

## **The Captain's-Report of a personal experience, incident, on D-AGWK - 19. 12. 2010 (Germanwings, Airbus 319-132)**

I like to quote an 'aviator's wisdom': Aviation consists of waiting for hours followed by moments of startling surprises.

One day I learned how true this saying could be.

The weather forecast for that day was not good. Heavy snow was predicted from midday onward for Cologne. Our rotation was to take us to Vienna first, then to Milano. Check-in was at 13:25 LT – preparations for the flight were normal.

I knew the co-pilot from having met him two days earlier on another rotation with heavy winter flight operations. I knew that he had had his final online-check several months ago and remembered him working very carefully and conscientiously. The mood was good and we were looking forward to what the day might bring. First snow flakes started falling during the walk around and while waiting on parking position following de-icing, it increased. Our taxi to 14L was short, and after only a few minutes off-blocks we were able to take-off. The flight to Vienna was without issues and in Vienna we even encountered a little sunshine and excellent flight weather.

After on-blocks in Vienna we got the first bad slot for the return flight since it had started snowing heavily in Cologne, and no improvement was expected. After about 3 hours of waiting, the conditions in Cologne seemed to improve and the re-opening of the airport a possibility.

We received a slot for about 50 minutes later, so boarding commenced immediately. Nevertheless, time was becoming short and we worried that we might lose the slot. Operations was able to extend the slot another 10 minutes since we had to de-ice before take-off. Time pressure increased. Still, we were 'released' about 20 minutes before the slot time ended. We taxied to the de-icing position and were the first in line, as we seemed to be the only ones who had to de-ice. The person de-icing was not aware about the time pressure and we did not inform him about it, in order to not create stress. The de-icing procedure went unusually fast, nevertheless. Even under time pressure the cockpit crew team-work functioned well. My suggestion to move the take-off checklist forward to save time, was intercepted with the reference to the outstanding after-start checklist, so we both resumed back to our normal sequences. Taxi to 16 was short and we were able to depart Vienna within the very last minute of our slot.

The flight was uneventful. I was pilot flying on this leg. At this time we already knew that due to our delay of 4 hours, we wouldn't be able to fly to Milano– due to that we were looking forward to our evening off. I ate my 'Hot-Meal' and during cruise we talked animatedly about the importance of sticking to procedures under time pressure. Descent to Cologne was practically a 'continuous descent'. Work atmosphere was professional and concentrated. We received radar vector for ILS on 14 L.

Banking to base leg I noticed for the first time this strange smell. My first thought was that it definitely smelled burned and electric. The smell was so strong, that I asked my co-pilot, who confirmed my impression. I asked the purser, who did not confirm smells

in the cabin, also none in the rear of the aircraft, which he checked with the colleagues there. At this moment a thought went through my head, wondering if it would not be best to don the oxygen mask. I didn't follow up on this thought since the smell had dissipated by now and we also received intercept turn and clearance for ILS 14L.

In retrospect I am not even sure if the smell had really disappeared, or if I couldn't smell it because our noses had already gotten used to it.

During localizer intercept the co-pilot suddenly announced that he felt 'incredibly sick' and that he had to don his mask. The tone of his voice gave me more of a fright than his actual words, as there was noticeable alarm and shock to be heard. Before I could think or even answer, I suddenly felt strong tingling in my hands and feet. At the same time I truly felt that my senses were dwindling. My vision suddenly reduced and I noticed strong dizziness beginning, at which time fear, that I was losing control over my body and my actions before being able to do anything about it, gripped me. My reflexes made me reach for the mask as we practise often during simulator training.

Then everything started happening at once. We were still on director and I told the FO in a few short words that he should tell them that we had to change to Tower frequency. He did this and just before he called that in, I ordered him to set off a mayday call. I can only remember in bits his use of wording, but he added 'mayday' and that we had a 'strong smell' in the cockpit. At this time I noticed that the glide scope was already running and put flaps in position one, myself. I noticed quickly how restricted communication was under the mask, especially in such a highly dynamic situation.

