



‘In the unlikely event...’

Most of us spend more time in the cabin of an aircraft than at the stick – and we can take responsibility for safety there, too. Pat Malone reports

The line between life and death in an air crash often seems arbitrary, dependent largely on the luck of the draw. Most people, I suspect, feel like helpless bystanders when they climb into an airliner, at the mercy of fortune and wholly in the hands of others. Nothing could be further from the truth; experience of air accidents, and research among those who survived when others did not, shows that passengers can do a great deal to stack the odds in their favour, and

an extraordinary safety course run by British Airways aims to teach people how best to save themselves when the worst comes to the worst.

At Cranebank, on the fringe of Heathrow, BA has a massive hangar containing the best part of a Boeing 747 mock-up, a shortened 737 fuselage and a number of platforms from which are hung escape slides, all for the training of cabin crew who, we sometimes forget, are not there to top off one’s Martini; their primary

purpose is to deal with emergencies – they just fill in time between disasters serving drinks. BA is offering a brief taste of their training to organised groups of passengers, and I went along with fellow members of the Helicopter Club of Great Britain.

The course was designed in response to requests from companies like BP, who spend a lot of money with BA and have a lot of expensive and highly-trained frequent fliers they’re reluctant to lose. An accident is so extremely unlikely that everyone’s virtually certain to be wasting their time... one of our lead trainers, Andy Clubb, said he had trained 3,200 pilots and 14,000 cabin crew, and he’d never even met anyone who’s had to do it for real. The last time the overwing exits on a British Airways aircraft were used in anger was 24 years ago. But if survival is a case of stacking the odds in your favour wherever possible, this is an easy win. It’s certainly a fascinating experience, and provides food for thought for days afterwards.

We had a high-powered team of instructors, including Geoff Fearon, 34 years in BA, 15 as Flight Engineer on 747s, now specialising in ground training on the 737 and Airbus family; Nick Jones, 38 years with BA, 15 as a flight engineer on the 747, now training on the 777 and 747; Andy Clubb, cabin crew with BA for 20 years and a very good communicator; First Officer Aogan Kearney, ten years a BA pilot having started as a cadet from school, now in the right seat of a 747; and Steve Denyer, IT manager, with 25 years of experience in training, who produced most of the training material. In five hours we were bombarded with a huge amount of useful information, and



**Above: air accidents are incredibly rare, but you can’t take safety for granted
Left: never has a safety briefing had a more attentive audience**

'I never thought of that' moments came thick and fast. I've distilled things in a vague chronological order – imagine you're getting on a passenger jet; this is what you do to give yourself the best possible chance of living a long and happy life.

First, as you walk up the aisle you need to count the number of rows to your seat, so you can feel your way back to the door in darkness and thick smoke. Stay close to the exit if you wish, or choose to sit by an over-wing exit. Where best to sit to maximise your chances of survival? We've all heard stories of people in the back surviving when all others perished, but there's no science to it. In the BA Manchester 737 crash in 1985, most of the 55 dead were at the rear. "While it's true that no aircraft ever reversed into a mountain," said Andy Clubb, "there's little to choose in where you sit. First Class might be considered a crumple zone for economy; beyond that, it's moot. The centre of the fuselage is strongest. You've got the wing spars, the engine pylons, the undercarriage supports. We can't advise you." Wherever you sit, figure out where the nearest exits are and how best to get to them, like the flight attendant says.

Stuff your bag overhead, climb in and fasten

Above right: the overwing exit doors weigh 40 lbs and must be thrown out of the aircraft
Right: instant IMC inside the cabin simulator as the evacuation drill begins



your seat belt. Then unfasten it, and fasten it again. Why do the cabin crew show you how to fasten the seatbelt, holding it up and clicking it into place? Surely every idiot knows that! Well, ask yourself how come so many corpses are found in seats, belts still fastened, their fingers torn and broken along with the trouser material at their sides, and indeed, their flesh gouged at the thigh? Because when panic, disorientation and sensory deprivation hit, they dived for the seat belt *in their cars!* 'Muscle memory' takes over. So try your belt buckle a few times, to instil a more appropriate 'muscle memory' in your arm. It might save a good pair of trousers.

