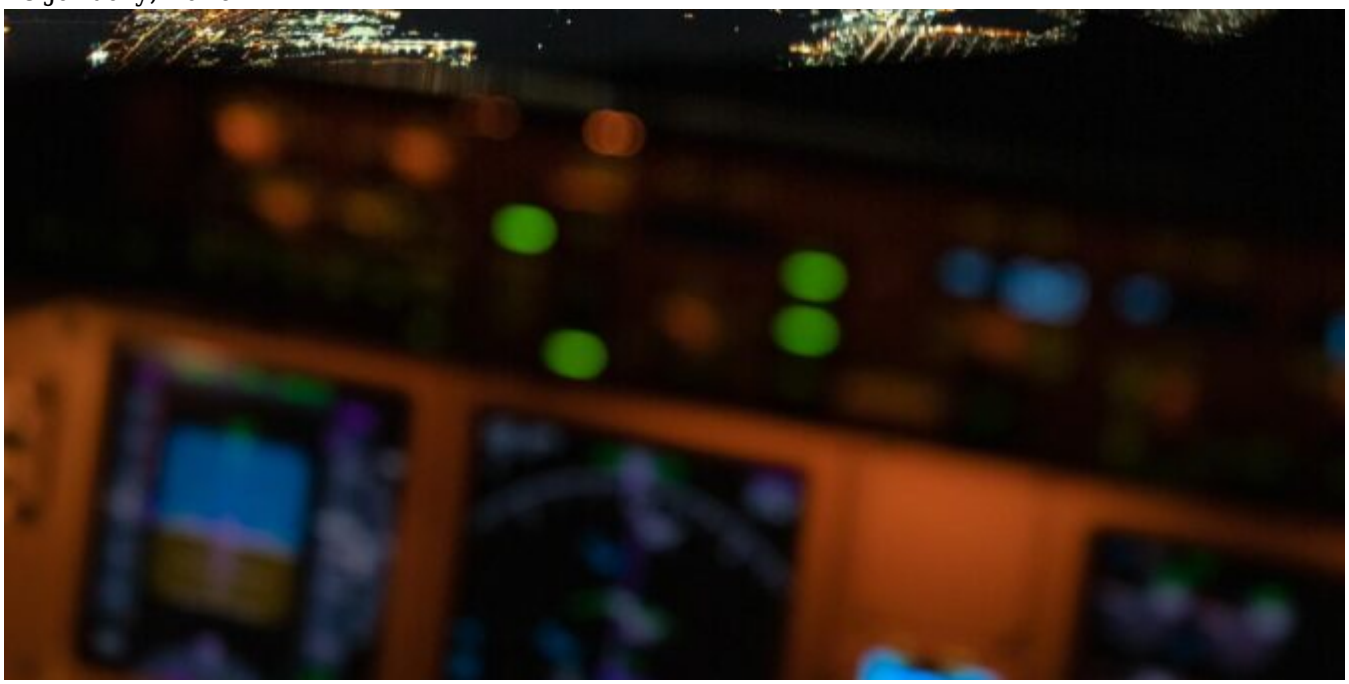
Guided Visuals: What They Are and Why They’re So Useful

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I remember the first time I tipped over on a visual approach to Runway 34 at the waypoint SHEED at YMML/Melbourne. The northerly was howling, we were heavy, and in continuous moderate turbulence. Things were busy, but under control.

At the commencement of the visual segment, we were level at 2500’ and partially configured to fly a normal decelerated, 3-degree approach. Local operators know you need closer to 4 to find ‘the groove’ by the stable call at 1000 feet. **The trouble was, we weren’t local.**

Instantly it became apparent 3 degrees would not be enough. The ‘bouncy ball’ (an Airbus acronym for vertical path indicator) immediately showed we were high.

And just like that, we were chasing.

Jet operators are accustomed to this ol’ chestnut: *you can’t slow down and go down.* Generally speaking, it’s one or the other. We were now trying to do both.

And then came the turn to final.

We disregarded Melbourne’s secondary airport to our right, with its name emblazoned brightly in white next to the runway so as to avoid any **potential confusion** (it has happened). As we struggled to configure and complete our landing checklist, workload soared. The final turn came late and required the maximum angle of bank our stabilised approach criteria allowed.

As we turned into 40kts of wind on the nose, our fate was sealed – the auto thrust (by design) applied a fist full of power to compensate for our falling groundspeed, and three whites on the PAPI quickly became four.

We were done. Out of altitude and out of time, **we called unstable** and commenced the go-around wandering how two competent pilots had let this get the best of us.

