Australian Government
Australian Transport Safety Bureau

Unstable approach involving Fokker 100, VH-FKF

near Perth Airport, Western Australia on 29 April 2025

ATSB Transport Safety Report
Aviation Occurrence Investigation (Short)
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Acknowledgement of Country and Traditional Owners

The Australian Transport Safety Bureau acknowledges the traditional owners of country throughout Australia, and their continuing connection to land, sea and community. We pay our respects to them and their cultures, and to elders both past and present.

Investigation summary

What happened

On 29 April 2025, the flight crew of an Alliance Airlines Fokker 100 aircraft, VH-FKF, were conducting scheduled passenger flight QQ 3811, from West Musgrave Airport to Perth Airport, Western Australia. The captain was the pilot flying and the first officer was the pilot monitoring.

The flight crew received an air traffic control clearance to conduct a visual approach following a standard instrument arrival to Perth Airport's runway 03. The approach required a 90° turn onto final that resulted in the aircraft being aligned with the runway and on the correct approach profile about 4 NM from the runway threshold.

Passing about 1,000 ft radio altitude, the aircraft was above the operator's permitted airspeed-related stabilised approach criteria. However, a go-around was not initiated and the aircraft landed uneventfully at 1539 local time.

What the ATSB found

The ATSB found that the pilot flying incorrectly assessed that the applicable stabilisation height was 500 ft. As a result, they did not manage the aircraft's energy state to ensure the stabilised approach speed requirement was met by 1,000 ft.

The pilot monitoring did not announce that the approach was unstable when the airspeed requirement was not met at 1,000 ft. This may have been influenced by their workload, the required check being completed slightly late, and an assessment that the airspeed was reducing.

Finally, although not contributory to the occurrence, during descent the captain inadvertently omitted to change the altimeter setting from standard pressure to QNH. This resulted in the left altimeter indicating 300 ft lower than the right altimeter. Neither flight crewmember detected the incorrect setting during 2 subsequent checks prior to landing.

Safety message

This incident highlights the importance of flight crew having a common understanding of the approach requirements. The International Air Transport Association provided guidance for flight crew to avoid an unstable approach. This included to:

- be aware of the stable approach criteria
- comply with the stable approach criteria published in the standard operating procedures (SOP)
- advise air traffic control when unable to comply with a clearance that would result in the aircraft being too high and/or too fast
- prepare for visual approaches by briefing speed/altitude/configuration gates, equivalent to those of an instrument approach, and follow the published visual approach pattern in the manufacturer's or operator's SOP

- configure the aircraft for landing at some predetermined distance from the airport or altitude, after which only small corrections to pitch heading and power setting should be made.

This incident also illustrates the need for effective flight crew monitoring. The Flight Safety Foundation identified that monitoring can be improved by standard operating procedures, increased emphasis and practice, and stated:

> One of the most important aspects of a safe flight operation is the requirement for crewmembers to carefully monitor the aircraft's flight path and systems, as well as actively cross-check each other's actions.

The investigation

The ATSB scopes its investigations based on many factors, including the level of safety benefit likely to be obtained from an investigation and the associated resources required. For this occurrence, the ATSB conducted a limited-scope investigation in order to produce a short investigation report, and allow for greater industry awareness of findings that affect safety and potential learning opportunities.

The occurrence

On 29 April 2025, the flight crew of an Alliance Airlines (Alliance) Fokker 100 aircraft, VH-FKF, were conducting scheduled passenger flight, callsign 'Unity' (QQ) 3811, from West Musgrave Airport to Perth Airport, Western Australia. The captain was the pilot flying (PF), and the first officer was the pilot monitoring (PM).[1]

At about 1449 local time, while in the cruise at flight level (FL) 340,[2] the flight crew received an air traffic control (ATC) clearance to conduct the KABLI One Victor standard instrument arrival (STAR) to Perth Airport's runway 03 (Figure 1).

Before commencing descent, the flight crew reviewed the Perth Airport automatic terminal information service (ATIS), which included QNH[3] of 1,024 hPa and wind from 080° at 10 kt. The flight crew calculated the landing reference speed (V_{REF}) for the aircraft's weight using landing flap 25 to be 122 kt and the approach speed (V_{APP}) as 132 kt.