Check that the buckle abuts the soft part of your stomach – there's less to damage around there – and double-check that the belt isn't twisted. Properly used, the belt is a good restraint; side-on, it's a blade to chop you in two in the event of an extreme deceleration.

Why no three-point harness? People don't like them, there's nothing to anchor them to, and it would prevent you adopting the brace position, in which you place your heels against the bar under your seat and get your head down onto your knees, with your hands over your head for protection. If you remain upright in a crash, your head will whiplash down and bounce off the floor, your legs will fly forwards and your shins will smash against the seat in front, dislocating your hips and rendering you immobile. Heels against the bar means your lower legs are angled slightly backwards so in a deceleration, there's a down-force that keeps them from lashing forward.

Save a hand

When you put your hands over your head in the brace position, put your stronger one underneath your weaker one. In a crash there's going to be a lot of stuff flying about, and it matters less if your weaker hand gets mashed and broken by debris – you've still got your better one for undoing the seat belt and other tricky work. If you're so tall that the seat



in front prevents you from getting your head right down on your knees, don't worry; there's a lot of padding there, and the seat will restrict movement.

Seats are stressed to 16g, up from 9g on older aircraft. For best results we really ought to be facing the tail, the configuration adopted in many military aircraft. The seat structure would then give maximum protection. But passengers feel uneasy being dragged backwards into the sky, and the movement in their peripheral vision makes them feel queasy.

Watch the safety briefing every time. Your lifejacket under your seat, they say. Is it? Passengers steal thousands of these things – they're checked every day, but if some light-fingered joker has liberated yours from the previous flight, the time not to find out is when you're up to your chin in brine. In the Hudson River ditching, the skill of the pilots saved the day; had it been left to the passengers to save themselves after a more violent impact, few would be alive today. Of the 155 on board, only 25 had watched the safety brief, and after the ditching, only seven of them took their own lifejackets!

Mostly, lifejackets come in handy in overruns or short landings – some 80 percent of the world's major airfields are close to the water. If by misfortune your lifejacket inflates inside the aircraft, either through confusion or because you snag the lanyard, you can deflate it by pushing on the valve in the manual inflation tube – it's just like the valve in a tyre. Once you're outside, four or five big puffs will blow it up again. On many occasions people have died in aircraft because their lifejackets pinned them to the ceiling when the water came in. Tie the straps around your waist in a double bow, so you can untie it quickly if you've inadvertently tied yourself to your seat. It happens.

Decompression is the most common incident a passenger is likely to experience – as Andy Clubb said, "either from Bruce Willis running amok with a machine gun or some other factor." He outlined what the passenger would experience in an explosive decompression – ear and abdominal pain among other things – and Aogan Kearney explained how the pilots would get down into breathable air at anything up to 10,000 fpm.



Above: an A380 has been cleared of 880 people in 74 seconds in test conditions
Left: on the escape slides, it's important to hit the ground running

At cruise altitudes you'd have about 15 seconds of useful consciousness, so it's important that you get your oxygen mask on immediately. The natural passenger reaction when the 'rubber jungle' comes down is to whip out mobile phones and take a picture, it seems. The team explained how the normal pressurisation system works – bleed air off the bypass fan – how oxygen is made or stored, and how much there is (not much).

The way out

Now, those emergency exits. In order for an aircraft to be certificated, it must be demonstrated that it can be evacuated in 90 seconds with half the exits unusable. The A380 has been emptied of 880 people in just 74 seconds, but not in a real-world evacuation scenario. Having demonstrated that a Boeing 737 could be evacuated in the requisite time in test circumstances, organisers of a second test offered \$20 to the first 20 people off the plane. Not a soul escaped the aircraft – they all got jammed in the doors trying desperately to win the money. That's more like what it would be like in an accident. It is clear that

there is no room for gentlemanly conduct. Don't stand on ceremony, stand on somebody's head. You want to be first in the aisle, and first at the exit, so you need to be first to undo your seatbelt – see 'muscle memory' above. Not only will you save yourself, but people who are panicking will see someone who looks like he knows what he is doing, and will follow.