Moral of the story – visual approaches (when unfamiliar) aren't easy. They're supposed to be, *but they're not.*

And business jet operators are the leaders in operating high-performance aircraft to unfamiliar airports.

Enter the guided visual.

Guided visuals make use of the FMS to **provide guidance that keeps you on profile and track**, reducing pilot workload and allowing you spare capacity to watch for other traffic, configure and all the other pilot-y things we need to do.

But it's important you're familiar with their **limitations** – and what responsibilities still lie with you.

Let's take a closer look…

Guided Visual 101

It helps to frame what we're talking about here.

Guided visual approaches are visual approaches flown with lateral and vertical guidance generated by the FMS. Think of it as an *assisted* visual approach, backed up by RNP-AR style vertical and lateral guidance.

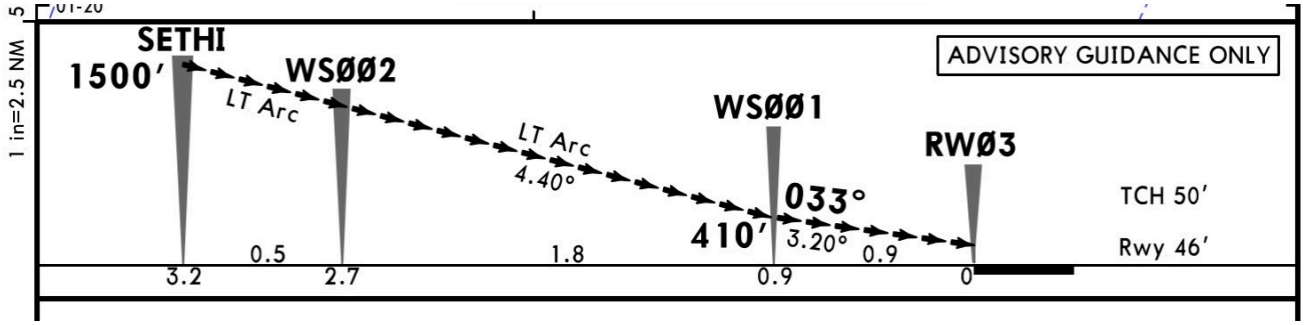
Important point: **you're still flying a visual approach**, in VMC, to a runway that's in sight. But instead of eyeballing things, the box builds you a stabilised path to the threshold.

You can fly it like any other automated approach with full situational awareness. It's computerised magic, but with some fairly strong caveats (more on that in a bit).

Why they're so useful

Firstly because they're so **stable.** Guided visuals reduce the need for 'dive and drive' visuals. You get a proper descent profile early, which enables you to manage energy with far fewer last minute flight path adjustments. They are smart and can take into account the various vertical profiles for different segments of the approach.

Take **WSSL/Seletar Runway 03:** the initial descent path from SETHI starts at 4.4 degrees until turning final at 410′ where the descent shallows out to match the PAPI at 3.2 degrees, and since there is a runway point in the FMS, the aircraft can remain coupled until it reaches its autopilot limitation altitude (200′ in a Gulfstream for instance).



Then there's **workload** – the FMS empties your capacity bucket by managing your geometric flight path, leaving room to focus on things like spacing, configuration, checklists and monitoring. This is especially pertinent when cleared via a visual approach while still high, fast or under (shall we say) 'less than optimal' radar vectors.

Then there are **visual illusions** caused by flat light, water, sloping terrain or black hole effect. Our eyes

are known to play tricks on us.

Finally, the elphant in the room – **automation**. Modern, complex aircraft are designed to be flown with high levels of automation. Whether or not this is a good thing is a can of worms that falls beyond the scope of this article. But automation is well and truly engrained in how we operate modern, complex aircraft.

It's hard to argue that when managed well (and not used as a replacement for core piloting skills), autopilot and flight director coupling provides significant **safety margins** compared to simply flying by the seat our pants.

But, beware...

Rubbish in, rubbish out. The guidance an FMS provides is only as good as the data it uses, and so **database accuracy matters.** A displaced threshold for instance may not be captured. Always, always cross-check your approach against visual cues such as PAPI.

It's also important to remember that **obstacle clearance is on you.** It's still a visual approach. Your FMS doesn't know about obstacles, cranes or even the 'steel structures and silos' that you must spot on approach to WSSL/Seletar, for instance.

