The runway collision risk how do we know?

by Captain Bertrand de Courville

I remember a meeting dedicated to the choice of European safety priorities. This was some 15 years ago. The question of a focused effort to address the runway collision risk was discussed...

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Some participants observed the clear absence of accidents of this type. Some others, referring to the importance of being "data driven", insisted on the absence of significant runway incursions to question the interest of such an initiative. The group finally considered that this should not be part of the safety priority list of actions. When asked how they knew there were "no runway incursions", the answer was: "We have no significant reports in Europe". For different reasons at this time, the runway incursion issue was implicitly perceived as a threat only on airports with higher traffic levels and complex runway patterns such as US airports.

I was surprised at this and whilst new in the group, I expressed my disagreement suggesting that a re-examination of this apparent absence of runway incursions should be undertaken. This was not because of any better knowledge regarding the runway incursion threat in Europe but because the same observation in my own airline led us to the opposite conclusion. This was in 1996. We were assessing our exposure to the main generic accident risks (Controlled flight into terrain, Mid-air collision, Runway collisions, Loss of control in flight, Runway excursion and a few less catastrophic ones). During these reviews, the question of precursor visibility was systematically brought up as a key vulnerability factor. Regarding the runway collision accident risk, the most obvious precursor was runway incursions and, despite the almost certain existence of events of this type, we had no reports of it at all. In other domains we had a rather good level of reporting. We concluded that the greatest risk for our airline at the time was systemic and that the answer lay in the absence of reporting, not in the occurrences themselves. The risk was to be blind without even being aware of it.

In order to clarify, we launched an internal questionnaire sent to all pilots including the following very broad and simple questions:

- ***"During your career have you ever crossed an active runway, lined up on a runway or taken off from a runway while convinced you were cleared to do so and discovering shortly after you were not.***
- ***If your answer is "Yes" could you describe the circumstances?***
- ***If the answer is "No", do you think it could happen to you?***

This questionnaire response provided powerful leverage in many respects. Its initial dissemination, the usual message to encourage the pilots to answer and the publications of the results captured pilots and flight instructors' attention on the subject for a significant period of time. Runway incursions, which had not been seen as a direct safety concern by most of the pilots, began to be more familiar. The risk awareness regarding runway collisions started to improve.

The absence of reports was also explained. After a runway incursion, pilots and air traffic controllers spontaneously debriefed the incident directly on the frequency or on the phone later in the day. By doing this, each party felt that they had learnt enough together from the event they had just experienced without realizing that this was just a "local learning". Their perception was also that their incident was unique and of no value for others. They were not covering up the event, but simply did not felt the need to report it. Again, this was in the 90s at a time when reporting programs were not what they are today.

By demonstrating formally that runway incursions did exist in our airline, the answers to the questionnaire provided the documented proof we needed. No surprise. We were not different from other airlines, not different from US where the runway incursions risk was already recognised as critical and therefore closely monitored.

We were also able to understand through the questionnaire answers that a majority of events was related to a limited number of error mechanisms. This was enough to take action. Various articles and extracts from runway incursion investigation reports from all around the world were systematically introduced in our Safety Magazine over a period of several consecutive years. The objective was to raise risk awareness and change pilot attitude regarding this risk. Different tasks usually performed during taxi were reconsidered. The departure briefing as well as the Public Address welcome announcement to the passengers were removed from the taxi phase and placed at the gate. The before take-off check list was simplified. And the taxi phase itself became a "critical phase of flight". This was done between 1996 and 2000.

At this time, during the years 90s, very few airports and civil aviation administrations in Europe were monitoring and publishing

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data about runway incursions. Rejected take-offs or go around caused by such an event were hardly ever investigated and reporting programs were not as mature as they are today.

Then, in May 2000, at night, an MD83 on take-off collided with a small Short 330 cargo plane lining up from an intermediate taxiway at Paris CDG[1]. In October 2001, a Cessna Citation taxiing in fog entered the active runway just ahead of a MD87 taking off from Milano Linate[2]. The runway incursion issue became a European priority and the first European Action Plan for the Prevention of Runway Incursion (EAPPRI) was launched. Since this date, a considerable effort has been made and the second edition of the EAPPRE[3] has now been published.

So let's try to do the exercise. What could go wrong now? Are we doing enough? I will propose the answer below.

In September 2009, the crew of a B777 operated by a major European airline failed to identify their take-off position correctly and lined up at the wrong runway intersection in good daylight visibility at a Caribbean airport. As a consequence, the take-off was initiated with only 1200 metres ahead of them. A lift off before the end of the runway was only achieved because of the unusually light weight of the aircraft. In February 2010 the pilots taxiing a B737 at Amsterdam failed to identify their correct take-off position in good visibility at night and took off from the parallel taxiway.

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Today, it is very encouraging to see that nobody dares to consider the problem completely solved. Runway incursions incidents are much better reported and monitored but the risk is still there, and everybody knows it. If we wished to be optimistic, then we could conclude this story here but safety always need to be challenged. As James Reason said, we always need the "dash of paranoia" to maintain our chronic unease.

The same month, at Oslo, the pilots of an A320 did the same thing in similarly good visibility by day. In November 2010, the crew of an A340 operated by a major European airline failed to correctly identify their take off position at Hong Kong in good visibility at night and began take-off on a taxiway. This time it was noticed by the ATC which promptly alerted the pilots and the take-off was rejected.

These four events have all been independently investigated. Accounts of them and the corresponding Official Investigation Reports are all on SKYbrary[4]! But how far have they really been disseminated within the industry, beyond the airlines involved and beyond the borders of the country that investigated them.

How many airlines have taken advantage of these events to challenge their own procedures and practices? More standardised policies, procedures, practices and training around the world which now prevail make the operational failures identified in a single incident more predictable. Seeing the same error repeating itself in different airlines and different locations is very significant. Pilots are assumed to check their take off position very carefully. This safety assumption has not been met on several occasions. It is highly probable that other operators are exposed to the risk of similar errors without being aware.

On the basis of these incidents, the issues involved should be clarified through a focused monitoring program (data mining, survey, line observation). Airlines should use time and resources to achieve this and, whenever possible and relevant, share their findings.

1- See: http://www.skybrary.aero/index.php/SH33_/_MD83,_Paris_CDG_France,_2000_(RI_AGC_HF)
2- See http://www.skybrary.aero/index.php/MD87_/_C525,_Milan_Linate,_2001_(WX_RI_FIRE_HF)
3- See http://www.skybrary.aero/index.php/European_Action_Plan_for_the_Prevention_of_Runway_Incursions_(EAPPRI)
4- See http://www.skybrary.aero/index.php/B772,_St_Kitts_West_Indies,_2009_(HF_RE)
http://www.skybrary.aero/index.php/B733,_Amsterdam_Netherlands,_2010_(RE_HF)
http://www.skybrary.aero/index.php/A343,_Hong_Kong_China,_2010_(RE_HF)
http://www.skybrary.aero/index.php/A322,_Oslo_Norway,_2010_(RE_HF)