Striking a balance:

by Álvaro Gammicchia

Few industries were hit as hard by the economic crisis as the airlines. With fuel prices at record levels and stiff competition in the market, companies are looking for various ways to ensure profitability. Cutting the fuel bill, which often exceeds 30% of operating expenses for airlines, might from a financial perspective seem a good solution. Fuel, however, is not only a question of money but also one of safety.

We have entered 2013 with cheerful media reports running around the world on "extremely high" aviation safety levels. Researchers from the Aviation Safety Network identified a steady and persistent decline of the number of accidents and incidents worldwide, making 2012 the safest year for aviation since 1945. But while flying is safer, it is still not risk-free. From time to time, planes declare emergencies for various reasons such as a bird strike, a cracked windshield, smoke in the cabin or any other technical problem. In all cases, the crew makes the executive decision to bring the plane safely down. In reality however an emergency declaration is one of the most critical situations for both pilots and Air Traffic Controllers (ATCs) - an abnormal occurrence which should be prevented whenever possible.

On 26 July 2012 an aircraft with almost 200 passengers en route to Madrid diverted to Valencia due to severe thunderstorms over the capital. Being 4th in line for an approach, the pilots had to hold over Valencia, where it was already busy due to other diverted flights. After having circled above Valencia, pilots declared MAYDAY emergency due to low fuel. The plane was cleared for a straight-in approach and minutes after, it landed safely. Most stories such as this one end here.

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started flying gliders at the age of 14 and is currently an airline pilot flying A320 series for Iberia. He is extensively involved in aviation safety through his work with the Spanish Pilots' Association, SEPLA, and as an Executive Board Director for Technical Affairs with the European Cockpit Association. Álvaro's work is in close cooperation with EUROCONTROL and is mainly focused on aerodromes, air traffic management and accident investigation and helicopters.

money versus safety

In this instance two more aircraft were forced to declare an emergency for the same reasons at the same airport. All three aircraft operated by the same European airline diverted to Valencia due to the weather conditions, all three had circled for a while, and all three were running low on fuel. Two aircraft landed with their final reserve fuel intact and one landed with less than this mandatory minimum amount in the tanks.

This final reserve fuel rule is a good example of the carefully designed "layers of protection" in aviation. If something goes wrong, there is another safety barrier which is supposed to prevent accidents and incidents. In the specific case, passengers were not at risk and the company operated in full compliance with European safety standards. Yet, the controversy of fuel emergencies goes beyond these incidents and invites many questions about the Captain's authority, the importance of Air Traffic Controllers and the challenge of striking the right balance when it comes to safety versus profitability.

The first unavoidable question is about the authority of the Captain to take enough extra fuel. The ultimate decision on how much fuel should be taken lies with the Captain. The European Commission Regulation on 'Air Operations' clearly outlines a fuel policy for the purpose of flight planning and in-flight re-planning to ensure that every flight carries sufficient fuel for the planned operation and reserves to cover deviations from the planned operation. The regulation specifies that the pre-flight calculation of usable fuel required for a flight includes: taxi fuel; trip fuel; reserve fuel consisting of contingency fuel, alternate fuel (if a destination alternate aerodrome is required), additional fuel (if required by the type of operation); and extra fuel (if required by the commander of the flight).

Yet this last point – extra fuel – is the one raising the most concerns due to its necessarily discretionary nature. With fuel prices skyrocketing, cutting the cost of 'extra fuel' seems to be a preferred option. Lately, evidence has begun to emerge about European airlines promoting flying with just the standard fuel reserves or even developing fuel saving incentive schemes for pilots. The less fuel used, the bigger the incentive. In other cases, various kinds of pressure or incentives can be exerted on pilots to take as little extra fuel as possible. Depending on the circumstance what may be interpreted as a de facto limit can be seen as interference with the Captain's authority to take safety decisions independently and this despite the fact that the Captain is the one ultimately responsible for the safety of everyone on board. This is a major paradox.

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So even if an airline is within the legal framework and the passengers are not at risk, the question still remains, how overstrained Air Traffic Controllers will react in a situation when multiple aircraft start running out of fuel at the same time. In a TV-interview for the Dutch KRO Reporter program, broadcasted in December 2012, an Air Traffic Controller asked the same questions. Pilots facing imminent fuel exhaustion must opt for a precautionary landing otherwise they face an extremely hazardous alternative. Yet, ATC also face an extremely difficult situation when eleven other aircraft, are circling above the same airport. How do you prioritise in these situations if more of those 11 aircraft encounter the same problem?

In the past few years, Europe has witnessed bankruptcies, cost-cutting measures and job losses. This raises the question of the potential impact of the economic crisis and the related cost-cutting measures on passenger safety. While the practice of promoting flying with less extra fuel is not an infringement of the letter of the law, one could ask whether complying with any mandatory minimum standard is sufficient to provide adequate passenger safety. Promoting fuel saving might be helping to maintain profit margins, but it can also narrow the ones on safety.

Of course carrying too much extra fuel does not necessarily provide an extra margin of safety, while it does cost more. So fuel decisions and fuel policy is a balancing act in which the Captain should ultimately determine whether a plane can fly and land safely with a certain amount of fuel. At the end of the day, if you bear the responsibility you must also be given the authority.

The existence of several layers of protection, such as the mandatory minimum for final reserve fuel and the unprecedented safety levels of aviation cannot be used to play down any serious safety incident. Each should be properly investigated because they provide an excellent opportunity to learn lessons which may help better strike the right balance between safety and costs. Allowing pilots and air traffic controllers to exercise their authority and to take decisions on operational issues without being under any undue pressure is a must. Ultimately, flying with more extra fuel costs more money, but it will sometimes be the price of safety.