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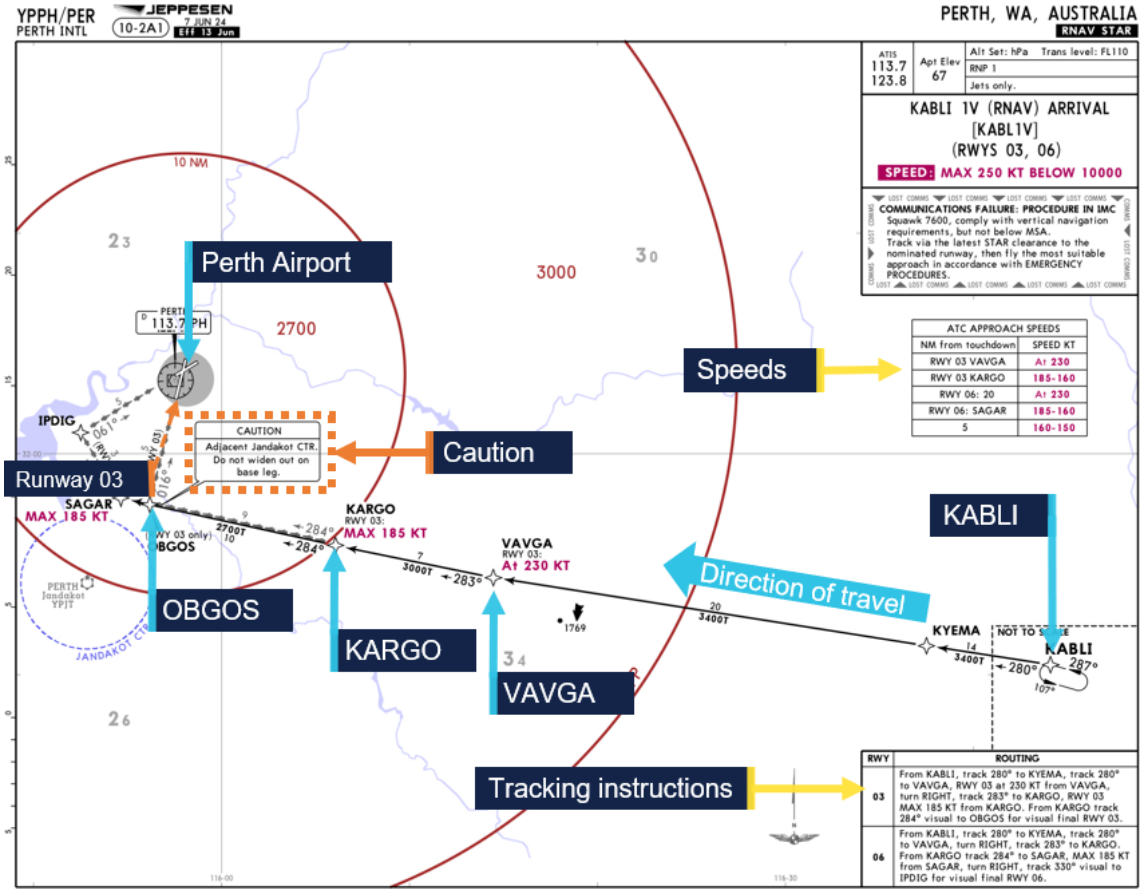
1 Pilot flying (PF) and Pilot monitoring (PM): procedurally assigned roles with specifically assigned duties at specific stages of a flight. The PF does most of the flying, except in defined circumstances, such as planning for descent, approach and landing. The PM carries out support duties and monitors the PF's actions and the aircraft's flight path.

2 Flight level: at altitudes above 10,000 ft in Australia, an aircraft's height above mean sea level is referred to as a flight level (FL). FL 340 equates to 34,000 ft.

