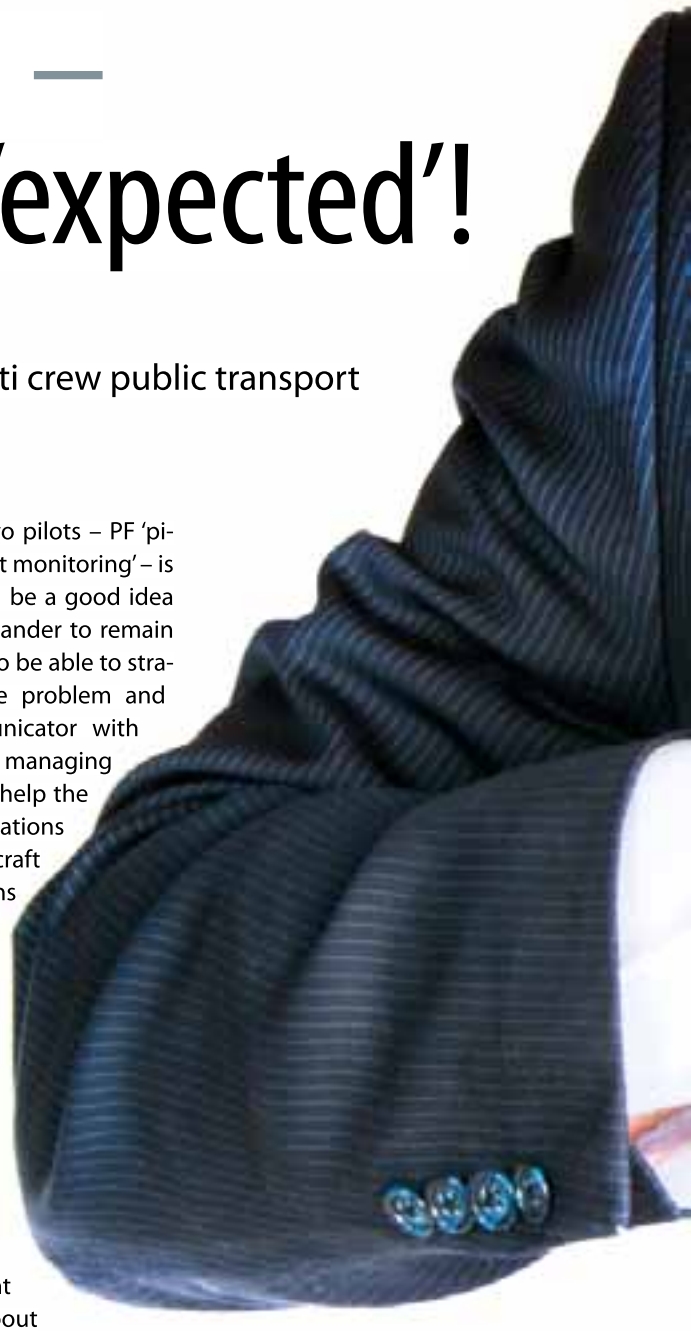
Being prepared – for worse than 'expected'!



By Captain Ed Pooley

OK, there is an Emergency – A multi crew public transport aircraft has declared a 'MAYDAY'.

You have rapidly 'woken up' and are temporarily saying goodbye to the predictable routines of your day-to-day comfort zone and beginning to respond – just as you were trained to.

But you know that as a controller you will, more often than not, be trying to assist the pilots by doing whatever you can to reduce their suddenly increased workload without knowing the full facts of the situation they are facing. Sometimes, you know that awareness of more of these facts would enable you to help more. Other times, it may not – possibly (but certainly not necessarily) because you cannot grasp the significance of 'technical' information. Either way, you usually (correctly) judge that the last thing an overloaded flight crew need is any more than the minimum of R/T to deal with.

From the pilots' perspective, I can tell you that:

- They will frequently delay declaring an emergency to the extent that you will suspect one exists before they do.
- If they want something specific from you they'll usually ask for it.
- As they have absolutely no idea how much you are likely to understand about the technical details of their emergency, they will usually communicate these based on their assessment of 'need to know'.

