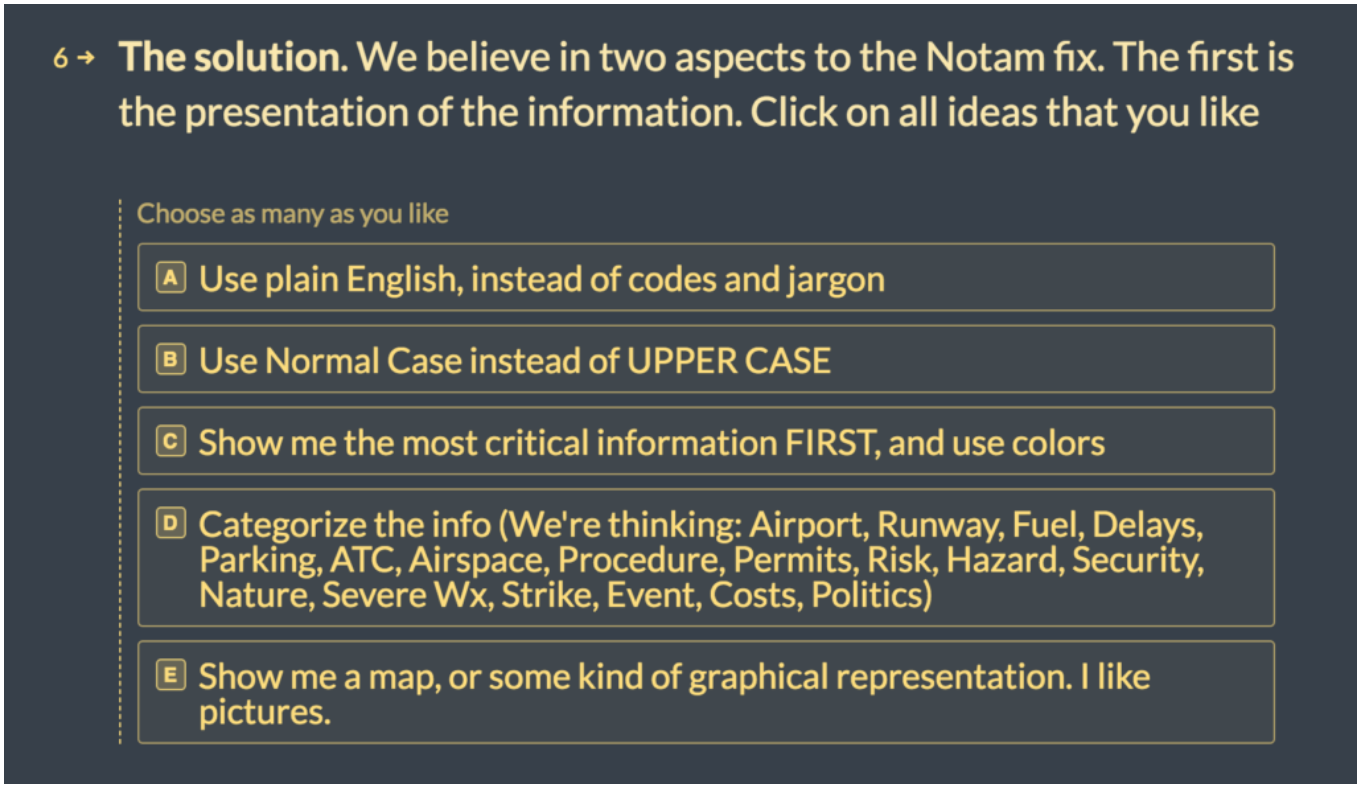
Do it like this:

- Send them the survey link: **https://fsb1.typeform.com/to/irZiFM**
- OR, click here for a magic pre-written email
- OR, send them a link to flightservicebureau.org/notams
- OR, share this **facebook** post:

The survey direct link is: **https://fsb1.typeform.com/to/irZiFM**

The Solution

If you took the survey, you saw this:

