

# Are we too good?

---

As air traffic controllers we provide a service. Some of us may feel we provide that service to airlines, others may think we provide it to pilots. There may even be a group of us who think that airline passengers are the true beneficiaries of the service we provide. Yet no matter to which of the mentioned categories air traffic controllers provide their services, we all take great pride in our job and we all try to provide the best possible service at all times.

Examples of how this personal pride translates to what our clients can notice include the offering of shortcuts (direct routings) in the air or (during taxiing) on the ground, the offering of alternative runways for departure or landing, and even offering the use of a single runway in the opposite direction of the one active at that time.

Our reasons for offering those "goodies" to pilots are usually not selfish: we genuinely think we're doing the pilots a favour by giving them the option we offer. It could reduce the distance between their parking place and the runway, so it might save them a couple of minutes of taxi time. It might get them airborne a minute or so earlier, or save them a minute or two of flying time. Wasn't it IATA (the International Air Transport Association) who sent out an appeal a few years ago to air traffic controllers to try and shave off 1 minute of flight time for every flight they handled, in order to achieve a significant cost reduction for their member airlines? Therefore the kind of "micro improvement" we're sometimes able to offer to individual flights must be important to our customers!

But are we really doing pilots a favour when we offer them such micro improvement alternatives, especially when this is done at short notice? And that the notice time is (really) short almost goes without saying: we see an opportunity for micro improvement develop, we immediately put it to a pilot as an option.

This "real time" modification of existing (and understood) plans<sup>1</sup> of pilots used to be fine in the days when aircraft were analogue machines that were operated by manual control inputs of the pilots. But those days are gone: aircraft nowadays are complex digital machines, operated by computer systems that are managed by the pilots.

To put it simply, in the old days a "real time" change-of-plan usually didn't require many changes to the aircraft configuration – it just was necessary for the pilots to understand the change and carry it out. Today however almost any "real time" change requires an update of the FMS – in addition to having to understand the change the pilots must also re-program the aircraft in order to be able to accommodate it. This potentially adds to the workload of the pilots at a time when they least need it, i.e. just before take off or landing.

In order to illustrate the scope of this issue I'd like to introduce Archie. Archie is the nickname given to the LOSA Archive by its creators, Dr. James Klinec and his team at the LOSA Collaborative (from the University of Texas, Austin, Texas). And LOSA is the acronym for Line Operations Safety Audit, an airline safety programme to monitor safety in normal operations that is endorsed by ICAO.

At the time of writing Archie comprises records of 6439 observations during commercial flight operations of more than 25 participating airlines (large and small, from all regions of the world). It is important to realise that by definition these records represent 6439 "normal" flights, i.e. flights during

---

<sup>1</sup> "mental model"

which no reportable safety incident occurred – successful operations from point A to point B, if you like.

In Archie's data a late runway change is identified as an "ATC threat to the flight crew <sup>2</sup>" in 843 of the 6439 observations. That is in 13% of the flights – which means that on average one in every eight flights faces a late runway change. One in every eight! And Archie has more to tell us: of the late runway changes, 39% occur after pushback and 61% occur late in the descent or approach (i.e. below FL200, including multiple runway changes after Top of Descent).

Yet these figures don't say much by themselves, other than maybe underscoring the statement about air traffic controllers trying to provide the best possible service at all times, earlier in this article. But Archie goes on: of the 843 late runway changes 17% were mismanaged by the flight crews, which means the flight crew committed one or more errors that are linked to the ATC threat of a late runway change. This makes "late runway change" the most often mismanaged threat in the LOSA Archive – other mismanaged threats average around 10-12%. Here's an example of an observation narrative from Archie:

*After takeoff briefing had finished, rwy changed to 16R from 34L. So Pilot 2 changed FMS setting and Pilot 1 checked the reverse side SID chart (16R) and set proper course and altitude on Mode Control Panel, but didn't change the HDG selector from 336 to 156.*

Remember that the percentages mentioned above relate to "normal flight operations" without reportable safety incidents. The flight crews that had the 17% mismanaged late runway changes must therefore have been able to successfully manage their errors, otherwise their flights wouldn't be included in Archie. But that implies that they must have experienced a higher than usual workload between the moment the late runway change was given to them, and the moment at which the operation was returned to normal again. A higher than usual workload in what is universally regarded a critical phase of flight. Is that what we want to achieve when we try to provide the best possible service to pilots?

Of course there are late runway changes that are unavoidable. If there is a constant stream of traffic and the weather is changing (or whatever other reason prompts the runway change) there will be some flights that need to be re-cleared after they've commenced pushback or after their Top of Descent. This is all part of the game, and pilots as well as controllers have to manage those situations to the best of their abilities. But for the other type of late runway changes, the "unforced" ones that we offer to pilots because we think we're doing them a favour, Archie's statistics tell us that we may need to reconsider our way of thinking: we may actually do pilots a bigger favour by NOT offering them an alternative runway for departure or landing than by offering it at the stage where we tend to do so.

So, next time you are in a position to offer a micro improvement to a flight, ask yourself if the perceived gain will outweigh the imposed increase in workload for the pilots (with the associated chance of flight crew errors) and make a judgment call. Sometimes in service provision "less is more", especially when viewed from a safety perspective.

Bert Ruitenber  
IFATCA Human Factors Specialist

---

<sup>2</sup> A "threat" in this respect is something that originates from outside the flight deck and that has to be managed by the flight crew in order to maintain the margins of safety for the flight.