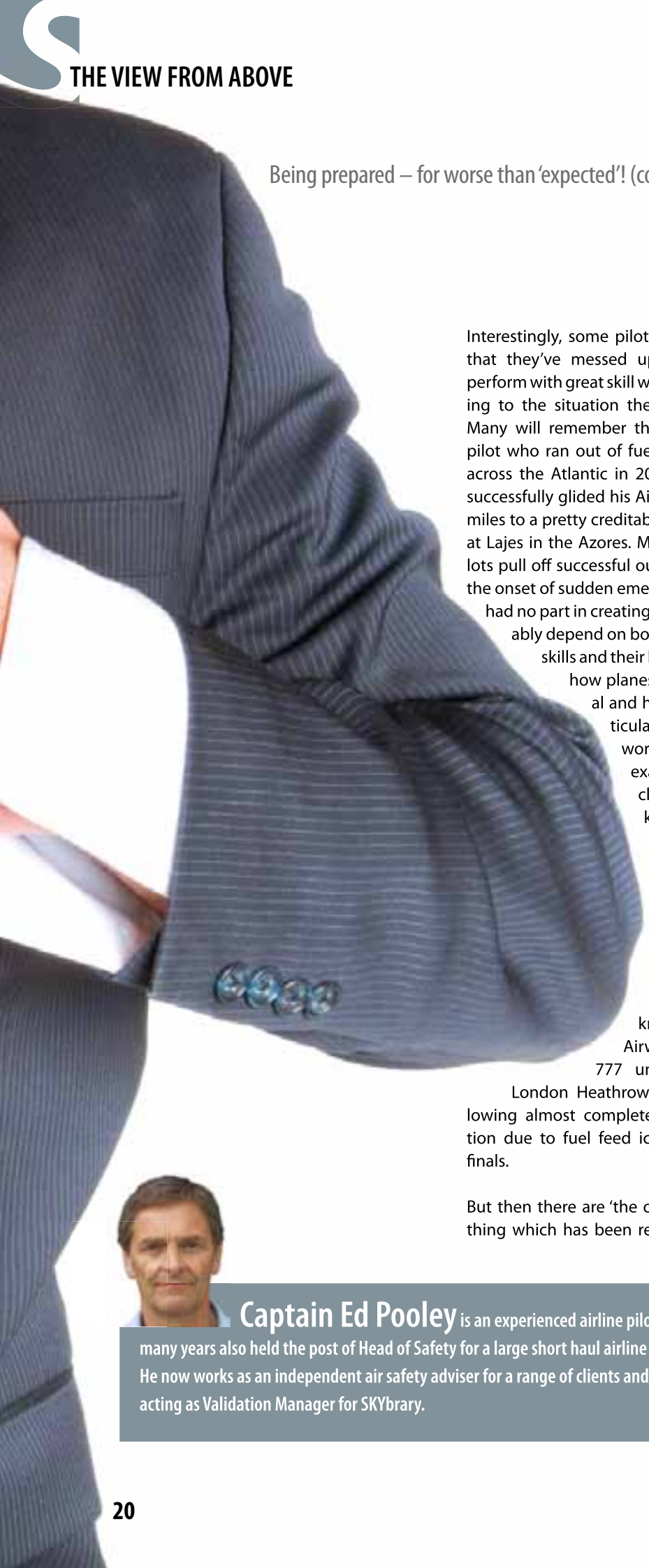
Many aircraft operators advise that at the onset of an emergency, a review of roles between the two pilots – PF 'pilot flying' and PM 'pilot monitoring' – is sensible. Often, it will be a good idea for the aircraft commander to remain or become PM so as to be able to strategically manage the problem and act as chief communicator with the co- pilot flying / managing the aircraft. This may help the clarity of communications to ATC from the aircraft since communications are then direct from the decision maker instead of being routed through the junior pilot.

However, what I really want to 'discuss' is the presumptions that a controller handling an emergency might reasonably make about the professionalism of the flight crew they are trying to help. Having looked around at your fellow controllers, you will probably have decided long ago that some of them seem to perform better under the pressure of a relatively short lived emergency than others even though you've all received the same training and passed the same competency checks.

Well surprise, surprise, it's much the same for pilots who, like controllers, are trained and especially assessed in ways which largely remove any element of surprise from what occurs. For pilots who train in pairs in their simulators, the value of the training to one pilot is often at least partly dependent on the aircraft knowledge, management and handling skills (relative to rank and experience) of the other.

If, as a controller, you make the assumption that, by and large, the two pilots don't usually make emergency situations worse even if their actions may have contributed to or even caused them in the first place, you may be wrong.