Tower responded immediately and instructed an easyJet to do a go-around. Speed reduced very slowly and we were still over 200kt, so we were unable to switch to flaps position 2. Approximately at this stage I must have switched off the AP, but I cannot remember details. I ordered gear-down and pulled the speed-brake. Still the speed seemed to reduce painfully slow. Communication was for me more difficult than it was in the simulator, since I felt that the 'noise' of my own breathing in the interphone was incredibly distracting and stressful. Capacity to turn the INT switch on and off all the time eluded me, since I was flying manually. Due to this there were constant communication problems between the FO and myself, since he sometimes could not hear me. At some stage I switched the transmission channel on the ACP to INT in order to work with the PTT on the side stick whenever I wanted to say something on the interphone.

During the entire landing phase I felt physically very ill. My impression was such, that while flying manually with the flight director, I was at the absolute upper limit of my possible abilities. Why this was the case I could not understand, but it made me feel afraid and I contemplated auto-landing, but dismissed the thought again since I was unable to think clearly. Too many things to think about – I thought – and, to recall all of that, I was not able anymore. The only thing that still worked was my 'fallback' to manual flying.

The final configuration was then fairly quickly established but the speed took, for my feeling, ages to decrease. I told my FO that I would disable the 1000ft gate if the speed wouldn't be within limits by then, since I didn't feel physically or mentally able to do a

go-around. This realisation shocked me, as a go-around is a standard manoeuvre which is usually a purely, practised, reflex controlled, action.

But in this situation I felt unable to do so.

Nevertheless, the team still functioned despite the restricted communication and performance capacities. For example, the FO reminded me of the landing check list which I would have completely omitted. At minimum our communication was disturbed due to the fact that I had forgotten to press PTT before my first Continue-Call.

During short final I noticed a reducing speed trend which I counter-acted with increased power thrust. I think I increased short term up to 65% N1. Speed remained the same anyway and I remember asking myself what exactly was happening here. For a moment I had the impression that I understand hardly anything of what was happening. I recognised the many blue lights, saw the runway and my goal was to land no matter how.

Touch down was in my opinion, normal. Auto-brake was on medium and seemed to work. I used my feet to brake only on the last meters. My aim was A3 turn-off, which I told the FO. But, we slipped so heavily on the last bit, that I was worried not to make it. Still we managed to decrease speed to the point of being able to take A3, and for a short moment relief flooded me that we had reached ground safely. This was quickly suppressed and replaced by an empty feeling and a big question mark. This is where my concept ended.

When 'chair-flying', I had often acted through situations like i.e. a bomb threat, and had many concepts ready at hand what to do and what to say in announcements. But, in this situation it had ended when I landed. I began constructing a new concept. To stop on the spot and evacuate seemed over the top since the situation in the cockpit was in hand and no further danger seemed imminent. My goal was to get an apron position with stairs and to disembark the passengers as normal as possible. This brain storming went fairly fast and without an increase in the thought process in an epic manner. I am not sure anymore, I seem to remember that I mentioned to the FO that an apron position seemed most sensible.

Tower told us that the fire-engines were available and ready to speak with me, but did not confirm. At this moment I remembered that I had just refreshed my memory concerning the hand-out smoke/ fire refreshers a few days ago, and was able to recall frequency 123,1. I told the FO that I would communicate with the fire-brigade and he should communicate with the Tower. I do not remember though if I handed over controls.

First I explained the basic situation to the fire-brigade and told them, that at this time, there was no visible smoke and no fire in the cockpit and that the situation in the cabin was normal. With half an ear I heard that Tower told us we could park wherever we wanted to. Since we had received C07 via company frequency during descent, we decided to take that one since with that the most important request, to park on apron, was met.

Tower told the fire-brigade, who then asked me to taxi to A07, as that position was far away from buildings. That seemed sensible to me, so my FO confirmed that info to Tower.

We continued taxi on TWY A direction terminal. Following communication with the fire brigade and a decision regarding parking position had been made, I was finally able to

Speak with the cabin crew, since my biggest worry in the back of my mind since landing had been the well being of my cabin crew and passengers. I wanted to know if the situation was still normal, but I did assume it was, since I would otherwise have had feedback. Nevertheless, I imagined they would be worried seeing the large presence of fire engines was obvious. I wanted to reassure them as quickly as I could. Making an announcement from under the respirator mask was not an option since doing so would contradict the inconspicuous situation and would have caused the opposite. I prepared myself and rang the purser. I told him in short what had happened, but also, that the situation was under control and that we would taxi to an apron position. I also said, that I would then immediately remove the mask after opening the window and then make an announcement.

