



AIR ACCIDENT INVESTIGATION

NEW EDITION

DAVID OWEN

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Introduction

Why yet another book on the safety of flying in today's airliners? Flying safety – particularly airline flying safety – is one of those subjects which has produced a seemingly endless supply of books over several decades. The factors which stimulate this apparently unceasing interest are complex, and I can only speak for my own reasons in writing this particular book. Statisticians tell us that flying is one of the safest modes of travel we have, and that by far the riskiest part of any flight is the drive to and from the airport. Nevertheless, we remain all too aware of the terrible consequences of any major breakdown of the aircraft itself, or of the control system designed to manage countless conflicting aircraft movements in close proximity to one another.

Three reasons probably account for this perception that flying is inherently dangerous, compared with say driving down a busy motorway. One is the contrast between the cosy normality within the passenger cabin, with meals and drinks and duty-free bargains and in-flight movies, and what we can see on the other side of a thin transparent window-pane. Out there the atmosphere is too thin to support life, the temperature is way below freezing, the airstream is moving past at hundreds of miles per hour and the hard and unforgiving earth lies miles below.

Secondly, we know that so long as the system works properly, we will reach our destination with nothing worse than a degree of travel sickness, a slight hangover or a frustrating delay. But if something goes wrong seriously enough to bring that aircraft down, or break it up in mid-air, we know the consequences are almost certain to be terrible and final. The newspaper photographs of tangles of wreckage, totally unrecognisable as the remains of a sleek and powerful airliner, are all too familiar. That terrible transformation happens in an instant's impact, and the lives of hundreds of people can be terminated in that same agonising moment.

The third reason arises out of the first two. If we are travelling down a motorway, we can see the first signs of fog, or spot traffic building up and slowing down ahead, and take action accordingly. We know that if a major mechanical fault arose in the vehicle in which we are travelling, we can stop on the hard shoulder, and wait for help. Of course we can still fall prey to the unexpected, and people do still die in motorway pile-ups. But the numbers in any incident are still comfortingly small, and we can draw consolation from the fact that in most cases, potential dangers can usually be seen and avoided. The world is still under our control.

Not so with airline travel. Not only are we unaware of most of the potential dangers which could affect our chances of surviving a particular flight, but when we take our seats and wait for take-off, we are all having to put our absolute trust in a wide variety of people to carry out their duties with total professionalism and expertise. Not merely pilots and air traffic controllers, but also maintenance engineers, baggage handlers, people operating the security checks on passengers and baggage, those who designed and built the aircraft,

those who regulate the airways and air traffic control systems, those who manufacture the millions of spare parts for the aircraft and its engines, and those who check, inspect and fit those parts – the list is potentially endless.

This is the core of the problem. In flying we have to depend on numberless individuals whom we shall never know and, in most cases, never see. The factors which determine whether ours will be one of the vast majority of flights which are relatively uneventful and totally routine in their outcome, or one of the minuscule minority of catastrophes, we will neither understand nor appreciate. We may not know whether flying is growing safer or more dangerous with every passing year, or whether it is as safe as it can be, or should be. We feel starved of information, which would help us understand the real nature of the challenge we undertake when we arrive to check in for our flight.

Which brings us to the reason for this particular book. The fact that flying is such a statistically safe activity is literally no accident. If there is any compensation for the awful human and material costs of an air crash, it lies in the work of one particular group of people, who investigate and analyse the accidents which *do* occur. If the factors involved in causing a particular accident can be analysed, then the system can be changed to provide defences against those factors, and we are all safer as a result. Changes to aircraft design, to maintenance procedures, to air traffic control routines and to pilot training all help to make future accidents less likely. It is this ultimately inspiring and encouraging story which is the subject of this book.

The accidents reviewed in these pages have all been chosen to show how a hitherto unexpected threat became revealed through a careful and infinitely painstaking process of detection, every bit as remarkable and demanding as anything practised by the likes of Sherlock Holmes. Not only identified, but neutralised through improvements intended to ensure the threat can never cause a repetition of the disaster which first brought it to light.

In reading the story, prospective passengers can take comfort from three more points. The first is that any individual would have to spend several entire lifetimes flying to stand the remotest statistical chance of being involved in a serious accident. The second is that the accidents reviewed in this book represent the tiniest of fractions of the thousands of flights completed successfully every day. The third is that, because of the investigations described in these pages, almost all the accidents described are even less likely ever to occur again. They represent the rungs of a ladder, by which airline flying is climbing nearer to the absolute goal of perfect safety.

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FLYING as an airline passenger is, statistically, one of the safest forms of travel. For every accident, from a trivial mishap to a major disaster, there are millions of flights which are safe and uneventful. However, flying can still be a daunting and even frightening experience for some people.

This book looks at the different factors involved in causing aircraft accidents,

ranging from severe weather conditions to pilot error, metal fatigue and inadequate aircraft maintenance. Each major cause is illustrated by means of crucial incidents, some of which puzzled the investigators, initially at least. Of the incidents described in detail, some were highly publicised by the media at the time, including the Paris Concorde crash in 2000. The book explains the painstaking work of reconstructing the precise sequence of events which brought about a disaster and how clues are found that throw light on what actually happened. Also, the present-day state of aviation safety is examined along with the challenges facing the future of a rapidly expanding industry.

DAVID OWEN was an engineer in the aerospace industry before turning to writing for a living. He has more than a dozen books to his credit, on aviation, motorsport, engineering design and social and military history, and has worked extensively in radio and television. Here, he has produced an absorbing book for both aviation enthusiasts and professionals.

Cover photograph: Concorde crash, Paris 2000 (Associated Press)