Being prepared – for worse than 'expected'! (cont'd)



Interestingly, some pilots who realise that they've messed up sometimes perform with great skill when responding to the situation they've created. Many will remember the Air Transat pilot who ran out of fuel on the way across the Atlantic in 2001 and then successfully glided his Airbus A330 65 miles to a pretty creditable safe arrival at Lajes in the Azores. Many other pilots pull off successful outcomes after the onset of sudden emergencies they had no part in creating which invariably depend on both their flying skills and their knowledge of how planes fly in general and how their particular aeroplane works. Recent examples include the well-known post bird strike ditching in the Hudson by a US Airways A320 in 2009 and the almost as well known British Airways Boeing 777 undershoot at London Heathrow in 2008 following almost complete fuel starvation due to fuel feed icing on short finals.

But then there are 'the others'. Something which has been regularly, even obsessively, trained for happens but the response 'on the day' ignores almost every critical element of that training. In June 2010, a 'classic' Boeing 737 being operated by what was then the low cost division of Royal Air Maroc, Atlas Blue, hit a flock of geese just after getting airborne at Amsterdam. It took a full four minutes (which is a very long time in an emergency) before the pilots got around to the thing they were persistently (and almost obsessively under current regulatory requirements) trained to do first and without delay – to carry out the memory actions for the (single) engine failure that they recognised had resulted from bird ingestion. And in what can only have been some sort of irrational panic response, the first action of the Captain, having just lost 50% of his thrust, was to order that the still in-transit landing gear be re-selected down because it was indicating unsafe. Yet all landing gear indicates unsafe when it is moving to a selected position. And even if the unsafe indication had been indicated by gear in a previously locked position, the imperative after losing half your thrust near the ground is to climb to a safe height using what remains and minimising drag by ensuring that the landing gear is up as quickly as it would normally be after any take off and the failed engine is 'secured'. Those actions collectively and significantly reduce drag, which itself would otherwise reduce the rate of climb.

In this case, ATC were aware straight away `what` had happened but could not have guessed what would come next. The requested and issued radar headings provided by ATC were completely ignored and as daylight faded, an erratic nine minute perambulation began which took the aircraft over some of the suburbs of Amsterdam

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at or below the height of the tallest buildings. It was accompanied by, at times, an almost continuous (and valid) activation of the on board Ground Proximity Warning System (GPWS). In this particular instance, the applicable ATC procedures – give radar vectors – seem to have completely failed to take account of the risks of giving such vectors below MRVA (although at least in this case the aircraft was in VMC). The message here is that the controller could not have known and could hardly have expected what was actually happening on board the aeroplane even when it was already clear that there were some major control difficulties.

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Back in 2007, the controllers at London Heathrow were faced with a similar sort of situation in which an aircraft was being flown erratically around some of the busiest airspace in Europe, albeit at higher altitudes than in the Amsterdam example. In this case it wasn't a bird strike but a failure by the crew to set up the aircraft navigation systems properly before the flight began which disabled normal attitude and heading instrumentation for both pilots. The evident difficulty which the crew were having in controlling their aircraft manually using the standby attitude display and the standby compass was compounded by insufficient language proficiency to properly communicate with ATC the nature and effects of their problem – surely an experience which many controller readers will have had at least once. Anyway, despite no emergency being declared, ATC (eventually) recognised the seriousness of the circumstances and provided a discrete radar frequency to help achieve a safe return. With the fortuitous addition of VMC below 1500 feet aal, a safe landing was achieved after 27 minutes of flight.

As with the Amsterdam event, the track flown by the aircraft from take off to touchdown and reproduced in the respective investigation reports is interesting to say the least. Contrary to the Amsterdam event however, the right seat co pilot was and remained PF – but had to fly from a standby attitude instrument available only in front of the aircraft commander and a standby compass which is difficult to use in a turn.- quite possibly the combined cause of his inability to fly headings. Despite the flight crew failing to recognise that their situation amounted to a MAYDAY scenario, instead describing it as just a 'navigation problem', ATC also came in for a bit of criticism on account of their slowness to recognise the de-facto emergency given that only the availability of a visual approach readily facilitated a safe outcome. It was also suggested that ATC could have made more effort to facilitate the positional awareness of pilots in IMC rather than confining their guidance solely to headings and track miles to go.

However, these are just details from particular examples. What is the purpose in telling you about the problem of what you don't know? You certainly can't do much about it.

Or can you? Sometimes, when faced with the unexpected, knowing what you don't know is almost as important as what you do know ….but do be careful how many questions you ask an overloaded crew if you can see some useful clues on your radar screen.