3 QNH: the altimeter barometric pressure subscale setting used to indicate the height above mean seal level.

Figure 1: KABLI One Victor Standard Instrument Arrival chart



Note: Airservices advised that the VOR depicted on the chart is historical, does not serve a navigational purpose for the depicted procedure and can be removed.
Source: Jeppesen, annotated by the ATSB

At about 1512, the flight crew were cleared to descend to FL 190 'when ready' and instructed to switch to another Melbourne Centre ATC frequency. The PM reported having commenced descent from FL 340 at 1517, and 3 minutes later, the controller instructed them to maintain 250 kt (airspeed) from KABLI until advised and cleared them to descend via the STAR to 9,000 ft.

The aircraft passed waypoint KABLI at about 1527, descending through about FL 166 and then turned to track 50 NM via the STAR to fly-by waypoint[4] OBGOS, 5 NM from the runway 03 threshold.

During descent, approaching the transition level (FL 110),[5] the required transition check involved:

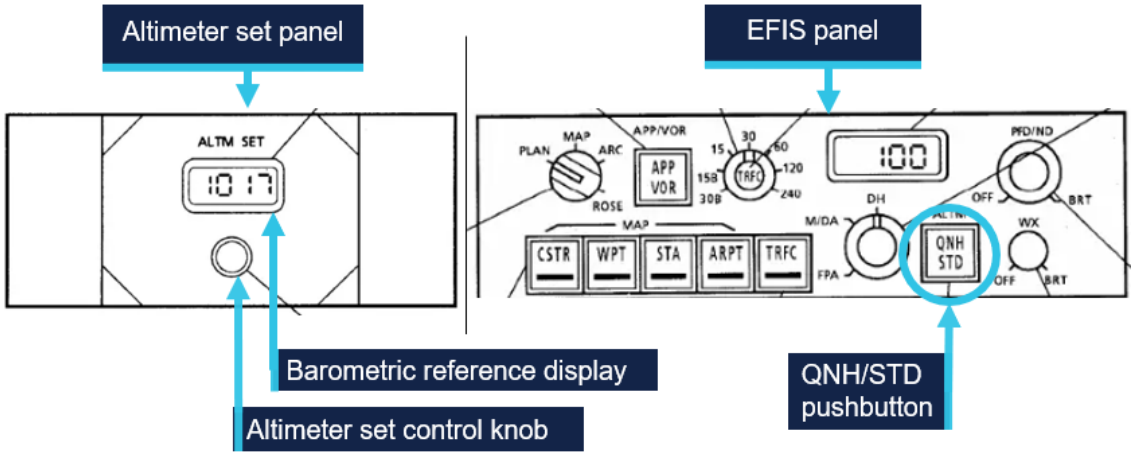
- each flight crewmember setting the current local QNH (in this instance 1,024 hPa), on the altimeter set panel
- changing the subscale for the captain's (no 1) and first officer's (no 2) primary flight displays (PFD), from standard (STD) to QNH by pressing the QNH/STD button on the electronic flight instrument system panel (Figure 2).

[4] Fly-by waypoint: a waypoint that requires turn anticipation to allow tangential interception of the next segment of a route or procedure.

[5] At and above transition level, the altimeter subscale is set to standard pressure 1,013.2 hPa. At and below transition altitude, the altimeter subscale is set to local or area QNH.

When set to QNH, the PFD displays the value selected on the altimeter set panel in hPa. When set to STD, the PFD displays ‘STD’.

Figure 2: Altimeter set panel and electronic flight instrument system (EFIS) panel (not collocated)



Source: Fokker, annotated by the ATSB

Recorded flight data showed that the first officer’s PFD altimeter reference pressure changed from STD to QNH passing about FL 114, but the captain’s PFD remained on STD. The standby altimeter pressure setting was not recorded, but the captain reported having set the standby altimeter to QNH.

After each setting their own PFD, the standard operating procedures required each flight crewmember to crosscheck all 3 altimeters were set correctly. The PF was required to call out ‘Transition [1,024] set. Passing [x] ft now. Speed [x] knots’. The PM was to respond, ‘[x] ft checked’. The crew reported completing the checks, but did not identify that the no 1 PFD was incorrectly set to STD and therefore indicating about 300 ft lower than the no 2 PFD (and the standby altimeter).

