It all went quiet

By Harry Nelson

Many years ago, during a routine military training flight during my RAF service, it all went quiet for me and my crew.

We had been chosen to take part in a bombing competition against the might of the USAF. Our aircraft was the Avro Vulcan Mk 2 powered, at least at the start and end of the story, by four Rolls Royce Olympus 301 engines. The exercise in which we were engaged was called a "timing and tracking run". It involved the pseudo-bombing from high altitude of two targets each 20 nm apart. The run was measured by a military radar ground unit which looked after the "bomb scores". The scoring system awarded 5 points for each nautical mile between the two targets when within 100 metres of the bombing track line, 4 points if within 200 metres and so on until outside 500 metres one scored a zero. Clearly, the maximum score possible was 100 points per run, (20 x 5) but, and it was a big but, the aircraft also had to be on time to a very strict timing limit.

This exercise created a pretty high workload situation for the crew and as we worked up for the competition, we developed a classic division of duties which involved myself looking after the tracking aspects whilst working closely with the radar bombing navigator and my co-pilot looking after the speed control whilst taking the timing from the plotter navigator. All was proceeding well until I heard a loud call from the plotter announcing that we were "20 seconds too early". My co-pilot who was already quite tense and gripping the throttles, immediately throttled back and as he did so he unintentionally closed the HP (high pressure) fuel cocks on all four engines. Yes, it went very quiet!

I should say at this juncture that the HP cocks were operated as the outer sleeve of the throttles and, with time, the spring loading which was designed to protect against their unintended operation had became weak and therefore overcame the design safety criteria.

The fifth crew member that day was the Air Electronics Officer (AEO). He was a laconic individual and certainly was not one to get upset easily, but on this occasion his voice was the first to speak. He normally called me 'Skip" or some other less polite name but on this occasion I heard loud and clear, "Harry we have a problem". He was looking at a bank of warning lights on his generator panel and he was right. We did indeed have a problem.

I took control of the aircraft and remember well my first thoughts. I must keep the speed up by descending to keep the Ram Air Turbine (RAT) working. It had dropped automatically as per design. The RAT would provide us with the necessary power to control the aircraft whilst we attempted relights. My second thought was, "which way do I turn for the nearest airfield? Without being aware then of the now famous mantra, I was indeed flying, navigating and later would also be communicating. In fact, by chance our nearest airfield was ahead of us and well within gliding range of our aircraft. Luckily, it was not needed as I also managed to get some fingers stuck into the ends of the throttles whilst opening them up and hit three of the four quick relight buttons. My co-pilot hit the final one and together, we were successful in regaining thee out of the four engines – sufficient to continue.

Harry Nelson has had a flying career spanning some 46 years which has focussed on flying training and test flying as the two main activities. A graduate of the Central Flying School and the Empire Test Pilots School he has operated in all parts of the world and worked at 5 flight test centres throughout Europe ending up in Airbus where he now holds the post of Executive Operational Advisor to Product Safety. He has over 10000 flight hours on over 76 types of aircraft.

Our air traffic controller, being a sharp guy, came on the ether and demanded to know why we were descending, at which point I had a difficult decision to make. Dear reader, please remember that this was the "V Force" and they did not take lightly such mistakes and errors. Therefore, I am quite proud of my instinctive response which was that we had "suffered a pressurisation problem" which indeed we had. You do not have much pressurisation when the engines are not working, so whilst telling a hopefully forgivable white lie, I tried to save us all the formal embarrassment of what would surely follow plus all the beers we would have to buy in the bar later when the other crews discovered our story.

So what is this story all about and why do I tell you it now? This whole tale came to mind not long ago when I had the chance to talk to Captain Sullenburger following his amazing landing on the Hudson, which I was able to discuss with him. One of the most interesting questions is what, if any, real assistance ATC can provide under such circumstances and he shared with me his immediate need for directional assistance to the nearest airfield. The first turn is critical if you are at low altitude. It can make the difference of making it or not. In his case he was indeed too low and chose a well known alternative. In my case, I was higher and was able to regain the power I needed to land normally. Had my engines not re-lit immediately, I know that the key information I would have needed was – what is my nearest suitable airfield, what are the weather conditions there and what is their contact frequency.

In the Hudson story I was incredibly impressed by the controller's reaction and the determination to assist as much as possible even faced with an apparent change in plan. In the end it reached a point where Captain Sullenburger was rightly so focused on flying the last part of the approach to the water that he was unable to respond to the final offers of assistance.

If ever you are faced with an aircraft which has lost all useful engine power, it is necessary for the controller to imagine the workload in the flight deck under such circumstances and to mentally put himself or herself there alongside the crew. Initially, following such a failure, there is quite a lot to do to stabilise the emergency. In priority order:

- **Establish a glide descent at the right speed. Normally, crews will know the speed to fly but will probably not have an instinctive idea of the glide rate which can vary quite a lot depending on the nature of the engine failure(s) and the configuration of the aircraft.**
- **Head in the right direction. This is where a good controller can surely assist and it helps if that controller also knows the weather situation at any potential suitable airfield.**
- **Get on with the drills and procedures that may improve the situation. Here again the controller can assist by being aware and rather than trying to "over control", leave the crew to get on with their work of systems recovery.**

Of course the biggest variable is always the likely time available and this is dictated normally by the height at which all this starts. In my case we had lots, although at the time it did not seem that way! Certainly, Captain Sullenburger had much less with his 3mins and 31 seconds of flight ahead of him, which only goes to show what a remarkable performance it was, not just from the crew perspective but also from the controlling team who assisted him.

There were two post scripts to my own story. The first happened many years later when I was having a beer in some hotel bar and was joined by another pilot. It turned out he too had flown Vulcans and after a couple more beers he decided he wished to make a "confession to me". Yes, you have guessed it, during a routine landing his co-pilot had inadvertently shut down all engines, in this case as he flared to land, just as my own co-pilot had done. With some considerable shame and much more wisdom than I had then I confess that neither of us had declared our respective experiences with the result that this design weakness continued and probably there are other guys out there somewhere who can tell similar stories. The need for a non-punitive culture could not be better demonstrated.

The second post script was that as we dropped from 40000ft to about 25000 in our "de-pressurised" emergency we "fell" straight ahead through the timing and tracking box, but there was no limit on the height accuracy, so we ended up achieving one of the best bomb scores we had all season for that exercise. Some days you get very lucky!!