HOW TO DO WELL IN THE SIM
B757/767

Do you like the sim? Do you hate it? Some people can't wait to strap themselves into the box to do battle (weird) and others are filled with dread (not so weird). Most pilots probably feel conflicting emotions. Worry that they might not perform as well as they should in front of their peers or that the pressure might force them into errors. Satisfaction when they complete the exercises successfully. A sense of purification when it's all over, similar to the glow of self-righteous relief when you come out of the dentist.

What is the purpose of the sim? To satisfy the megalomanic sadism of Training Captains? Believable, but not true (usually). Some of the work is box-ticking, completing mandatory skill tests set by the regulatory authorities. Relevance to real-life scenarios might be tenuous but clearly there must be tests to compare actual pilot performance with laid-down standards. As an example, looking at basic aircraft control after engine failure, the most demanding scenario is considered to be a complete loss of thrust in one engine just after V1, and so we have to demonstrate competence in dealing with this problem every time we visit the sim.

In the history of aviation, how many engines have failed just after V1? Many pilots will never experience an engine failure at all, never mind during take-off. But you never know – it could happen the next time you fly, or the time after that or . . . Just consider this scenario – it's 11 o'clock at night. The weather is crap – gusty wind, rain, low cloud, turbulence. You've just taken off from runway 05L at Manchester and are halfway round the right turn towards LISTO and halfway through flap retraction. What's going on? The plane wants to bank more to the right. Is it just the turbulence? It's not climbing! Beep . . . beep . . . beep . . . beep. EICAS caution! Shit! Right gen off! *'Bank angle! Bank angle!'* What ??!! HELP!! . . .

You can imagine the confusion, can't you? Hopefully, after not too long, this crew will figure out that they've lost the right engine. Their training and experience will kick in and they will start to sort things out. Some things will have to be dealt with straight away. Get the aircraft under control. Delay further flap retraction? What speed to fly? What heading? Continue with the SID? What about terrain? What about the emergency turn we briefed on which turned in the opposite direction? Have we diagnosed the problem correctly? Are there recall items we have to do?

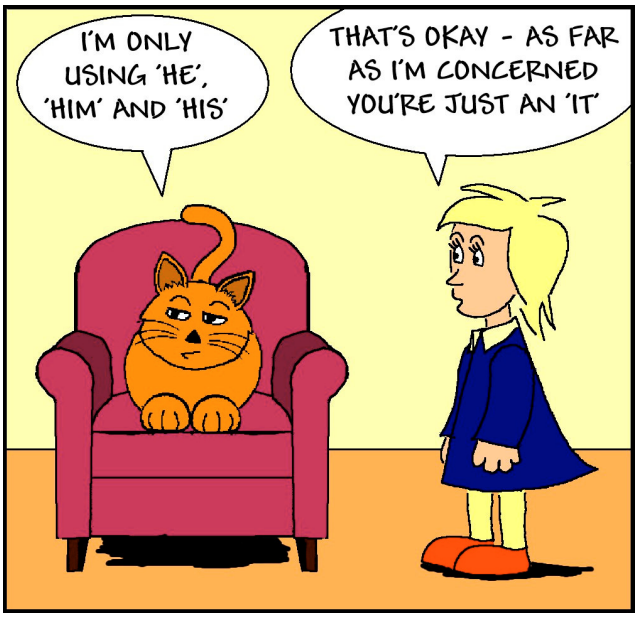
Your engine failure (or malfunction) could happen during the climb, or in the cruise, or during descent or on the approach. Could you deal with it? Suppose your colleague was away from the flight deck. You would have to sort things out without another brain monitoring what you're doing. If you're the captain and it's you who have gone to drain your sump, have you briefed your copilot?

Later on, we'll run through some situations as you might encounter them in the sim, but we'll also tack on 'Real Life Variations' in the same vein as the engine failure scenarios we mentioned above.