At about 1527, the PM contacted the Perth Approach controller, and at 1528:44, passing FL 136, was instructed to increase speed to 270 kt then cancel further speed restrictions, and descend to 7,000 ft (see the section titled *Air traffic control speed instructions*). About 4 minutes later, they were cleared to descend to 3,000 ft and report when visual.[6] The PM read back ‘descend 3,000’ and advised they were visual. The controller then cleared the flight crew to conduct a visual approach, which the PM read back.

At 1533, ATC broadcast that a new ATIS was current and the QNH had changed to 1,023 hPa. At that time, the aircraft was descending through about 5,000 ft. Passing 5,000 ft, the standard procedures required the PM to call out ‘5,000 ft on QNH [1,023]’ and the PF’s required response was ‘QNH [1,023] checked’. Both flight crewmembers recalled having set and then confirmed all 3 QNH displays were set to 1,023. However, they did not identify the altitude discrepancy between altimeters, or the no 1 PFD subscale setting of STD.

As ATC had cancelled the STAR speed restrictions, the flight crew did not have to adhere to the airspeeds on the approach chart. Therefore, as the aircraft descended through 5,000 ft, it passed waypoint VAVGA at an indicated airspeed of about

[6] Visual conditions: The pilot has established and can continue flight to the airport with continuous visual reference to the ground or water and visibility along the flight path is not less than 5,000 m.

270 kt – 40 kt faster than the published speed restriction. The aircraft subsequently passed waypoint KARGO, descending through about 3,300 ft at 230 kt airspeed – 45 kt faster than the published speed restriction.

Approaching 2,500 ft and at about 200 kt airspeed, the PM selected flap 8. As the aircraft descended through 2,500 ft, the flight crew were required to crosscheck the radio altitude[7] indicating on both PFDs. The flight crew confirmed the radio altitudes matched, but again did not identify the no 1 altimeter subscale incorrectly set to STD. At the same time, the approach controller instructed the PM to change to the Perth Tower ATC frequency. The PM contacted the aerodrome controller at 1536:15.

A review of recorded flight data identified that, at 1536:46, the aircraft commenced the right turn past waypoint OBGOS (Figure 3), at about 2,000 ft above mean sea level (AMSL) and 180 kt airspeed. During the turn, landing gear was extended, followed by flap 25. Just before the aircraft was levelled, the captain deployed the speed brake.

Figure 3: Recorded flight data showing VH-FKF turn past fly-by waypoint OBGOS

Source: Recorded flight data overlaid on Google Earth, annotated by the ATSB

The captain reported identifying a discrepancy between the altimeter and the radio altitude during the turn, passing about 1,500 ft, and assessed it as an instrument error. As they were visual, the captain was primarily focused outside, ensuring the aircraft aligned with the runway and on the correct profile by following the precision approach path indicator (PAPI) guidance.

About 1 minute after commencing the turn, the aircraft was aligned with the runway centreline, about 4 NM from the threshold, at 1,250 ft radio altitude and 172 kt airspeed. The captain later reported that the airspeed was faster than normal due to their focused attention on the observed altimeter discrepancy. As the aircraft descended through about 1,000 ft radio altitude (also about 1,000 ft above aerodrome elevation), the PM assessed

[7] Radio altitude is the height of the aircraft above terrain immediately below the aircraft measured by a radio altimeter.

that all stabilised approach criteria were met and called ‘stable’, and the flight crew continued the approach.

The aerodrome controller cleared the flight crew to land as the aircraft passed about 600 ft radio altitude. At 1539, the aircraft landed normally within the touchdown zone. After landing, the captain realised that the no 1 PFD was set to STD and changed the setting to QNH.

Context

Flight crew information

The captain held an air transport pilot licence (aeroplane), class 1 aviation medical certificate, and had accrued 24,797 hours total flying time, 1,497 of which were in the Fokker 70 and 100 aircraft types.

The first officer held a commercial pilot licence (aeroplane), class 1 aviation medical certificate, and had 4,600 hours total flying time, 520 of which were on the Fokker aircraft types.

