

Is it time to upgrade to a newer (Decision Making) model?

OPSGROUP Team
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In the brave new world of pilot training there is a new paradigm – evidence based training. **But evidence of what?** Well, of **pilot competencies** – a set of ‘tools’ for a pilot to quick draw out of their metaphorical tool belt in order to help them solve whatever situation flies their way.

Where does Decision Making fit into this tool belt?

It can be viewed as a sort of Swiss army knife of a competency because it is one which, when wielded well, helps build **best outcomes**, but when used badly will probably leave you with a few pieces of splintery wood and a nail through your hand.

The (badly metaphorized) point trying to be made here is that the Decision Making & Problem Solving ‘competency’ is a big, multi-faceted one, and it turns out that making a decision is often easy, but making a **good one** is less so...



Decision Making is about using information to find a solution, not forcing it to fit what you already decided

Double E's give us the 'O' factor

A good decision, or an 'optimal' one is going to be the one that leads you to the **safest, most efficient and effective outcome**.

Efficient because you've done the 'best' thing. **Effective** because you got there the 'best' way.

Reaching this **optimal solution** is easier said than done though. You, the pilot, want to be as safe as possible, but then you have authorities wanting you to tick every rule and regulation box, and you have your company wanting you to tick every commercial box, and before you know it you can find yourself heaped under a pile of "**What Ifs?**" and "**Why didn't you's?**".

All of which can quickly incapacitate any common sense and airmanship. So what can you do about it?

Have you heard the story of the Nimrod?

Everyone knows the Hudson tale, and a great story it is too – a captain (and crew) showing a level of decision-making that saved the lives of all passengers onboard. Well, the story of the Nimrod is similar.

It took place back in 1995, over the coast of Scotland. XW666 was a BAE Nimrod R.1P operated by the RAF, en-route from EGQK/Forres-Kinloss RAF station. They were approximately 35 minutes into the flight when the crew had a No 4 engine fire warning illuminate. During the drill to deal with this the No 3 engine fire warning also illuminated.

The moment that makes this story worth telling was this – at just **4.5nm from EGQS/ RAF Lossiemouth** (and its 9,068 feet of runway) the captain discontinued his attempt to put the aircraft onto a tempting piece of tarmac, and instead **ditched into the cold water of the Moray Firth**.

So why, with just 4.5nm to go between him and a much easier landing, did the captain do this?



Air-Britain Photographic Images Collection

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A monument to a 'crash' worth celebrating

The captain had asked the rear crew member to watch through a window and to inform him if fire became visible through the aircraft structure. When this report was received, the captain ditched. When they dragged what was left of the poor Nimrod out of the water (actually, quite a lot of it was left and all the crew survived), the investigation confirmed that the structural integrity of the wing's rear spar had **deteriorated by over 25% in just 4 minutes**.

In the time it would have taken to cover that last 4.5nm the wing would have failed, resulting in an **uncontrolled crash**.

The big learning point here though is that it wasn't so much the 'good decision' (the "let's land this thing quick" decision) that was the big save, but actually **the captain's ability to change his decision** – to review the situation and say "yup, that ain't gonna work anymore, let's do this instead."

When a good choice turns bad

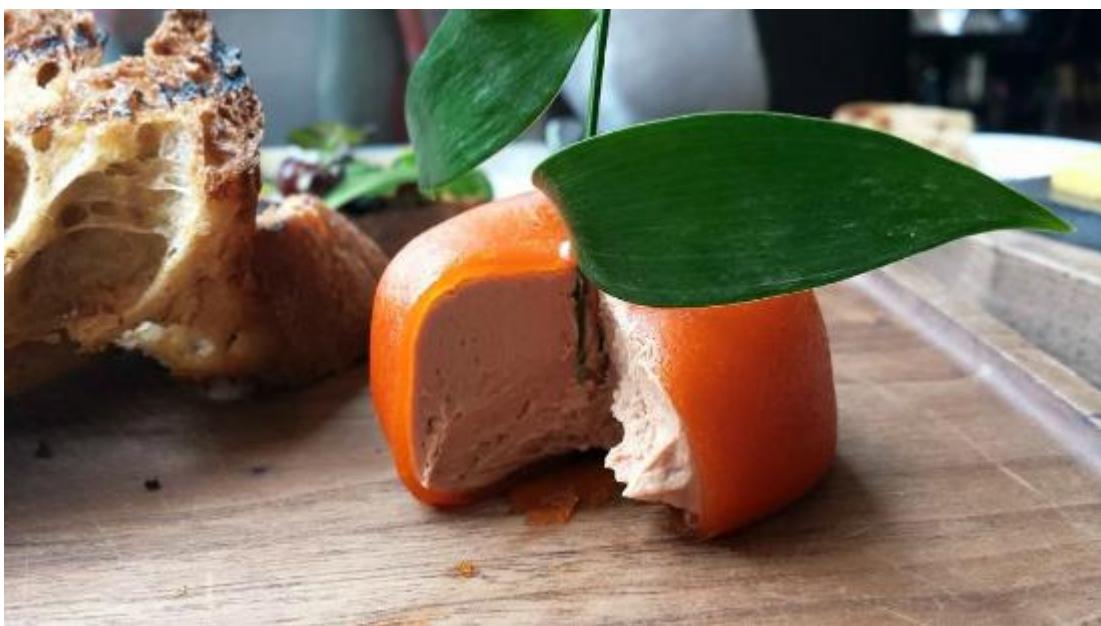
Doesn't this satsuma look fresh, fruity and delicious? Most people (who fancy a piece of fruit) would probably happily eat it.