COMMANDERS AND COMMANDERS-IN-WAITING

On a normal line flight, there is an evens chance that the copilot is the Pilot Flying. If there are no complications the captain will probably let his colleague run the show the way the copilot wants to. If things are not going well because of technical problems or for other reasons the captain will probably want to take over the overall management of the flight – after all, he is the Commander and is legally responsible for the aircraft's safety. That is not to say that the captain will necessarily take on the role of PF. It might be better to leave the copilot in this role so that the captain is freed of the task of physically controlling the aircraft and can devote his attention to monitoring, analysis and decision-making. It's CRM of course, making use of a resource – the copilot – in such a way as to reduce pressure on the captain.

[Note to our lady pilots: please excuse the use of 'he', 'him' and 'his' rather than 'he or she', 'him or her' &c. It's not misogyny, rather an attempt to make the text more easily readable.]



In the sim, the Training Captain will probably brief the copilot under check that he can retain the role of Commander when he is carrying out his non-normal exercises. Of course, the LHS pilot will be available as a resource. The copilot 'Commander' can direct the LHS pilot to act either as PF or PNF, according to the demands of the situation. Obviously, these exercises are invaluable to copilots for developing and practising captaincy skills. Make the most of them – it will be of great benefit when the Command Course comes up.

In the discussion that follows, we will treat all pilots as Commanders or potential Commanders. Even the most junior and inexperienced copilots must acquire the skills we were talking about above, and the sooner you start practising, the more quickly you will progress.

ARMCHAIR AVIATION

There is a difficulty that pilots face that is probably unique to aviation – the requirement to perform exercises correctly at the first attempt without having practised them for several months. If you want to play the guitar like Eric Clapton or the violin like Vanessa Mae or curl free kicks like David Beckham

you must practise for several hours every day, as these individuals do. If you did three single-engined NDBs every day you would do them brilliantly every time. But no, having not had a go for half a year, the TC expects you to do it properly without any practice at all! There are techniques you can use to help you with this particular exercise, and we'll look at these later on.

But there are things you can practise. You can sit in an armchair at home and give yourself a rapid depressurisation, or an engine fire passing 10,000 feet on climbout. Or electrical smoke over the middle of the Atlantic. The possibilities are literally infinite – use your imagination! You can do the same thing driving into work – the concentration required to drive your car safely while you're giving yourself a problem to solve is a good way of simulating extra mental pressure (although you may get some funny looks from other drivers if they see you donning your oxygen mask and checking your overhead panel – no matter, let them smirk!)

PRIORITIES

An instinctive pilot reaction, reinforced by training, is to make an assessment of time-criticality soon after a problem is recognised. If there is more than one task to deal with a sequence of priorities must be established – items that must be dealt with immediately, those that can be deferred until later and, if time is short, those which can be ignored. If plenty of time is available the situation can be resolved at a leisurely pace – checklists can be read slowly and methodically and both pilots can monitor what the other is doing. In a way this is another element of CRM – time is a resource which should be used as required.

Time might be in short supply because of various factors. Here's another Sod's Law scenario: you're nearing destination with a comfortable reserve of fuel but before you can start your approach the airport closes for some reason or other. So off you go to your diversion, but now you're in the queue of other flights who have taken the same action. After holding for a while, watching your fuel disappear, you are at last cleared to make an approach. Sighs of relief all round! 'Flap 1, please'. Beep . . . beep . . . beep . . . beep. What's up? TE ASYMMETRY!! Now you've got to deal with this problem before your fuel gets dangerously low. You've also got to keep calm because you know that people make mistakes when they are under pressure and your flight deck colleague will be feeling the tension too.

Time might be very short. What about a fire that can't be extinguished? Or smoke that's getting worse. God forbid, suppose one of these horrors happened to you over the ocean? What would you do? If you have previously encountered them in your armchair aviating maybe you'll have some idea of how to save the day.