WSSL/XSP
SELETAR

9 MAY 25 | Private | 39-7

SINGAPORE, SINGAPORE
RNAV H Rwy 3

BRIEFING STRIP™

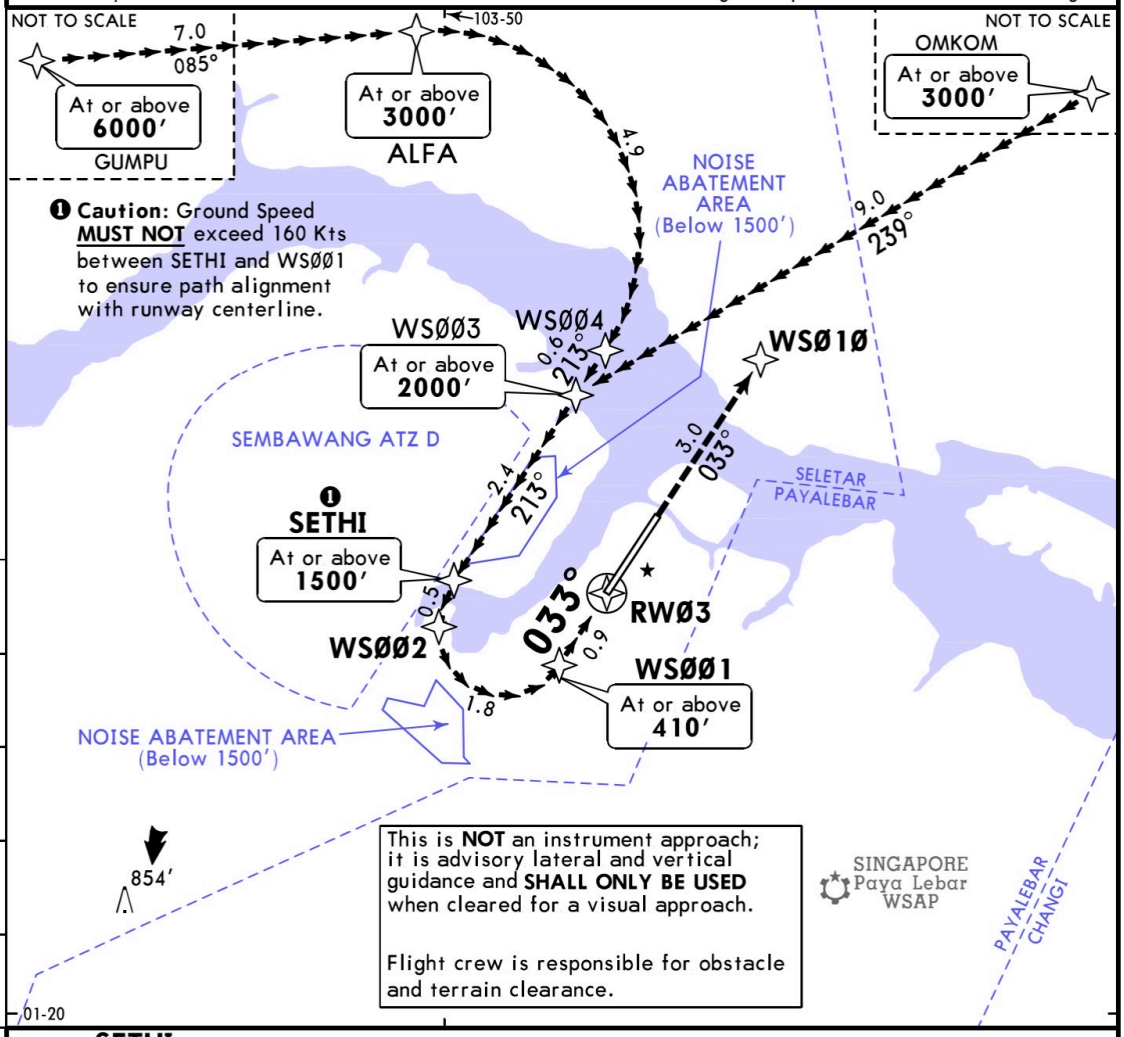
ATIS	SINGAPORE Approach (R)	*SELETAR Approach	SELETAR Tower	Ground
128.425	124.05	126.025	118.45	121.6

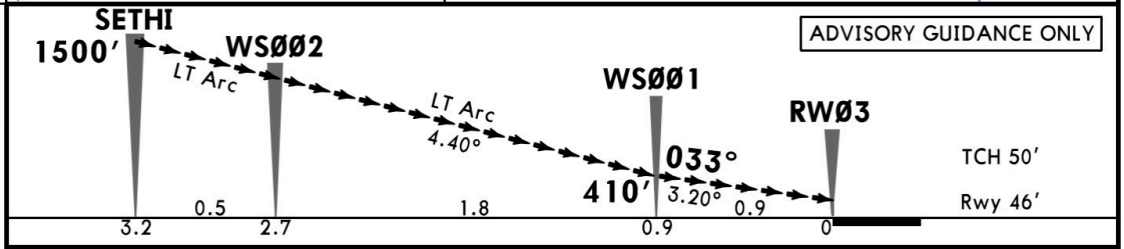
FMS VISUAL	Final Apch Crs See Planview	Visual Approach Weather Minimums Apply	Apt Elev 46′ Rwy 46′	No MSA published

Go Around: Contact ATC for go-around instructions.
Note: A missed approach consisting of a climb to 1500′ and straight leg to WSØ1Ø on runway heading has been appended to this approach. It is advisory only.

