Case Study Comment 4
by Tom Becker

"Errors can be prevented by designing systems that make it easy for people to do the right thing and hard for people to do the wrong thing." (Kohn, et al., 1999)

Obviously, the automatic back-up system software in the sample story was not designed and implemented well enough to cope for real world scenarios like direct routings or other than expected human behaviour. However, the above quote, which was taken from the book "To err is human: building a safer health system" does not only refer to technical systems but its meaning extends even wider as it includes our work systems with their norms (SOP), behavioural guidelines and last, but not least our (safety) cultures. System design is crucial as it influences how we are trained and how we work at the sharp end. In this sense the sample story highlights a key area of preventive behaviour we can use in practice especially when dealing with (sometimes imperfect) automation – it is how we deal with our intuition or "gut feeling".

Already in the beginning of the story "Bert" was surprised when he heard that the symbols for the aircrafts continue moving even if the radar data was gone. Later in the text "Alexander" was irritated for a moment when he got the impression that the picture froze for a second, then started moving again. Both had the feeling that something is different or not as expected.

What is your experience? Did you ever experience such situations in which your intuition or your gut told you that something is wrong or worth a second thought or even worth a deeper analysis, but for some reason you did not follow that track? Which were the reasons not to stay sceptical?

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Again system design plays a significant role by implementing communication SOP for scepticism and creating a culture where, even in practice, doubt and questioning is supported and not suppressed or put aside. In the story the gut feeling was there, but not used by the characters to question either the software-design or its actual behaviour. Considering the possibility that there would have been no complacency by the other characters or even no direct request from the sample flight the weak software design would have probably gone undetected until the next "window of opportunity" for an incident would have been opened – maybe with a different outcome then.

If we ask ourselves: How do we deal with our own doubts and, even more important, how do we handle the doubts and concerns of our team-

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members in daily practice? Do we appear as open as we would like to do? Sometimes our self- and public image might differ. How often do we use interpersonal feedback to align those images? How do our superiors and our management deal with our concerns? Are they open for scepticism and feedback? Sometimes already a short question or remark on being sceptically can serve as a nudge for others to join our thoughts.

However, automation and technical systems will never be able to substitute our human intuition as a safety tool. So, why not fostering that in practice by implementing specific communication SOP or by installing a kind of "remember button" at our workstations to keep such "trigger thoughts" alive and to make our doubts and concerns visible thereby involving team-members in the thought process? We have warning lights and symbols for many technical systems. Why none for our human "non-technical" system? Here again a systems approach is required to develop practical solutions – in order to make it always easy for us at the sharp end to do the right thing.

A RECOMMENDATION:
Although automation assists us in accomplishing our main duty – the prevention of accidents and incidents – a sound scepticism on what it does or shows could be helpful sometimes. Even if it might turn out at the end that our doubts or concerns were not reasonable – "always on the safe side" is still the basic principle in aviation.