Time available might be affected by other factors. The QRH tells you to land at the nearest 'suitable' airport if you're down to one engine or one generator or one hydraulic system. In other words, don't prolong flight unnecessarily in these circumstances. It doesn't define 'suitable' because it is impossible to

cater for every set of circumstances – weather, airport aids and so on. The Commander must make the decision, probably after discussion with his copilot.

Whoever invented the mantra 'Aviate, Navigate, Communicate' deserves a Nobel prize – it encapsulates brilliantly the requirement for prioritisation. Looking back at our V1 cut scenario – there is absolutely no point whatsover in sending 'Mayday' before the aircraft is under control and following the correct flight path. ATC can help you with neither of these.

WOMEN'S ROYAL AIR FORCE

This august body (of august bodies) does not exist any more. Nowadays the ladies have been combined with the men (so to speak). But the acronym derived from their initial letters is useful for deciding where you're going to land having completed the relevant non-normal procedures. It could be that you can continue to your intended destination. Otherwise, when choosing an airport, consider:

W **weather** – is it suitable for your non-normal aircraft status?

R **runway** – is it long enough? Wide enough? Does it have good approach aids and lighting? Is there a crosswind? Is it wet or slippery?

A **autobrakes** – although this item is covered by the approach checklist, it is a good idea make a considered judgement on what setting to use beforehand

F **fuel** – have you got enough for what you intend to do? Have you got too much? And if so should you dump what you can and or burn off fuel to get the aircraft weight down?

Try to remember to do the Diversion checklist and the Overweight Landing checklist if applicable.

FINAL REVIEW

Some non-normal checklists include subsequent operational restrictions or tell you which components are inoperative. You may have been running several checklists which include these items. By the time you're on final you might have forgotten some of this stuff so find a way to remind yourself. Some pilots leave the QRH on the glareshield, open at the relevant checklist, others write the info down on a piece of paper.

On final approach, review:

- inoperative components that will affect landing and rollout

- any changes to standard go-around procedure (for example, whether gear and or flap retraction is affected)

- manoeuvring on the ground – can you vacate the runway unassisted?

On the last point, can you steer off the runway without nosewheel steering? The answer could be 'yes' if you can arrange to complete the landing roll at a high-speed exit, using careful differential braking. At a busy airport you will earn the undying gratitude of the airport management, not to mention your fellow pilots waiting to make an approach.

THE VSI – YOUR NEGLECTED FRIEND

The humble VSI is invaluable when you're trying to fly a defined vertical flight path, especially when there is no other direct guidance (such as an ILS glideslope). If you know what it should be reading you can use this information to fine-tune pitch attitude adjustment more accurately than chasing the flight director. Some examples:

- **climb out after V1 cut** – have you anticipated what sort of rate of climb you can expect for your current aircraft mass? Typically, you can expect somewhere between 700 to 1000 fpm. Besides aircraft mass, the performance will depend on whether you increased the good engine to full power. Armed with this knowledge, keep the VSI in your scan during climb-out. If you see a significantly lower figure, you'll be eroding your climb gradient. If you see a higher figure, you'll very soon be losing airspeed. If you drop below V2 it will be very difficult to regain it without losing climb performance.

- **flap retraction after V1 cut** – of course, you'll call for 'vertical speed, plus 200'. Now finesse your attitude so that you get this reading on the VSI – it's a more precise technique than crudely chasing the flight director.

- **visual segment of non-precision approach** – when you've dumped the autopilot and flight director, the VSI is invaluable in maintaining the correct vertical profile, particularly when you're manoeuvring to line up with the centre-line. Sometimes inadvertent pitch inputs are made. To prevent this happening, either watch the VSI like a hawk yourself, or if you're too busy, have your colleague call out continuous readings – it's almost as good as an electronic glideslope. If you've ended up too high or too low, set yourself new VSI 'targets' to regain the correct path.