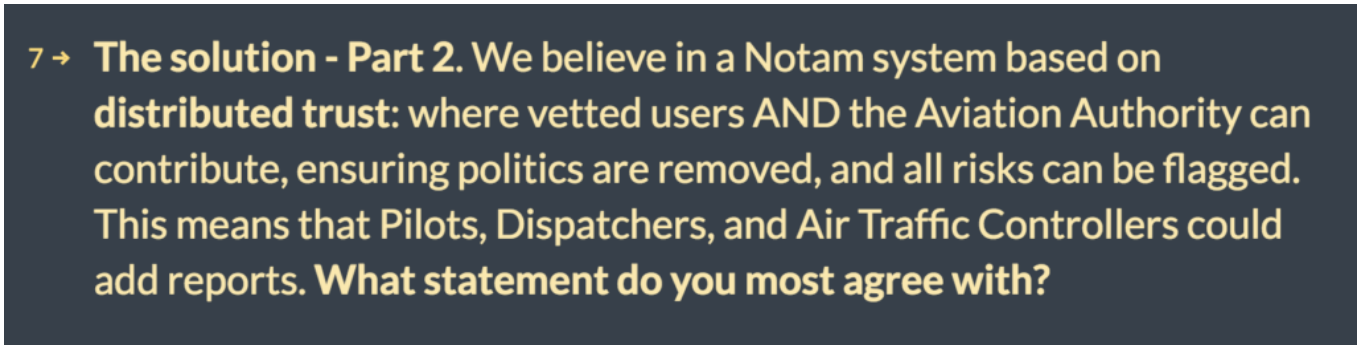


That part is pretty easy – presenting the **Output** of the system is a straightforward enough task.

The I**nput** part – that's where the real work is.

First, we are working on an Artificial Intelligence answer to finding Critical Notams in the current legacy system. This will allow us to present the data flow in order of what matters, and leave those cranes, birds, and grass cutters right at the bottom.

Second,



If you read my article on **MH17 – a darker truth**, you'll understand why it's important to open up the system to allow a trusted group to shape the information flow.

That begins with **Pilots, Air Traffic Controllers, and Dispatchers**. I have the great fortune to be all three, and it's very clear to me that just like Trip Advisor – and our own "*Airport Spy*" in OpsGroup – this idea will work. We've already seen in OpsGroup how much we trust the information from other users in our group.

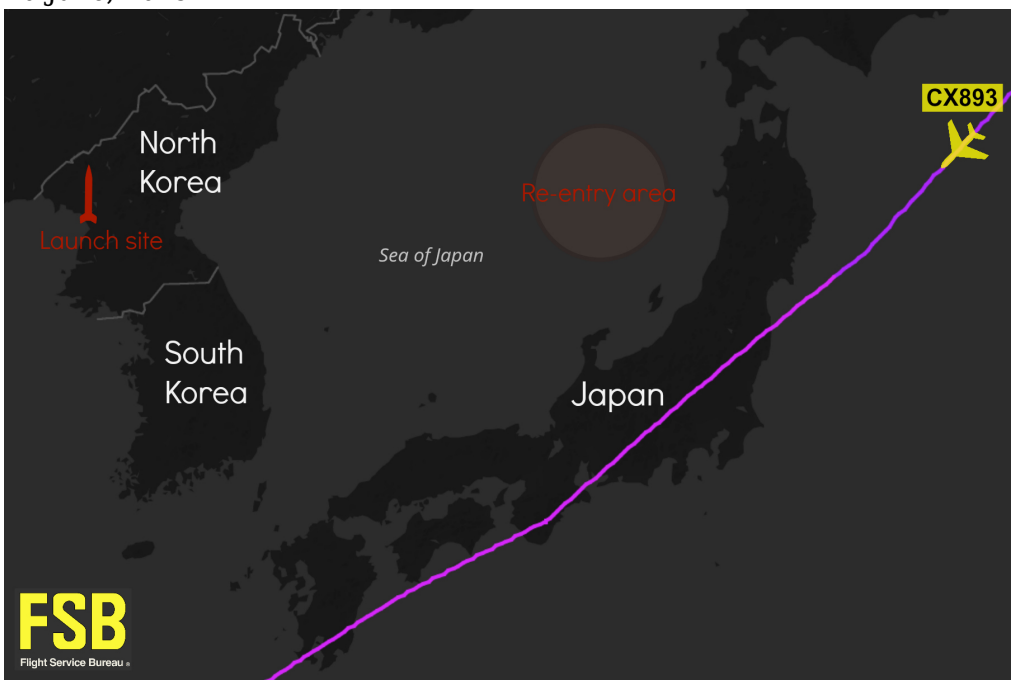
It's key to the future trust of the Notam system. Which we should rename, but that's another days work.

If you got this far, thank you for being part of the solution! You can always write me a note at mark@fsbureau.org

Thanks!
Mark.

