

## REFLECTIONS ON THE DECISION TO DITCH A LARGE TRANSPORT AIRCRAFT

An edited version of the RAF Leadership Centre Interview with Flt Lt Art Stacey in 2004

Flt Lt Stacey was the captain of Nimrod aircraft XW666 which on the 16<sup>th</sup> May 1995 suffered a catastrophic engine fire in number 4 engine. As a result of this fire, Flt Lt Stacey made the impossibly hard decision to ditch in the North Sea just a few miles from RAF Lossiemouth rather than push on to land on the runway. It has subsequently been calculated that the aircraft would have lost its wing entirely in between 30 – 90 seconds after the ditching; in this case they would not have made it to the runway. All crew were rescued and survived the accident.

*16<sup>th</sup> May 1995, it was an air test, the aircraft was XW666 and it had been off the line for 6 months and we were doing the air test out of Kinloss with a minimum crew of 7. We took off climbed up 15000 ft and settled ourselves down to do the air test when we had an engine fire in no 4 engine. We'd had an indication but we had no idea that it would be that dramatic and, certainly in the past, indications had proved to be false alarms. Over the years 2 wires had been rubbing on the electrical loom for number 4 engine and they'd short circuited. So when the engineer put power down to what he thought was the engine anti-icing it was actually going to the starter system for that engine; it opened an air valve which allowed air from a running engine onto the starter motor. So air rushed in and turned the turbine but, because it hasn't got any load upon it, in free spooling it got up to 100,000 rpm in 2 seconds or so. It produced an awful lot of heat and it also produced an awful lot of stress. All the stress was centred on a little nut about the size of an old half crown which then shattered. This spinning turbine disc, now going round at 100,000 rpm, whistled out of the starter motor, hit the engine and exploded. A turbine blade went into a fuel tank causing an explosion but, fortunately for us, didn't blow the wing off. Fuel then poured onto the hot starter motor (or what's left of it) and we get a fire which we couldn't put it out.*

*Unbeknown to us, the explosion had blown the underside engine cowlings off the aircraft. The idea of fire extinguisher with a jet engine is that you don't put it into the engine, you surround the engine so you smother it - you deprive it of oxygen. But to do that of course you've got to assume it's surrounded by a shell. If half of that shell has already gone you can't put the fire out and that was our problem.*

*When the initial indications started, to me it was an inconvenience more than an emergency. I'd flown Nimrods for 20 odd years and we'd never had a real engine fire in a Nimrod, so why should this be anything different? This to me was a false alarm and, in fact, when I returned to flying following the ditching, I had an identical situation a month later that was a false alarm – we'd had spurious warnings but we'd never had a real fire. The fact that it had just come out of a major service was an inconvenience because we'd have to dump fuel, land back, get the fault rectified, then refuel and turn the aircraft round again and that would take 4 hours and we were flying back that night booked with British Airways from Inverness to take us home.*

*So the magnitude of it didn't really dawn until probably some seconds after the initial warning when I heard an explosion; obviously that was the point at which the fuel tank exploded. Also the aircraft shook for about half a second. This was beyond my experience and indicated to me that this wasn't an inconvenience, this was for real.*

*So its for real, I've got an engine fire. Rolls Royce said that the Rolls Royce Spey Engine would not catch fire and, if it did, one fire extinguisher would put it out and they'd shown us the trials that they'd done. The co-pilot and the engineer started putting fire extinguishant in*

*but they didn't put the fire out and straight away you start thinking, "not only is this real, but it's beyond the norm. I had been assured this would not happen, it's not going out – why?" I was thinking, "well what's causing this? It's got to be fuel fed, to not be going out." You don't think about the obvious things like the engine cowlings not being there anymore because they've been blown off - you can't see under the wing. It took some time to come to terms with the magnitude of the situation.*

*The engine fire was now burning the wing off so I turned the aircraft round. We were about 45 miles from Kinloss and started descending. When I turned round, Lossiemouth was closer to me by about 10 miles from that direction, so I told them we were diverting there and that's what I aimed to do. One guy down the back did a marvellous job of keeping me informed and reporting the extent of the fire and he was saying that panels were coming off the wing (he could see the engine through the flames) and his final report to me was that wing was melting – its not a word you normally associate with flying. And all this led me to believe that my aircraft was either going to blow up in the air - the fuel tank would finally go, or the fire would do so much damage to the wing that it would fall off, and that's why I decided to put the aircraft on the water, go for ditching instead of going for Lossiemouth.*

*It was a difficult decision; had we been 1000 miles out to sea, there would have been no alternative because there's nowhere else to land but when you're so close to a runway that you know you can make – it was a different matter. People have asked me what was it that made me go for that option perhaps it's my 20 years plus of flying; from a practical point of view, I thought that at any minute we were going to die. I didn't even think we had 30 seconds left and that every second that went by was a bonus.*

*As I said earlier, I thought my aircraft was going to blow up or I was going to lose control and I felt that we weren't going to make the runway; it was as simple as that. With all the reports coming from the back about the damage I thought "there's only so much damage an aircraft wing can sustain" and when you consider the whole episode from the start of the fire to touching the water took only 6 minutes, but 5 minutes when you're on fire – that's a long time, and it just seemed to go on and on and the fire didn't seem to be getting any better – it was getting worse in fact. We couldn't put this damn fire out against all the perceived experience and advice and eventually we were either going to lose the wing or the aircraft was just going to explode.*

*Its funny the feeling when you approach things like that - the thought of the aircraft exploding held no fears. I thought, "I'll probably hear the bang and then I won't feel anything else," so that didn't hold any fears. What did bother me was the thought that if the wing fell off, then it would take a certain time for the aircraft to come down and hit the water and we would be conscious for that. Dying, no I had no doubts that we were going to make it, if I'd believed what they'd said about the chances of survival on the flight deck [which were not good] I'd have gone for the runway, but I thought, particularly with the weather conditions as they were, "we've got a bloody good chance of surviving this."*

*Afterwards I considered the decision I had made over and over again. As aircrew we are trained to analyse our own actions and we do tend to be hyper self-critical. My reaction was, this is either something we've done (because it was beyond all norms) that we shouldn't have or, it was something we hadn't done which we should have. Why hadn't the fire gone out? It should have. We have always been told it would go out with one fire extinguisher; we poured all 4 fire extinguishers into it and it still burnt – I was thinking it's got to be something that we've done wrong. But, even before the Board of Inquiry came out, a very experienced friend of mine came to visit me in hospital and I respect his judgement, his airmanship, his experience, probably as much as I respect anyone's and he said "You old bugger, it's a good*

*job it was you and not some younger person who might have gone for the runway". It was the first step to feeling that I had made the right decision.*