

FRONT LINE REPORT

GETTING THE MESSAGE ACROSS

by **Bert Ruitenberg**

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It happened in the early hours of what promised to become another fine summer's day. A twin propeller commuter flight was just beginning to taxi to the departure runway, an activity that would take close to 10 minutes because of the remote location of the runway, when the tower controller realised that there was an opportunity to let this flight use the main landing runway for take-off since there were few inbounds at that moment.

The controller passed the offer to use the nearby runway to the commuter's crew, duly using standard ICAO phraseology of course, and the crew was only too happy to accept this option for it meant a saving of some 10 minutes of taxi time. When the crew reported ready for departure at the assigned intersection near the middle of the runway, the controller gave the take-off clearance and again duly included the runway designator in his call. Now try to imagine the controller's surprise when he saw the aircraft accelerate on the runway in the opposite direction of what had been correctly acknowledged by the crew several times when accepting the offer and when reading back their take-off clearance...

When analysing this event - hang on! Before I go there you probably want to know the outcome of the event, right? Well, the controller considered instructing the aircraft to stop its take-off roll but since the first inbound aircraft was still far enough away from the runway he decided to just let the rolling aircraft continue its take-off, and resolve the situation in the air. The commuter was turned away from the centreline once

airborne, so the path of the inbound aircraft was clear by the time the ILS was intercepted. A short but interesting discussion followed with the crew of the commuter aircraft, about topics such as compass headings and runway directions, and suffice it to say that the content of ICAO approved phraseology in that discussion was less than average.

What may have played a role in the event is that although it is perfectly legal and within published procedures to use the runway for departures in the direction assigned to the commuter, most departures from that runway are done in the opposite direction (with landings then obviously taking place on another runway). The point of this story however is to demonstrate that serious communication errors can occur even when perfect ICAO phraseology is used by both the controller and the pilots.

This is why I'm not terribly impressed with some of the draft recommendations that were proposed in the Air Ground Communications workshop that was held at the Eurocontrol headquarters in Brussels on 30 September 2005. In particular I'm referring to those recommendations that say things like "use standard phraseology", "take extra care where language difficulties could exist" and "always listen carefully to readbacks".

Don't get me wrong, I don't question that the advice contained in these recommendations is sound. It's just that I think that the practical value of giving that advice to seasoned aviation pro-



fessionals is about the same as when telling car drivers to "drive carefully" in the hope that the number of road traffic accidents will go down, i.e. the value is little to zero. If these or similar recommendations are the best the industry can come up with to resolve air-ground communication problems, we've not come very far since the radio was invented by Marconi over a century ago.

Instead of addressing human behaviour I'd put my money on other draft recommendations, that were also discussed in the workshop, like the systemic deconflicting of similar call signs, the use of data link, and the application of a technical device that would not just alert users that a simultaneous transmission takes place but that would prevent simultaneous transmissions altogether. (Where I suggest "data link" this is not meant to imply that it should replace voice communications. I'm a fan of data link as an extra means of air-ground communications. Send information by data link, and use voice for instructions - it can be as simple as that.)

Having said this, it is interesting to note how none of those proposed

recommendations or solutions would have made any difference in the event described at the beginning of this text. In that event the problem wasn't the technique nor the technology used for the communication, rather it was the content and the related interpretation of the message that resulted in a take-off in the wrong direction.

Air Traffic Controllers are a service-oriented breed. When we see a possibility for a direct routing, a taxi shortcut or a more optimal runway we'll offer it to

our customers. But I think we should start asking ourselves whether we really are doing the pilots a favour, or whether we're merely giving them an extra opportunity to make a mistake. I submit that in today's environment the potential gains of the former are often outweighed by the potential for risk in the latter.

Bert Ruitenberg

PS - If you're familiar with the Threat and Error Management (TEM) frame-

work that is being advocated by ICAO and other bodies, I recommend going over the event described above again from a TEM perspective to see what Threats, Errors and Undesired States can be identified from the ATC and the pilots' viewpoints. If you're not yet familiar with the TEM framework I recommend an internet search or a dedicated visit to the website of ICAO (<http://www.icao.int/ANB/humanfactors/>) where a text on TEM for ATC can be downloaded.

COGNITIVE FIXATION

by Professor Sidney Dekker

Sidney Dekker is Professor of Human Factors & Aviation Safety at Lund University in Sweden. He gained his PhD in Cognitive Systems Engineering at The Ohio State University in the US. His books include "The Field Guide to Human Error Investigations" and "Ten Questions about Human Error".

People always think they know what is going on, what the world around them looks like. Of course, these ideas may be incomplete or even wrong (compared to what they discover the world to have been), but saying that something has been lost is not helpful. It is better to try to understand how this picture may have made sense, or felt complete or accurate, to people at the time.

Making sense of a situation, or "sense-making", is an ongoing process. People's actions and assessments of what is going on are deeply intertwined. By doing something, people learn more about the world. This in turn helps them decide what to do next. The dynamics of sensemaking in unfolding situations can, however, create interesting side effects.

Some important aspects of sensemaking may arise, especially when controllers are faced with an unfamiliar or unexpected problem, for example:

- A well-formulated diagnosis of the problem is often impossible.



Handbooks and checklist are of little help

- Controllers have to make provisional assessments of what is going on based on partial and uncertain data
- Controllers' situation assessment and corrective actions are tightly interwoven. One constrains and informs the other
- Taking action simplifies the diagnostic problem. It commits

controllers to a particular interpretation

- A side effect of taking action is that controllers build an explanation that justifies their action. This explanation may persist and can get transformed into an assumption that is then taken for granted.

From an emerging mass of uncertain, incomplete and contradictory data, controllers have to come up with a