THE V1 CUT

The stabilizer trim you set before take-off is intended to result in a stick force of close to zero when the rotation is complete. If you lose an engine you will also lose the pitch-up effect of that engine. In other words the aircraft will now feel nose-heavy. You will notice that more of a pull is required to initiate rotation. But once rotation has started, if you keep pulling hard, there is a danger that the rotation rate will be too high. Remember that you're aiming for

2 to 2½ degrees per second, slightly less than normal (2½ to 3). A too rapid rotation might hit the tail on the ground or might leave your IAS short of V2 when rotation is complete. In summary, stick forces will feel quite different compared with a normal take-off.

Emergency turn 'as soon as practicable'? What does this mean? At the very least the aircraft must be under control and must be climbing before you start the turn.

It is strongly recommended to increase power on the good engine, up to full power if required, to improve climb performance, but not if you have directional control problems or the good engine is showing signs of distress (such as very high EGT).

If a fire drill is required, remember to check that the bottle(s) discharge when you rotate the fire warning switch. You should get an EICAS message plus a discrete light near the switches.

If you reach MSA before completing the emergency turn you have the option of calling for ALT HOLD to get quicker acceleration if desired. In the sim, it is frequently forgotten to reset the bank limiter after clean-up. One way of remembering is to tack it onto the end of the procedure. For example, PF can call for (or select if in autoflight): 'flight level change . . . max continuous . . . bank limit auto.'

WOH! WE'RE GOING TO BARBADOS . . . WOH! TO THE SUNNY CARIBBEAN SEA . . . NOT!

You've had your engine failure taking off from Manch and you are now pointing at Wallasey VOR. With 50-odd tonnes of fuel sloshing around in the tanks the aircraft mass is around 180 tonnes, which means you're still below MSA when you call for 'vertical speed, plus 200'. Now your flight deck colleague points out you've had your good engine at take-off thrust for 5 minutes. What to do? If you ease it back, will you be able to accelerate for the clean up without losing height? But if you don't throttle it back, will it start to melt, even though the manual says it's certified for 10 minutes at rated thrust after engine failure? Maybe you ran through this scenario when you drove in to work and decided how you would play it. Just as importantly, you discussed it your flight deck colleague as part of the take-off briefing.

Okay, at last you're clean (you even remembered to accelerate to +90 and reset the bank limiter) and approaching the Wallasey VOR and at last you've made MSA. The QRH stuff is done, the decision has been made to return to Manch and while holding at WAL you've advised ATC, the cabin crew, the passengers, Maintrol, Servisair, your mother . . .

Now you've got another dilemma to face (or should that be trilemma?):

- do you land immediately at your current mass?
- do you dump the centre tank fuel and then land?

- do you dump the centre fuel and then burn off some wing tank fuel and then land?

When crews meet this scenario in the sim, some of them choose the first option, on the basis of *'we should not prolong flight on only one engine and we know that the aircraft is certified to land at its max structural take-off mass in an emergency'.* Impeccable logic, isn't it?

Other crews take the second option. *'We've got 15 tonnes of fuel in the centre and that would take just over 10 minutes to dump. It's acceptable to fly on one engine a little longer to get the mass down so we can use a lower Vref'.* Again, faultless logic.

Some crews go for the third choice, along the lines of *'this is an ETOPS aeroplane, certified for up to 3 hours of single-engined flight, so we'll get the mass down as low as we can'.* Nothing wrong with this reasoning, is there?

Who is to say which is the 'correct' solution? For what it's worth, the majority of crews take the middle course of action, but whichever option is chosen, if the outcome is a successful landing with an undamaged aircraft and uninjured crew and passengers you can perhaps say that all these solutions are acceptable.

HEY, WHAT ABOUT US?