The captain reported their fatigue as 3/7 and the FO as 1/7.[8] There was no evidence fatigue was a factor in this occurrence.

Key speeds

The flight crew used the onboard performance tool to calculate the landing reference speed (V_{REF}) of 122 kt. The Alliance Airlines Fokker 70–100 Aircraft Operating Manual (AOM) Supplement (SUP) defined the approach speed as V_{REF} + 5 kt with the following wind correction:

> The approach speed (VREF + 5) should be corrected for wind, including gusts, as follows:
>
> | | |
> |---|---|
> | Wind 0 up to 10 knots inclusive: | no correction |
> | Wind (+gust) more than 10 up to 20kts inclusive: | add 5kts |
> | Wind (+gust) more than 20kts: | add 10 kts |

Based on the ATIS specified wind speed of 10 kt and the Alliance AOM SUP, there was no wind correction required and the V_{APP} was 127 kt. However, the crew added 5 kt for wind correction and used V_{APP} of 132 kt. The flight crew could not recall their decision-making around the wind correction, but reported it may have included consideration of the wind the aircraft was experiencing at the time of the calculation, and the aerodrome forecast wind speed of 12 kt.

The Fokker Aircraft Operating Manual specified maximum flap extended speeds of:

- flap 8° – 250 kt
- flap 15° and 25° – 220 kt
- flap 42° – 180 kt

and the maximum landing gear extended and operating speed was 200 kt.

[8] Self-assessed Samn-Perelli 7-point fatigue scale.

Air traffic control speed instructions

Airservices Australia's Aeronautical Information Publication (AIP) included the following content related to airspeed requirements:

ENR 1.5 – 47:

> 10.1.5 When a clearance for the termination procedure is authorised e.g. visual approach, the published STAR speed restrictions still apply unless specifically cancelled.
>
> 10.2.5 Cancellation of 'published speed restrictions' cancels all speeds published on the STAR chart. Cancellation of 'ATC-issued speed control instruction' cancels any speed control instructions issued by ATC. Airspace speed limitation must be complied with unless specifically cancelled.

ENR 1.4 – 13:

> 4.1 Airspace speed limitations stated 'N/A' for IFR aircraft in Class C (and Class A) airspace.

GEN 3.4 – 56 included the phraseology [DESCEND VIA STAR TO (*level)*], CANCEL SPEED RESTRICTION(S), for the circumstances:

> During a STAR descent:
>
> a. comply with published level restrictions
>
> b. follow the lateral profile of the STAR
>
> c. published speed restriction and ATC-issued speed control instructions are cancelled

ENR 1.6 – 5:

> 5.2 The pilot must request an alternative when at ATC-issued speed control instruction is unacceptable on operational grounds.
>
> 5.5 A pilot will be advised when a specific ATC-issued speed control instruction is no longer necessary. Unless otherwise stated, an ATC-issued speed control instruction applies until the aircraft reaches the point in the descent profile where the speed would normally be reduced below that assigned by ATC. Except for a STAR, a DME arrival, or unless otherwise specified, a clearance for final approach or a clearance for a visual approach terminates speed control.

On this flight, after being cleared for the STAR, the flight crew were instructed to 'increase speed to 270 knots and then cancel further speed restrictions'. About 3 minutes later, they were cleared to conduct a visual approach.

Airservices Australia advised that in this case, the aircraft was expected to maintain 270 kt until the point of normal profile speed reduction. The flight crew could then resume their desired profile speed.

The aircraft maintained 270 kt until it passed waypoint VAVGA, less than 2 minutes after being cleared for a visual approach. The captain reported that the cancellation of speed restrictions created a 'subtle pressure' to maintain a higher airspeed, and contributed to the faster approach speed.

Recorded flight data

At 1528:44 the aircraft was 40 NM from OBGOS at 13,915 ft (corrected barometric altitude for comparison) and 250 kt when ATC instructed the flight crew to increase speed to 270 kt then cancel further speed restrictions.

