Inside the cabin – before and after the wake turbulence encounter

Declan Selleck
22 March, 2017



The Challenger 604 vs Airbus 380 story has gone once around the world.

But is it even true? Some have asked. Let's do a reality check.

After our initial story was published in last weeks International Operations Bulletin, which we first monitored thanks to the great work of the Aviation Herald, it was republished in various versions in The Times of London, Flying magazine, AIN Business Aviation News, Deutsche Welle, and NBC. The picture on the Flight Service Bureau facebook page was viewed 1.1 million times.

First, the picture.



The incident happened. This has already been confirmed by the German BFU, who have responsibility for investigating accidents. The Canadian TSB have assigned an accredited representative to the investigation, and Bombardier have assigned a technical advisor.

So to the cause. The crew reported that 1-2 minutes before the loss of control, at about 0840 UTC, an Airbus A380-800 had passed overhead, slightly to the left. The Aviation Herald's reporting is of the highest standard, and we trust their source.

Like the Aviation Herald, we also deal in facts. Joining the dots to form the bigger picture doesn't require Colombo on the job.

- The incident happened on January 7th, since which time the German BFU have been aware of the case.
- The story has been out in the aviation community since February 7th, when it was posted that: "A CL604 enroute Male to Europe, upset by opposite direction, 1,000′ above, A380's wake. Several rolls, large G excursions. Diverted into Muscat."

Since the authority, manufacturer, and operator are all aware of the story, it is reasonable to deduce that were a material part of the widely reported incident not true, then that would have been stated rather quickly.

The ultimate confirmation will come from the Germany BFU, hopefully on this Interim Reports page.

The Boeing 757 parallel

On Sunday, we reported the similarity between this A380 story, and the 10 years it took to determine that the Boeing 757 had a wake 1.5 times stronger than other similar aircraft.

Our primary interest here at *Flight Service Bureau* is keeping the International Flight Operations community safe and informed. Consider this opening line from the New York Times on Dec 23rd, 1993:

> Nearly a year after being alerted to the problem, the Federal Aviation Administration has ordered air-traffic controllers to warn aircraft flying behind Boeing 757 jets of the potential for dangerous wake turbulence.
>
> In the last year, two crashes that together killed 13 people have been attributed to turbulence caused by Boeing 757's. In the more recent crash, on Dec. 15, five people were killed when their private jet went down in Orange County during a landing approach"

Wake Turbulence Enroute

The entire topic of wake turbulence is not fully understood by any of us. There is much more to learn. Truly innovative studies were last done back in the 1970's. Some experienced crews have even questioned **whether enroute wake turbulence even exists**. Flight school drills into us as pilots, that wake lives around the airport. "Heavy, clean and slow" are the dangerous ones. But "slow" means about about 150 knots for aircraft like the 380. In the cruise, that goes up to about 250 knots IAS at the higher altitudes. If 150 knots is slow, then 250 knots isn't really "fast".

Before the crash of a Delta Tristar at DFW in 1985, we didn't know much about windshear and microbursts. Maybe we have to learn the same lesson with enroute wake.

In Flying magazine, Les Abend has a very readable example of enroute wake in this article.

FLYING

As we passed our first waypoint of 20 degrees longitude westbound over the North Atlantic, my copilot and I studied the TCAS symbol on the navigation display. Another airplane was approaching us from behind at the 5 o'clock position. Our 777 was cruising at FL 390. The other airplane was 1,000 feet below at FL 380. Within minutes, the anonymous jet appeared in view from the copilot's side window.

"Great photo op, Boss," my copilot announced as he stared outside.

"Who is it?" I inquired.

"Air France. It's an A380."



Jumpseat A380

** The A380 in flight across the North Atlantic...
before its wake-turbulence gift.**

And here are some other examples of **enroute wake turbulence** encounters:

- Air Canada, FL370, 55 degree roll at FL370 – wake from Boeing 747
- Virgin Australia, FL350, 45 degree bank – wake from A380
- American Airlines, FL220, bang – wake from B777
- Air France, FL360, 25 degree bank – wake from A380
- United Airlines, FL240, severe turbulence – wake from MD11
- British Airways, FL320, 30 degree roll – wake from A380
- Antonov 124, FL320, 15 degree roll, altitude loss – wake from A380
- Vueling, FL320, sudden 40 degree right bank – wake from A340
- Japan Airlines, E170 – uncommanded increasing roll to left – wake from A340
- Armavia, A320 – A/P disconnect, steep banks – wake from A380

Note to Members #24 – Wake Turbulence Enroute

While the industry awaits further guidance from the authorities, Flight Service Bureau has made public its **Note to Members #24** (normally restricted to OpsGroup circulation). Revised 22MAR2017.

Key points from our Note:

- **We might be wrong!** Like we said above, there is much still to learn about enroute wake. Read the note, but make up your own mind.
- **Consider the wind.** The danger point is roughly 15-20nm after the crossing point, as this is when the wake will have drifted down 1000 feet. In stronger winds, the wake may have drifted well away from the centreline. A turn away may not be necessary.
- **SLOP where possible**. It may not prevent all situations, especially crossing traffic, but if you're 2nm right of track you're **a lot less likely** to be directly underneath another aircraft.
- **Read the note** for the full guidance, and tell us if you have any further thoughts.