A while back we abandoned a crew who were struggling with an engine failure during climb-out. We left them halfway round the turn towards LISTO in the middle of flap retraction. In general, if there is any doubt about terrain, the best course of action is to leave your flaps where they are, hit FL CH and think about firewalling the good engine. Nav-wise, follow the SID, at least until you've got a better plan sorted out. FL CH mode will trap your speed at its current value and give you a better gradient than if you try to clean up. Most SIDs, even at terrain-critical airports, are based on shallowish climb gradients to cater for the case of engine failure during departure. Once terrain clearance is assured you can do V/S + 200 &c.

THE SINGLE-ENGINED NON-PRECISION APPROACH

If you are down to one engine in real life you will probably try to find somewhere to land with either good weather or an ILS or both (remember WRAF?) In the sim we cover the worst case scenario by asking crews to fly a single-engined non-precision approach in marginal weather.

As far as tracking is concerned, the secret is to make sure the control wheel is level when you're not applying roll inputs for turning. You can do it with your feet or with the rudder trim or a combination of both. The autopilot has limited aileron authority – if the wheel is displaced you might not be able to turn at all. Remember that whatever you have displayed on your HSIs, current achieved track is always displayed in some form or other.

If you're doing an NDB with the beacon remote from the field then on final you'll be tracking away from it - the ADF needle will be pointing backwards. Under the mental workload it'll be easy to turn the wrong way if the back bearing isn't spot on. Here's a dodge to help you - once you've passed the beacon, set up a heading which gives you the required track inbound. In other words you can ignore the beacon for a while. By the laws of physics, if you departed the beacon on the correct track then your back bearing will be very close to what's required. Later on when you've got a moment or two you can sneak a look at the ADF indications to check all is well.

When you finally get visual contact, don't relax! Your work is not over! Consider leaving the autopilot engaged while you assimilate the visual picture and perhaps even while you manoeuvre onto the centreline, so as to avoid inadvertant pitch inputs.

For the vertical profile, the VSI . . . yeah, yeah, we've done that already.

THE SINGLE-ENGINED GO-AROUND

This should be considered during your approach briefing. In the event of a go-around, will you carry out the promulgated procedure or will you modify it? For example, if terrain is not significant and the procedure is complicated, you could ask ATC if you can climb out straight ahead to make life easy for yourself. If terrain is significant, how will you fly the go-around? Is it safe to clean up straight ahead? If not, what sort of escape manoeuvre will you perform? Will you need to restrict your bank angle? (Real life variation: it is unlikely that you would make a single-engined approach into an airport with critical terrain unless no other options were available.)

ONE-AND-A-BIT ENGINES

Some engine problems, such as overheat, might result in you running an engine at reduced or idle thrust. It is a good idea to look at the Engine Failure and Shutdown checklist and pick out the items that are relevant, such as flap override switch and fuel balancing.

Note that certain dual EEC faults on FADEC engines will signal the FCUs to default to idle thrust regardless of thrust lever setting.

REVERSER UNLOCKED

If a reverser deploys with take-off or climb thrust set the aircraft (if it doesn't fall apart) will be on its back very quickly. If there is any doubt about controllability then throttle the faulty engine fully back or cut its fuel immediately, preferably with your colleague monitoring that you get the correct thrust lever or fuel control switch. If necessary, other factors allowing, reduce thrust on the good engine.

The 767 QRH requires you to configure with LE slats retracted to prevent damage from the disrupted airflow. Bear in mind that the PLIs and stick

shaker will be programmed accordingly, which means you may get nuisance stick shaker warnings. Carry extra speed to prevent this, until you're on final.

DEAD-STICK LANDING

The dual engine failure check list does not cover the case of inability to relight either engine. Have you given any thought to how you'd fly a dead-stick landing? A few years ago one Canadian 767 crew did it – successfully – after running out of fuel (their totaliser was inop and insufficient fuel had been loaded).

If the APU is available at least you'll have normal hydraulics and full instrumentation. One suggestion is to spiral down over a suitable airport and arrange to be abeam the runway threshold downwind at about 5000 feet with gear down and flap 20. Fly a normal-shaped circuit and on final approach consider extending flap 30 only if you're much too high. Carry extra speed for the flare from the high rate of descent.