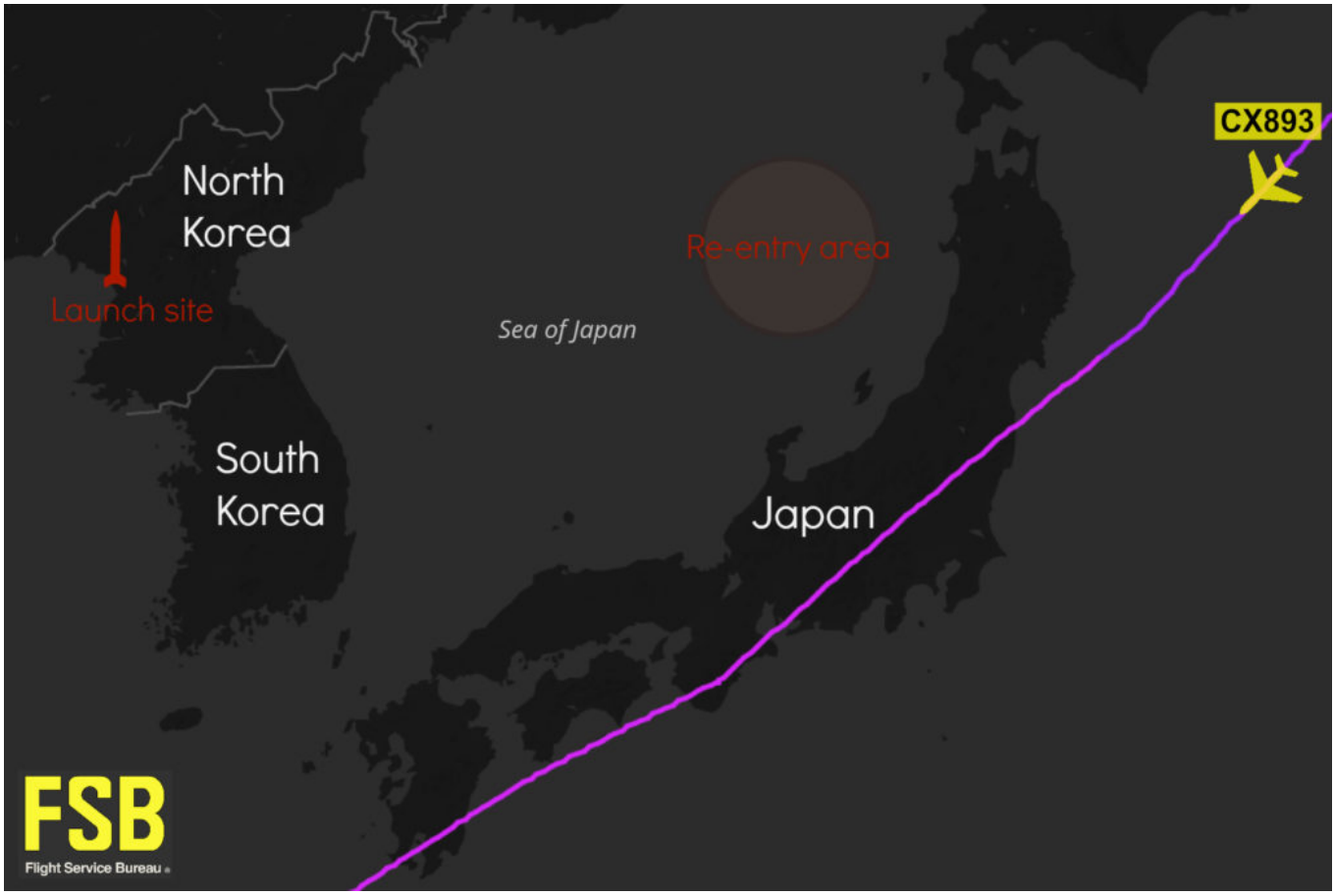
Cathay crew witness missile re-entry from North Korea

David Mumford
20 June, 2019



Crew onboard a Cathay Pacific flight witnessed the re-entry of North Korea's latest missile near their position late last week. The CX893 service from San Francisco to Hong Kong on Nov 29 was over Japan at the time when North Korea launched its missile.

The crew reported: **"Be advised, we witnessed the DPRK missile blow up and fall apart near our current location."**



Here's Cathay Pacific's full statement:

"On 29 November, the flight crew of CX893 reported a sighting of what is suspected to be the re-entry of the recent DPRK test missile. Though the flight was far from the event location, the crew advised Japan ATC according to procedures. Operation remained normal and was not affected. We have been in contact with relevant authorities and industry bodies as well as with other carriers. At the moment, no one is changing any routes or operating parameters. We remain alert and review the situation as it evolves."

North Korea's missiles are larger, and can fly further, than the other missiles we've previously seen. Over the past year, most of these missiles land in the Sea of Japan, well inside the Fukuoka Flight Information Region (Japanese airspace). But as we see with this latest test, there is clearly a danger of some of these missiles not re-entering the atmosphere intact – meaning that a debris field of missile fragments passes through the airspace, not just one complete missile. If you haven't done so already, make sure you read this: our article on why North Korean missiles are now a real threat to Civil Aviation.

This latest test is also significant because of its unprecedented altitude – 4500km (2800 miles). Experts seem to agree that if it had been fired on a standard trajectory, the missile would have been capable of traveling around 13000km (8100 miles), meaning it could have struck anywhere in the mainland US.

If you're operating in the region, we recommend avoiding the ZKKP/Pyongyang FIR entirely and avoiding the affected areas over the Sea of Japan. For more info, check out Safeairspace.