After setting parking brakes we realised that the APU was not running. While that was rectified we opened both windows. It felt like the APU took ages to start running. I couldn't wait that long to make an announcement, since latest when arriving at parking position and with the many emergency blue lights illuminating the area, even the last passenger had to have noticed something was wrong. Due to the open windows and the still running engines the noise was infernal, so I tried to cover the microphone handset with my left hand while making an announcement.

I told the passengers that the fire-brigade was there as a precautionary measure after having some unusual smells in the cockpit during descent, and that they would now come on-board to ensure themselves that there was no further danger imminent and that all passengers could disembark thereafter. Since my adrenalin levels were still fairly high I remembered the trick in such a situation was to speak so slowly that it seems unnatural, in order to avoid speaking too fast. The purser's feedback later said that the announcement came across well and was understandable. When I finished the announcement I switched the engines off. The FO reminded me of the parking check list. I then closed the window - not really intentionally but automatically, as cold air was coming in and water was dripping, but instantly an urgent request from the right came to re-open the window. I looked across to my FO being aware of him for the first time in a while. He once again said that he felt really, really ill and I got a fright at how bad he looked. I immediately opened the window again and then saw my colleague who was now hanging with his entire upper body out of the window. My first thought was that he might be vomiting, but he was only desperately trying to get some fresh air, as he told me later.

The purser announced 'all doors in park', and the seat-belt signs were turned off, after which the fire-brigade leader entered the cockpit. We spoke and I said, that in our opinion there was no further danger to be expected in cockpit or cabin. I pointed out how bad the FO's condition was.

He called the emergency team who immediately removed the FO to the ambulance. I remember that he had managed to get up from his seat by himself, but then had to be supported. I was asked how I was, but I felt that I could remain until all passengers had left the aircraft.

While talking with the team leader regarding further actions, I noticed how my whole body began to shake, which worries me to this day, as I do not know such symptoms. To this day I do not know if the reason for this was pathological, or the aftermath from the stress. Luckily the phenomena stopped a few seconds later.

I asked the team leader if the fire-brigade could retreat a bit in order for the passenger busses to approach and to begin disembarkation, and communicated this also to the passengers.

I stood in the cockpit entrance during disembarkation to see how the passengers' mood was, and was happy to note that they were friendly and calm.

As soon as the last one had left, many different people approached me and everybody wanted to know something. First, I wanted to know how my FO was faring. I had noticed that the ambulances were still standing close by and assumed that was a good sign. I was assured that his condition was acceptable and that the ambulances were waiting to take me to hospital to be examined. I also remembered that the purser mentioned that the smell was still noticeable in front of the cockpit door. At the time when this comment was made both cockpit windows had already been open for 15 minutes.

I then spoke with the cabin crew and quickly noticed that they were psychologically ok. I described what had happened and asked how they experienced the situation. As I had thought, for the two in the back galley the landing was normal and they did not feel to have been in danger at any time. Also the purser made a stable impression, so I decided after pointing out the possible and available help by the CISM team, to send the cabin crew to their well earned evening

Following this I spoke with maintenance and made a WO entry. To my astonishment the MCC worker present seemed at that point in time already sure that it was de-icing fluid that had been the reason for the incident.

I was being harrassed to fill in a form right away by the fire-brigade operations manager who pushed it in to my hand. I asked if I could do it later, which he denied. So I filled in the §5 LuftVO incident report which, looking back, I should have declined to do since I was still feeling physically unwell. I should have better communicated how unwell I felt and should have only filled in my personal details.

After finishing the paper work and handing the aircraft over to maintenance I collected my things and the FO's, and went to the ambulance. There, I saw my FO who was still looking very ill, lying in a reclining chair covered with a blanket, and an oxygen tube in his nose. An image which shocked me.

The paramedics immediately put an O2 tube on me as well and measured my O2 levels. I don't remember the exact value, but remember that it was, according to the paramedics, very bad and clearly under 80%. Normal values are, to my knowledge, around 95-98%.