I am hungry, I like fruit, this is a piece of fruit, I shall eat it – Problem diagnosed, options considered, decision made, action assigned... DODARing 101.



Yums

But what about now?



Less yums

Turns out it was made of liver paté.

The (rather odd) point to take away from this is that a decision, based on the information you have, can be great. The best. The optimal. **The satsuma of choices.** But if the information changes, or if it turns out to be incorrect, then so too might the decision be. So fitting information into what you have already decided does not work. Nor does sticking with a decision and not continuing to gather information.

The golden rule of Decision Making, and the one the Nimrod captain applied so well, is the importance of the review - **being able to change a decision when it needs changing.**

This can be a tough thing to do. As pilots, we are very goal orientated, but when that goal becomes too

focused – the “must land now”, or the “it looked alright 5 minutes ago, I’m sure it still is” attitudes – these can lead to unstabilised approaches, overruns, accidents (more on that here).

So, **don't be a Nimrod**, be like the **captain of one** instead!

Check your checklist! Lessons from fatal King Air accident in Melbourne

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The pilot at the controls of a Beechcraft B200 Super King Air that crashed shortly after take off had the aircraft's rudder trim in the full left position for take off, the Australian Transport Safety Bureau (ATSB) has found.

The ATSB final report said the aircraft's track began diverging to the left of the runway centre line before rotation and the divergence increased as the flight progressed.

It then entered a shallow climb followed by a “substantial left sideslip with minimal roll” before beginning to descend. At this point the pilot issued a mayday call seven times in rapid succession.



Approximately 10 seconds after the aircraft became airborne, and two seconds after the transmission was completed, the aircraft collided with the roof of a building.

What Happened?

The investigation found that **the pilot did not detect that the aircraft's rudder trim was in the full nose-left position prior to takeoff.**

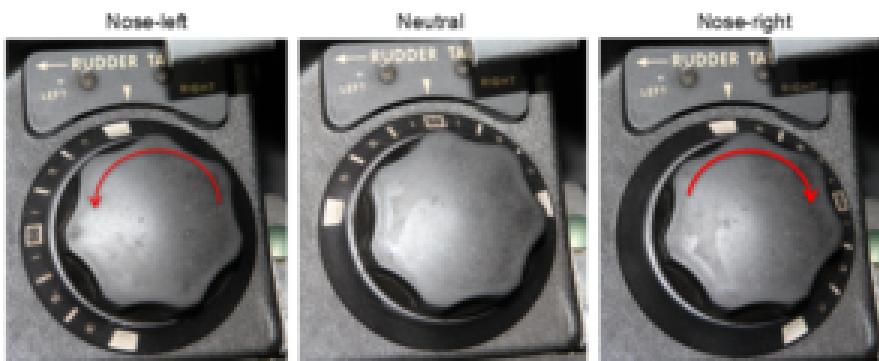
"Prior to takeoff, there were several opportunities in the pre-flight inspection and before takeoff checklists for the pilot to set and confirm the position of the rudder trim," the ATSB final report said.

A King Air flight simulator was used to recreate the event as part of the ATSB investigation.

The pilot who performed the flight simulator test commented that:

*The yaw on take-off was manageable but at the limit of any normal control input. Should have rejected the take-off. After take-off the aircraft was manageable but challenging up to about 140 knots at which time because of aerodynamic flow around the rudder it **became uncontrollable**. Your leg will give out and then you will lose control. **It would take an exceptional human to fly the aircraft for any length of time in this condition.** The exercise was repeated 3 times with the same result each time. Bear in mind I had knowledge of the event before performing the take-offs.*

The pilot also stated that it could be possible for a pilot to misinterpret the yaw as being caused by an engine power loss rather than from a mis-set rudder trim.



Safety message

Cockpit checklists are an essential tool for overcoming limitations with pilot memory, and ensuring that action items are completed in sequence and without omission. The improper or non-use of checklists has been cited as a factor in some aircraft accidents. Research has shown that this may occur for varying

reasons and that **experienced pilots are not immune to checklist errors**.

This accident highlights the critical importance of appropriately actioning and completing checklists.

Checklist discipline

In previous correspondence between the accident pilot and the ATSB when discussing checklists, the pilot stated that:

*"You don't get complacent as a pilot but you get into a routine. The same as your pre-take-off checks, you get a routine and **you don't need to use a checklist** because you are doing it every day, you are flying it every day... I take-off with one stage of flap because it gets me off the ground quicker. And I never change my routine..."*

Wait what!??? It is stating the obvious but it's a timely reminder that **checklists are an essential defense against pilot errors**.

Sadly, **it could have been a life-saver** in this instance.

The ATSB video to supplement the report.

<https://www.youtube.com/watch?v=2iYQNLxQns&t=>