GPS and RF required | Alt Set: hPa | Rwy Elev: 2 hPa | Trans level: FL 130 | Trans alt: 11000′

1. FMS LATERAL AND VERTICAL GUIDANCE - ADVISORY ONLY.
2. This procedure must be loaded by name (RNAV H) from the FMS navigation database.
3. Use of INAV Map Data/Special Use Airspace overlay recommended.
4. ATC will have no knowledge of this RNAV H procedure or the "WSØXX" waypoints included in the procedure.
5. Direct-To any waypoints anchoring the start of a Radius to Fix (RF) leg is not recommended with large intercept angles.
6. Aircraft should be fully configured for landing by WSØØ3.
7. Ground speed MUST NOT exceed 160 kts between SETHI and WSØØ1. Excessive ground speeds will result in overshooting.





WEATHER MINIMUMS - Visual Approach Weather Minimums apply

FMS lateral and vertical guidance - Advisory only.

CHANGES: Notes, airspace.

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Singapore’s Seletar Runway 03 RNAV-H

What’s the bottom line? **Guided visual approaches do not replace good visual flying. But they do help make it safer, more stable and more consistent.** For BizAv operators flying to diverse airports, they can be one of the most useful tools in the box – provided they are understood.

What about legalities?

In the US, a guided visual approach is **still a visual approach** under FAA rules. The FAA previously issued this Information for Operators (InFO) to that effect, and is an **important read** before flying any guided visual.

Don’t confuse them with instrument approaches – even if the charts appear similar. *“Looks like an approach”* doesn’t equal *“is an approach.”*

In other words, the presence of flight director and autopilot guidance does not change anything.

There is no such thing as an ‘instrument visual approach.’

Visual approaches have no published minima. There is no FAA obstacle clearance protection, no TERPS validation or any other underlying regulatory protections. The same applies in the ICAO world, whilst you might have access to the visual guided approach, it is still legally a visual approach, don’t let the chart fool you into thinking otherwise.

You must:

- Maintain continuous visual reference with the runway or traffic.
- Be able to land using normal manoeuvres.

The FAA doesn’t specify whether you need to be **head’s up or down** – just as long as you remember that these remain your responsibility.

Another important clarification is that most guided visual approaches are proprietary, in other words not published via AIP. **Avoid potential confusion by not using using weird naming conventions** (such as “RNP-H”) that might not be immediately evident to the controller that has cleared you for a visual approach.

If you are specifically asked by ATC if you will be tracking via a procedure however, it is okay to say so. At several US airports ATC have been actively involved in procedural design. This highlights the **benefits of these types of approaches, not just for pilots but for controllers too.** They can help remove the *“some fly wide, some fly close”* factor which is common in a visual approaches.

And finally there is this **important caveat.** Flying one of these RNAV H or RNAV G procedures does not relieve the pilot of their responsibilities of **right-of-rule rules** – especially at uncontrolled airports where pattern rules still apply (see CFR § 91.113). The NBAA report that they are receiving increasing reports of turbine aircraft using instrument approaches to complete visual arrivals and (either intentionally or unintentionally) disregarding right-of-way rules with other aircraft. It’s important to understand that using these procedures **does not grant any extra priority.**

Where do you find them?

In the US, guided visual approaches are not usually published procedures.

Instead third party vendors produce ARINC-424 coded procedures that can be used in your jet's FMS. Just like an RNP-AR, **you should not modify waypoints** on the approach, since this could affect the jets trajectory.

When loaded, they usually appear in your FMS as 'RNAV-H RWY XX' or 'RNAV-G RWY XX' depending on which avionics package you are flying with.

Honeywell appears to be leading the charge. They have designed a number of them which, at the moment, are only available to aircraft with Honeywell avionics. Although we have been told that the data may soon be licensed to other avionic manufacturers the likes of Collins etc. Watch this space.

Garmin has also recently started to add some Visual Guided procedures to their products as well. While the number of airports served is less than the Honeywell offering, their offering is growing quickly

Have more to add?

Let us know! You can reach the team via blog@ops.group.