If you haven't got the APU, for example because there's no fuel to start it, your only hydraulics will be the RAT and residual engine pump pressure if they are windmilling. There may not be enough hydraulic pressure to wind up the HMG, in which case you'll be flying on the standby instruments. Although you can get the gear down on the alternate system you probably won't be able to move the flaps or slats. In this case, arrange to be abeam the threshold at about 3000 feet at Vref30 + 80 and again fly a normal-shaped circuit.

If you're trying to do a straight-in glide, best range speed approximates to ECON descent speed or 290 kt – your descent gradient will be approx 3^{o} (5%).

FIRE AND SMOKE

Other than donning oxygen masks and smoke goggles, there are, surprisingly, no recall items for fire or smoke in the flight deck or cabin. In real life, if it is the flight deck that is affected you will be hampered by fear as well as the physical impediments of restricted vision and communication difficulties. Here we have possibly the worst case of time-criticality. Remember that in the past aircraft have come to grief when these situations have escalated out of control, so if there are any actions you can do to ease the situation while your colleague is fumbling for the QRH, you might be able to prevent this outcome. Smoke in the flight deck is without doubt a 'mayday' situation and it's probably a good idea to turn towards an airport straight away and start a descent. Over the middle of the ocean you might also have to contend with imminent ditching. Think about it the next time you do some armchair flying.

If you think that the **electrical** system is the source, switch off the **utility buses**. You will lose nothing of importance in the flight deck and there's a possibility you'll isolate the faulty component. This action will come in the

checklist anyway later on. If you think the **air conditioning** is the smoke source, switch off the **recirc fans**. This action will prevent contaminated air being recirculated and may even remove the smoke source if one of the fans is responsible for it.

If you don't know what the source is, don't sit there doing nothing! Try the electrical checklist first and if that doesn't work, do the air cond checklist. Incidentally, switching off the utils will also switch off the recirc fans, which may be helpful, as noted above.

Do you know the smoke removal checklist? No reason why you should – there are no recall items. But again, while your colleague is trying to find the right page there are things you can do in anticipation of the checklist:

- if you are in a 767, switch the equip cooling to override (which opens the overboard smoke clearance valve)

- switch the recirc fans off if you haven't already done it (on the 757, switching off the left recirc opens the overboard valve)

- set the pressurisation landing altitude to 9500 feet

- set the cabin rate to max

These last two actions will maximise air flow through the flight deck and cabin and hopefully purge the smoke.

In summary, thorough knowledge of the fire and smoke checklists and anticipation of the actions required might save the day.

RAPID DEPRESSURISATION

When you call 'MAYDAY', if you're in busy airspace and you can get some sort of ATC clearance before you plummet, so much the better. It would be pointless doing the drill perfectly and then slamming into another aircraft beneath you on the way down. It's unlikely your TCAS will call out sensible RAs, nor those of nearby aircraft. The question is: 'how long do I spend trying to get an emergency descent clearance before hypoxia begins to affect the passengers and cabin crew?' And of course no-one can give you an answer – you must use your judgement as to when to start down if ATC can't help.

One of the difficulties in this scenario is communication with cabin crew – they can't talk to you with their masks on, so it's one way traffic only. Having done the QRH checklist you could do a combined PA for both the cabin crew and the pax, along the lines of: ' . . . we've lost cabin pressure, so everyone make sure you've got your oxygen masks on . . . cabin crew stand by for further instructions . . . '. At the end of the descent your PA could be ' . . . cabin manager, take off your mask and report to the flight deck . . .' Or if for some reason you need to talk to the cabin manager during the descent, you could

tell him on the PA to don a portable bottle and report to the flight deck. He can then listen to what you say over the speaker.

