

Happier landings

David Jacobson, a 2010-retired Qantas and TAA training captain with a passion for getting it right, has launched an iPad app that targets what he sees as the most overlooked comprehension gap in both basic and ongoing flight training processes – the planning and execution of a landing flare that leads to a consistently smooth touchdown, in the right place.



VH-EBQ's last touchdown – in Longreach

Most pilots admit to an occasional humbling arrival, commonly at night and/or with distractions with limited visibility or misleading visual clues; and almost always attributable to a flare manoeuvre whose timing failed to position their aircraft that coveted few centimetres above the runway centreline for as smooth a touchdown as the landing surface could deliver.

Jacobson asserts that the answer to the quest for consistently great landings starts with a simple geometric calculation, which any pilot of any aeroplane can utilise to identify a visual fix along the approach path by calculating the point where the wheels are at precisely the correct height to initiate an optimum landing flare.

The 'Jacobson flare' applies basic triangulation principles similar to those that were used in the WW2 'Dam Busters' bouncing bomb operation to help pilots maintain a constant 60 ft (18.3m) over water at night; and more recently the devices originally used to align arriving airliners accurately with their aerobridges. Once understood, it is simple to use, error-tolerant, and capable of improving the safety and comfort that both pilot and passengers hope for.

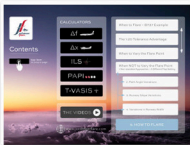
Since its first global debut in *Flight International* in the late eighties, the 'Jacobson Flare' philosophy had already been adopted by numerous flying schools, its effectiveness highlighted by notable reductions in average time to first solo, enhanced confidence as students progress through the syllabus, and easier transitions between aircraft types in later life. Complementary spin-offs include lower maintenance costs – tyre and brake wear as a good example – reduced runway traffic congestion for improved punctuality, safety and efficiency, and enhanced passenger comfort.

Basically the Jacobson Flare uses simple triangulation principles and a fully defined eye path from a stable approach right through the flare to the touchdown.

'Aim point one' is the initial intercept of the pilot's eye path and runway, the visual 'centre of expansion' on final and the pre-calculated intended point of main-wheel contact with the runway. This is normally at the beginning of the 1,000 ft aim point markers for narrow-body jets on an Australian standard runway. The pilot flies accurately towards this point by positioning it correctly in the windscreen with elevator control, using the vertical height relationship between the pilot's line of sight (eye path) and the glareshield, while also maintaining awareness of the whole visual field. The eye path technique ensures that the pilot will initially keep aim point one "captured" while remaining aware of all the other elements including the flare fix. Thus the pilot's reference to those points provides a virtual "head-up display" throughout the whole approach and flare manoeuvre, fully visible to the pilot, and a flare that will consistently produce improved landings.

The 'landing flare fix' is commonly an identified element of the runway markings, which (when it is about to pass out of sight below the forward edge of the glareshield at the base of the windscreen), accurately signals the 'flare fix', the optimum point for initiating the flare. (On single-engine aircraft, the engine cowling is ignored; this takes advantage of design consistencies in the limiting downward view or cockpit lower visual cut-off angle.)

'Aim point two' is normally (but not necessarily as the app explains) at the upwind end of the runway. In a typical flare pilots 'fly their eyes' up from aim point one towards aim point two over a period of three to four seconds. This timing has proven to be valid for virtually all aeroplanes, regardless of size, weight or approach speed. Thrust is progressively reduced to idle before, during and/or after the flare- as usual, depending on the aircraft's airspeed and inertia.



The simple reference points for executing the flare manoeuvre provide consistency and improved safety for the pilot, which is the primary aim of the app. No previous methodologies need to be eliminated from the pilots' previous experience and in fact the Jacobson Flare' is suitable for every type of aeroplane and scenario, regardless of the myriad of variables. The whole flare technique

and its application are simple, practical and effective, and significantly are equally applicable in basic training as in airline operations.

Air Commodore John Chesterfield RAAF (Ret'd) and a noted training identity who operated Phoenix Air Training Services at Coolangatta, trained 15 of Virgin Blue's current training captains in his school, and reports that: "We had mainly ex-Air Force instructors, but we would typically get students to solo within six hours of dual time. I'm not sure if Virgin as a company uses it as a standard operating procedure, but certainly the training captains that we trained and who taught and used it in the school, as far as I know still use it and teach it to the young pilots in Virgin."

"The beauty of it is that it applies equally to a Cessna 152 as it does to an Airbus A380. And once you've used the technique and become used to it, it applies to every aircraft you'd ever fly; the only difference is the mathematics, just the bit between the aim point and the flare cut-off point. You can set it up for any aircraft that's made, and it does work like a dream. The most important thing is to establish a stabilised constant angle of approach, using the primary flight controls to control the aircraft flight path, and then power and flaps as required to control your approach speed, exactly the same as when we fly an ILS."



Having now become digital, this well-designed and modestly priced iPad app is available from the App Store worldwide and is attracting global interest. Simple to understand, it comes with a host of tools including a set of five calculators with stored manufacturer's type data for most currently-operating transport category aircraft types and models, to compare desired visual aim points

with those determined by an ILS, PAPI or T-VASIS and the facility to add your own aircraft data for other types so any professional pilot can use it daily. Illustrated with six great videos of various aeroplane types, the app demonstrates an identical, consistent and quantified technique, at a range of locations. Users believe the Jacobson Flare app offers a perfect solution to one of world aviation's most challenging long-term problems.

For more information, visit [the Jacobson flare website](#) or see it on [Facebook](#)

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