I had to answer a few questions before the trip to the hospital in Porz could begin.

On the way I made a telephone call to IOCC and heard that Mr Knitter wanted to know what the passengers had been told. I also called Mr Dunz to inform him about the occurrences.

The drive to Porz took much longer than it usually would due to the extrem wintery and difficult weather conditions on that evening.

What I clearly remember is the fact, that I continuously began to feel better which was due to the O2 and the slowly improving O2 levels, as I was told by the paramedics. I had previously read about this, but now I experienced myself that I had not noticed before how bad I had actually felt. Only due to the obvious improvements I was able to realise how badly impaired I had been. I had the impression to have clear thoughts for the first time in about an hour. I now realised why I had had such difficulty with the decision

making during descent concerning a seemingly simple thought process regarding the preparation for an auto-land or a go-around.

Following about 2 hours of examinations at the hospital, we were released and we drove by taxi to the airport. Because we felt we needed to discuss the happenings of the past hours, we held an intense debriefing.

All in all this incident showed me how quickly the border-line between normal and not normal operations can be crossed. I would have never thought that one could get in to a situation during which loss of controls could happen so fast. Theoretically I knew about it, but what it means in reality was shown clearly in this case.

Especially that one can also lose control within seconds on lower height levels shows how important it is never to let one's attention diminish too much. It is very important to stress here that it is imperative to don the oxygen mask, even at the smallest suspicion of toxic fumes, wherever they might be originating from, and they don't even need to smell strong, to incapacitate the pilots. I can't imagine the scenario that could have happened if we had hesitated a second longer to don the masks. A pilot-less aircraft with 149 human beings onboard, drifting without configuration along the ILS - everyone can imagine the possible ending.

As I heard, the aircraft was back online the next day, and it was said that the reason given by maintenance was de-icing fluid in the air-conditioning.

I am fully aware that as a pilot my technical knowledge is less compared to a technician's. But I do have 12 years of flying and operational experience, 7 of which on Airbus. I have had experiences with burned de-icing fluids in the air-conditioning, also in high concentrations with strong smoke development in the cabin. That's why I find it hard to accept this diagnosis. I am also aware of the fact that experiences from other incidents with contaminated cabin air have shown that the reason that nothing could be detected afterwards was due to the volatile nature of the substances. But the intense smell that I detected and the physical reactions I felt, have definitely no similarity to that after burned de-icing fluids.

Perhaps it was luck that two days earlier I had prepared the smoke/ fire refresher and my FO, as he told me later, had just undergone his simulator refresher. It certainly showed me the importance of constantly 'refreshing' oneself. Biannual simulator training is conforming to law and regulations, but can never suffice to prepare for the amount of failure possibilities one can be confronted with just before the end of a day.

I think it cannot be taken for granted every day, that we can get in the car after work and drive home. The fact that we sit in a thin aluminium hull, filled to the rim with fuel and human beings, travelling across a space unfit for living and close to the speed of sound clearly shows, that this job, as non-dangerous we seem to think it is, has its own risks. To keep these risks at a minimum is my duty as a captain.

The fact that nothing serious has happened for years, misleads to thinking that it is self evident and that the only relevant thing is, is to take care of daily operations. That preparations for the unexpected and extremely rare occasions can quickly determine between 'good outcome' and 'bad outcome', is something one has to be aware of over and over again.

To counteract such complacency each one of us probably needs from time to time some provocation for thought. For me this incident was one.

My personal understanding of my duty as a captain has always been that I receive the smaller part of my salary for those sunny days flying an aircraft to Palma and back again. The larger part is to be prepared for those rare occasions when it is necessary to be able to do the right thing. The biggest investment to be prepared, is time. And the time in our tight duty rosters is the most precious thing we have. But we do have more of it than we sometimes think. We just don't use it. Often, a long flight phase goes unused and even boredom sets in. If one would use only part of such phases to discuss a smoke/fire procedure in full, one would use time wisely and make another step toward being prepared for such an unexpected incident.

I try to do this as often as possible and will probably do even more so in the future, even though I probably will, like most of us, lose the battle against idleness at times. Still, I am glad I was prepared. As unlikely as it might seem, the day can arrive when it can happen - as I had to experience myself.