One final point - if during the cruise one pilot is leaving the flight deck it is a good idea to review the rapid depressurisation QRH procedure beforehand, because the remaining pilot will be unmonitored if he has to carry it out. Some pilots like to leave the QRH open at the relevant page as a back-up in this situation.

HYDRAULIC PROBLEMS

There are a few things worth considering that are not covered by the QRH. On the 757 the checklists refer to items that would be affected by PTU failure after left hydraulic failure. To be able to anticipate whether you'll need alternate flap and gear extension, you'll need to find out if the PTU is working. One clue is the status page on EICAS. If you've got left hyd quantity greater than about 0.18 units, it signifies that standpipe fluid is available – a good sign. If the quantity is less than this figure there may not be enough fluid for the PTU to pump even if it's working. If the status page displays POWER XFER UNIT then the PTU is probably defunct. Check the CB on the overhead panel if applicable.

But of course the best way to find out if you're going to need alternate flaps and gear is to try extending them to see what you get, and the sooner you find out the sooner you'll be able to plan your subsequent actions. There's no point in starting an approach and then having to break off because you can't configure the flaps and gear properly.

FLAPS AND SLATS

Alternate flap operation is slow. Don't be distracted by clicking the IAS knob on the MCP one knot at a time to try to match speed to current flap position – it's a waste of your mental capacity. During extension, it's better to wait until the flaps have attained the next selected position and then dial the speed back accordingly. If you're retracting them, dial up the speed first, and then when you've got the speed, run the flaps.

For partial flap landings the flare technique requires some thought. The main differences are:

- your approach speed will be greater
- your approach rate of descent will be greater
- your attitude will be higher

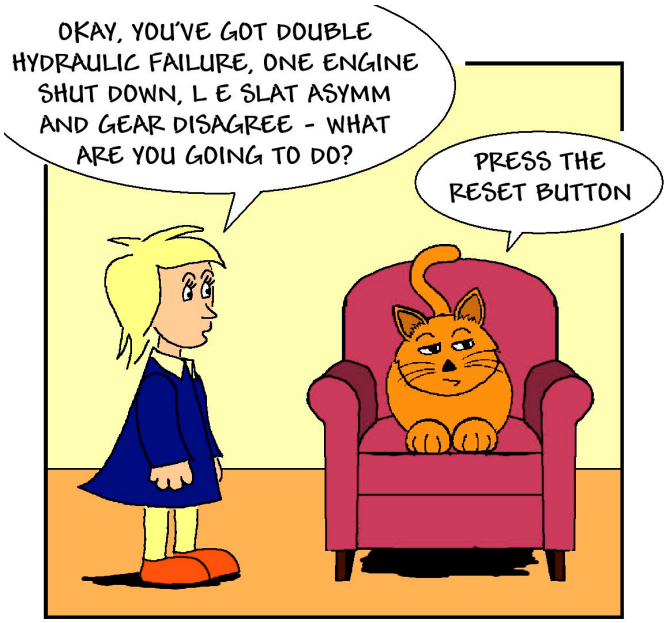
The higher speed means your elevators will be more effective when you raise the nose for the flare. Over-rotating during the flare might float you halfway down the runway or, with the high pitch attitude, might hit the tail on the

ground. On the other hand, if you don't flare at all the aircraft will wallop into the ground at high speed and teeth-jarring rate of descent.

One solution is to check the descent at the point where you would normally start your flare and then ease the wheel slightly forward again so that your sink rate will be more civilised when you touch down and your tail won't be too low.

Real life variation: The AFM says that *'Flaps 30 landing field lengths are adequate for all non-normal landing configurations for which procedures are included in the AFM.'* Incredibly, this means that legally you could attempt a flapless slatless approach in a 763 at 130 tonnes at Bristol (LDA 6000 ft). But of course you wouldn't do this, would you, even if that's where your car was parked. In other words, consider practical as well as legal runway length when doing your W R A F assessment.