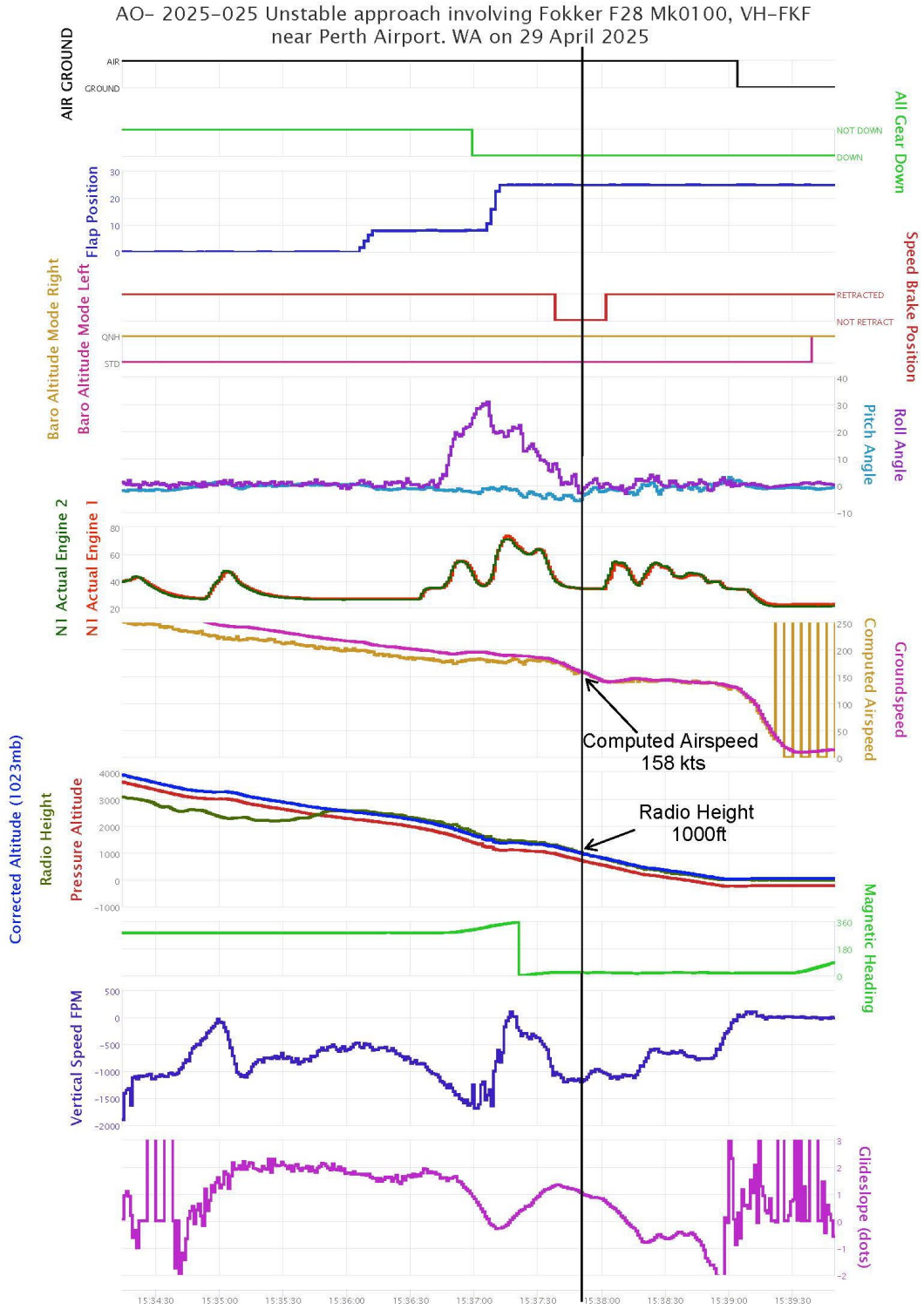
At 1531:42, the aircraft was 24.6 NM from OBGOS at 7,698 ft barometric altitude and 272 kt when cleared for a visual approach. The aircraft then continued at about 270kt to waypoint VAVGA, 16 NM from OBGOS. From there, about 140 kt deceleration to V_{APP} (132 kt) was required by 1,000 ft.