Check the exit before flight to see how it works. There will be a full explanation on the laminated safety card, which you'll also study closely. There is no real standardisation in how these exits work, although design is moving in that direction. If you're sitting next to an overwing exit, figure out which hand you'll use to do what; you'll need not only to pull the door out, but you'll have to throw it out through the hole. You can't open it when the aircraft is pressurised – at normal cruise of about 8 psi there's about two tonnes of pressure on it. The door weighs 40 lbs, and you'll probably have to lean back as you pull it in or it'll clout you on the head. Virtually the last thing the flight crew do when they get the final wind-check from the tower before take-off is to figure out at which angle they'd stop the aircraft on the runway in the event of an engine fire to ensure that the wind carried the flames away from the fuselage – one of the lessons of Manchester. The two things the fellow next to the overwing exit must remember to do before opening the door are first, to release his seatbelt, and second, to check outside for fire. No point jumping out of the frying pan...

In terms of getting out, you're much better off at the main doors, which are several times the size, easier to operate, and will probably have been opened by trained people. In tests, eight people get out of a main door for every one who gets out over the wing. The flaps will have been lowered to 40 degrees to act as a slide off the wing. Engineer Nick Jones took us through the door-opening procedure, which is very simple unless you're in a panic. The

handle rotates through 180 degrees – but then one edge of door on the simulator swings slightly in towards the passengers before the whole shooting match moves out of the way, so if you just push on it, you'll be disappointed.

The lights are dimmed on take-off and landing to help eyes adjust to the semi-darkness you'd experience in a power failure; going directly from bright light to darkness would reduce your ability to respond. In an emergency, chances are that smoke will obscure the exit signs, and anything you can do to improve your awareness of where the exits are will count in your favour. Understand this – your disorientation will be so complete, your brain function so slow, that simple tasks will become almost impossible. Who knows what pitch or roll angle the floor will be at? Decide now that if it becomes necessary, you're going to follow the white floor-level lighting along the aisle towards an exit. On most aircraft, there's a red light on the floor at the exit, added as a result of the experiences of a chap who survived the Manchester crash – fully six minutes after the accident he was crawling along the floor, and he noticed a tiny glimmer of light off to the side... he rolled to it, and fell out of an exit. He was the last man out.

So, into the sim. The aircraft started to vibrate as though taxiing. The recorded voice of the captain made the usual noises, and there was a feeling of acceleration as the back of the cabin dropped away... but as we began to 'climb' smoke began to appear from beneath one of the seats at the front. All of a sudden things got very tense, the tone of the announcements changed to one of harsh compulsion. "This is the Captain. This is an emergency. Brace! Brace!"

The cabin crew, strapped in behind us, took up the chorus: "Brace, brace! Brace, brace!" And they kept shouting it, at the top of their voices. The cabin began to fill with smoke – non-lethal, and smelling of vanilla. At some point, alerted by an evacuation alarm I don't remember hearing, the instruction changed. "Unfasten your seatbelt! Come this way!" The rush for the exits was far too polite – in the real world, just forget everything else and go! At Manchester, a woman turned back from the door to get her handbag, working frantically against the flow of passengers. She died in the fire. The continuous shouting of "Brace, brace!" was obvious in retrospect – if they stopped, we'd all sit up and look around to see why. And they didn't just tell us to evacuate; we got piecemeal instruction we could understand, like "unfasten your seat belt" and "come this way".

On to the escape slides. These were not added to aircraft until 1971, and weren't designed integrally to the door until much later. We began by sitting at the top of the slide and pushing gently off and graduated to jumping on. No drama – but it's important to sit forward, because you want to hit the ground running lest a cascade of falling passengers crush you. In a real emergency you'd have someone else's boot in your face on the way down, and you'd land on hard tarmac rather than rubber matting.

Unlikely though an air accident is, I feel much more confident getting into an airliner now. One always feels trepidatious being strapped down in a tube with somebody else at the stick, but this course makes you realise you're far more than just a passive victim; you have a significant degree of control over your destiny. I'm reluctant to say, "Bring it on!" but I can't remember an afternoon as well spent. ■