LANDING GEAR



Remember that it requires both the side brace and the drag brace to lock down to get a main gear green light on the 767. If neither lock down you'll see EICAS GEAR DISAGREE. If one locks but the other doesn't the EICAS will display a BRACE message, which means the gear leg is actually extended and therefore **it may not collapse** on touchdown. So, don't start throwing the passengers down the slides if your aircraft is safely standing on three legs after you've stopped on the runway, and remember to brief your cabin manager accordingly. If you've done the 'impact' checks everything will be quiet and dark with dead engines and APU but you can still deplane your pax via normal steps.

WE NEED TO TALK

It's obvious that the cabin crew must be fully briefed (remember NITS?) when you're dealing with non-normals. There might be difficulties, though, such as the depressurisation scenario we looked at earlier.

Here's one for you – you've just taken off from somewhere when one of the engines surges. The crashing and banging noises will naturally alarm you but at least you can work out what's going on. Imagine what it's like in the cabin, especially at night with the engine flaming like a roman candle from the tail pipe. The cabin crew will hit the ALERT button but you might be too busy to respond straight away. Now you've created a problem for the cabin manager

– why aren't the pilots responding? Surely they know there's something wrong. Or do they? Should I go and tell them?

One way round this problem is for one of the pilots to briefly select PA and transmit *'cabin crew stand by'* or something similar. It will only take a second or two but it will give tons of reassurance to the cabin crew, and possibly to the passengers as well. Then when things aren't so hectic you can spare the time to brief them properly.

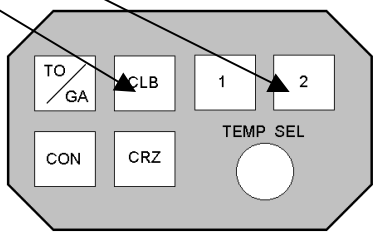
While we're talking about PAs, remember that the objective is to minimise any fears the pax may have. Your choice of words is important and, like our politicians, you might need to be 'economical with the truth'. For example, *'we've had a problem with one of the engines so we've shut it down but the aircraft will fly quite happily on one engine'* **(oh my god! they've only got one engine left!)** might not be as comforting as *' . . . we're running with one of the engines at reduced thrust'* **(reduced thrust! not too scary!)** They're not to know that the thrust is reduced to zero.

On the topic of communications, having declared MAYDAY, if the situation eases consider changing your status to PAN. This will release some of the alerted ground personnel (such as medical staff in nearby hospitals and off-airport fire services) who can subsequently stand down.

AND FINALLY (1) . . .

Do you ever get yourself in a mess in the sim flying a normal manoeuvre in a fully serviceable aircraft in nice weather? Such as the two-engined go-around? Everybody gets the first bit right ('go-around, flaps 20, positive rate, gear up') but all hell breaks loose at clean-up altitude. The TCs hear all sorts of weird and wonderful permutations from PF – 'check . . . VNAV . . . no, flight level change . . . no, plus 80 . . . climb power . . . er, climb two . . . er . . . no . . . er . . .' There is a four-word phrase you can say at this point that will cover you for all eventualities – autoflight or manual flight, even if you've got ALT CAP on the ADIs. And the winner is . . .

'climb two, plus 80'



or 'plus 40' if you're cleaning up to flap 5. Works every time. You can rehearse it next time you're flying your armchair or driving in to work.

AND FINALLY (2) . . .

To answer the question we posed at the beginning: the main purpose of the sim is to give you the chance to practise dealing with problems that you may encounter on the line – in other words it's a confidence-builder. You can also derive considerable benefit after the sim check from reviewing your performance and thinking about any change of tactics you might want to incorporate into your methods of problem-solving for the future.

Good luck!

NOTE: IF THERE IS APPARENT CONFLICT, COMPANY SOPs AND TRAINING DEPARTMENT POLICY TAKE PRECEDENCE OVER ANY SUGGESTIONS IN THIS PAPER

J Evans

Original version 04/11/01

This version 29/05/16