The construction of runway safety

by Professor Sidney Dekker

A few years ago, my airline used to fly to Rome (FCO/LIRF) a couple of times a day. At that time, Rome Fiumicino seemed to be one of the world's construction sites with its own airport. Things would look different every week, sometimes only subtly so. A new terminal (5) was to open in 2008 and runway 16R/34L was being improved to allow the operation of larger aircraft such as the A380. This involved the renovation of the asphalt layer and construction of new taxiways, as well as the installation of Cat III runway lighting.

This was a pre-Electronic Flight Bag era and the Jeppesen charts we carried in the cockpit seemed to procreate on their own accord. The packs for LIRF were unapologetically thick, full of revisions and temporary maps and directions. I remember the fear of holding the stack of fresh plates between thumb and a few fingers - ready to put each new page in the binder in the right place. The middle chunk of pages would sometimes slide out, like a slick hamburger from a bun. The result would be a disordered mess of Jeppesen plates fanning out all across the floor.

Jepp plates and charts resemble inscrutable pieces of brittle, sticky foil at the best of times. But now they seemed to have sprouted a whole new lexicon of signs and markers and codes and barber poles associated with the changes and temporary conditions.

Still, there was always the question whether the airport actually put things in the places the temporary plates said. With construction going on, you never know. And in the dark, it was always harder to find out for real.

Not long before, I'd had a student who was involved in the investigation of a runway accident. The accident had taken the lives of 49 people. The airport had been un-

RUNWAY UNDER CONSTRUCTION - GOOD LUCK! -

dergoing construction. "Lights are out all over the place," one pilot had remarked to the other. Indeed, they were. Also, the plates the pilots had were not consistent with the taxiway layout at the time. Taxiway signage in the constantly shifting topography of the airport had been misleading and depictions of taxiways on the charts available in the cockpit was simply wrong. In the darkness of early morning, the two pilots started their take-off roll from a runway that was close to their intended one. But the runway they'd ended up on was too short.

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Taking the easy way out, investigators blamed the pilots – they had lost "positional awareness." Investigators also blamed the controller on duty for not paying enough attention. Such a response is, unfortunately, all too typical. And it leads to the well-known, but incomplete, countermeasures against what we are made to believe is a "human error." It has led us to focusing on restricting that unreliable frontline human operator.

In case of the pilots: stopping them, limiting them, restricting them – with stop bars, for instance. And by on-the-spot fines if they cross those bars without a clearance. A few weeks ago I was talking to the CEO of a company whose pilot had just been fined thousands of Euros for crossing a lit stopbar. The CEO had offered to pay, for which I commended him.

And in case of the controllers: we seem to want to manage the risk of human error by putting in more technology, more procedures, and prosecuting ATCO's criminally if things still go wrong. Some people apparently still think we can improve safety just by preventing those fallible operators from doing the wrong thing.

Runaway safety?

But what about starting at the other end? What about looking first at the error traps that are built into our airports? Human error, after all, is not random, but systematically connected to features of people's working environment. What about trying to anticipate and forestall the many error traps that emerge, unintentionally, when we start shifting things around during construction activities at our airports?

The story of the runway accident above seems to have had a long tail, and has recently harvested an additional victim. An state audit report that covers the year during which the accident occurred showed more than half a million dollars of questionable or unsupported expenses by airport managers. This included gym equipment, artwork that subsequently went missing, a hefty tab of a strip club, DVD's, video games and reimbursements for expenses that managers had already got paid for.

This was not runway safety, but runaway safety.

When you are rebuilding your airport, half a million dollars may not seem like much. But it might have provided a few new taxi light bulbs and signs to guide crews to the correct runway.

My proposal is to remove the last item so we will have a nice round number and anyway, who wants... to spend money on something "temporary"?

Of course, none of this ever showed up in the conclusions of the accident investigation. After all, the "guilty" had already been found (the flight crew and the controller). Nonetheless, the airport's director lost his job two years after the accident, and received a suspended prison sentence of five years.

Last year, he was found dead in his apartment. He was fifty years old.

A MEL for airports under construction

If it hasn't been created already, it seems to be high time for a MEL, or Minimum Equipment List, for airports under construction. What are the things that we can or should absolutely not do without? What should we reserve money for? Taxiway and runway lights would seem a good candidate to go onto the MEL, as would plates that are accurate, and signage along taxiways. Surface movement radar? Lit barriers?

These seem like simple, even completely obvious things.

But apparently they are not, or have not been, as they (or their lack) are contributing factors in runway accidents from the past decades around the world. Think about what you would put on that MEL. And ask the pilots who frequent your airport would they want to have on it as well. Then take it to your airport's director. ꟻ