At VAVGA the aircraft was at 5,000 ft, 1,600 ft higher than the minimum permitted altitude. To that point, the average descent rate since the crew were instructed to increase to 270 kt (40 NM from OBGOS), had been 1,938 fpm. A descent rate of 2,286 fpm was required for the aircraft to have passed VAVGA at 3,400 ft and subsequently achieve the required deceleration.

Figure 4 depicts key parameters of the recorded flight data during the approach from 3,000 ft. At 1,000 ft radio altitude, the recorded airspeed was 158 kt, which reduced to the stabilised criterion of V_{APP} + 10 (142 kt) by 800 ft, 9 seconds later. The vertical speed was not recorded but was calculated from the change in recorded altitudes.

Table 1 shows the derived vertical speed, with exceedances of the stabilised criterion of 1,000 fpm between about 1,000 ft and 450 ft radio altitude. These included an expected increase in vertical speed associated with the retraction of the speed brake, passing about 800 ft radio altitude. The recorded data also showed that the aircraft was within one dot of the 3° glideslope from 1,000 ft and therefore on the correct approach profile.

Figure 4: Recorded flight data of approach to runway 03 from 3,000 ft



Source: ATSB analysis of recorded flight data

Table 1: Descent rates from about 1,000–400 ft radio altitude

Radio altitude (ft)	Descent rate (fpm)
1,015	-1,217
977	-1,127
965	-1,123
915	-1,087
913	-1,030
873	-890
868	-843
843	-870
843	-983
797	-990
798	-1,013
805	-1,103
773	-1,203
720	-1,200
719	-1,050
708	-1,013
683	-1,123
668	-1,170
609	-1,097
611	-1,067
606	-1,110
587	-1,197
541	-1,023
550	-940
561	-953
492	-1,140
491	-1,207
455	-1,163
437	-1,027
391	-820

Alliance Airlines documented procedures

Descent rates

The OPPM stated:

> The following values for the rate of descent below the transition altitude shall not normally be exceeded:
>
> • 3000 fpm down to an altitude of 3000 ft above aerodrome level (AAL).
>
> • 2000 fpm down to an altitude of 2000 ft AAL transitioning to 1000 ft AAL
>
> • 1000 fpm below 1000 feet AAL.

Visual approach

The OPPM stated that in visual meteorological conditions (VMC)[9] on a visual approach, the aircraft must join the circuit on the upwind, crosswind or downwind leg, or make a straight-in approach after establishing on final approach by 5 NM.

The Alliance Airlines F70–100 AOM SUP (versions 2.5 published in March 2024 and 2.6 published 10 June 2025) included section 7.12 *Visual approach* with subheadings 7.12.1 *Procedure* and 7.12.2 *Straight-in visual approach*. Both subsections included:

> If not in the correct landing configuration at 1000ft AAL [above aerodrome level], a go around must be initiated.
>
> If not stabilised on speed and glide path at 500ft AAL, a go around must be initiated.

Additionally, section 7.12.2 *Straight-in visual approach included:*

> The following are the requirements for configuring a straight in approach.
>
> - The aircraft must be configured landing gear down and flap 25 prior to 1500ft AAL and a 5nm final.
> - Select flap 42 (if required) at 1300ft AAL.
>
> Vertical speed should not exceed 1000ft/min inside 5nm to touchdown.

Stabilised approach criteria

The Alliance Airlines OPPM defined a stabilised approach as one that met the following criteria:

> a) the correct flight path;
>
> b) only small changes in heading/pitch are required to maintain the correct flight path;
>
> c) the aircraft speed is not more than V_{APP} + 10 knots indicated airspeed and not less than V_{REF};
>
> d) the aircraft is in the correct landing configuration;
>
> e) sink rate is no greater than 1,000 feet per minute
>
> f) thrust or power setting is appropriate for the aircraft configuration;
>
> g) all briefings and checklists have been completed;
>
> h) specific types of approaches are stabilized if they also fulfil the following
>
> i. instrument landing system (ILS) approaches must be flown within one dot of the glideslope and localizer
>
> ii. a Category II or Category III ILS approach must be flown within the expanded localizer band
>
> i) unique approach procedures or abnormal conditions requiring a deviation from the above elements of a stabilized approach require a special briefing to have been completed prior to beginning the approach.
>
> • **Note 1**: A momentary excursion is permitted for points (c) & (e). A momentary excursion is defined as a deviation lasting only a few seconds and where every indication is that it will return to the stabilised criteria as listed in points (c) & (e).

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[9] Visual meteorological conditions (VMC): an aviation flight category in which visual flight rules (VFR) flight is permitted – that is, conditions in which pilots have sufficient visibility to fly the aircraft while maintaining visual separation from terrain and other aircraft.

• **Note 2**: Where the nominal descent path for a particular approach requires a descent rate greater than 1000 fpm. This is only permitted when expected rates of descent have been briefed prior to the approach being commenced.

Stabilized Heights

All flights shall meet all of the above stabilized approach criteria by 1,000 feet above aerodrome level except under the following circumstances:

Visual approach:

- Speed may be higher than V_{APP} + 10, provided it is within limits and expected to reduce to V_{APP}+10 or below by no later than 500ft AAL.
- **Note 3:** Visual conditions as defined by Jeppesen AUS or AIP - the pilot has established and can continue flight to the airport with continuous visual reference to the ground or water; and visibility along the flight path is not less than 5000m.

Visual circuit:

- Manoeuvring shall be completed no later than 500 AAL.

Circling approach

- Final Flap shall be selected no later than leaving the Circling Altitude.
- By 500ft AAL for the following shall be achieved.
    - Approach Speed must be achieved
    - Checklists must be completed
    - Manoeuvring must be completed.

…[RNP-AR approach]

An approach that does not meet, or subsequently exhibits sustained deviations outside of these criteria requires an immediate go-around.

On 3 April 2025, Alliance issued Operations notice 25-038:

Background

The company is currently seeing an increased trend in Crew not adhering to the stabilised approach criteria contained in OPPM 7.12.9. Data from safety reports and gatekeeper contact has identified that crew are often misinterpreting the requirements of the policy. Therefore, the policy has been revised to improve clarity and compliance.

All Tech Crew are to review and ensure familiarisation with the revised company Stabilised Approach Criteria below. Adherence to the stabilised approach criteria is mandatory.

Stabilised Approach Policy.

On all approaches the PIC should ensure that the aircraft speed, configuration and descent profile are managed to comply with the Stabilised Approach Criteria outlined below.

If ANY of the Stabilised Approach Criteria have not been achieved, the PF should execute a mandatory missed approach.

Note. Momentary excursions are permitted on Speed and ROD. A momentary excursion is defined as a deviation lasting only a few seconds and where every indication is that it will return to the stabilised criteria.

Note. If the approach is unique or abnormal situations necessitate a deviation from the stabilized approach criteria below, the specific elements are required to be included in the arrival briefing. Eg an offset approach requiring late runway alignment.

Stabilised Approach Criteria

3D, 2D Approaches and Straight in Visual Approach	Trigger	PF	PM
By 1000' AAL (IMC and VMC) • **C**hecklist ○ Before Landing Checklist Complete[1] • **S**peed ○ Not below VREF and not above VAPP+10kts • **F**light Path ○ The aircraft is established within the lateral and vertical tolerances for the approach.[2] ○ Only small changes in heading/pitch are necessary to maintain the correct flight path ○ Sustained rates of descent not exceeding 1000fpm.	1000' Auto Call[3]	Call: **"CHECK"** Call: **"GO AROUND_"**[4]	CSF criteria met. Call: **"STABLE"** CSF criteria not met. Call: **"NOT STABLE"**

Visual Circuit/Circling Manoeuvre	Trigger	PF	PM
By 500' AAL • **C**hecklist ○ Before Landing Checklist Complete[1] • **S**peed ○ Not below VREF and not above VAPP+10kts • **F**light Path ○ The aircraft is established on the runway centreline and on the correct slope ○ only small changes in heading/pitch are necessary to maintain the correct flight path ○ Sustained rates of descent not exceeding 1000fpm	500' Auto Call	Call: **"CHECK"** Call: **"GO AROUND_"**[4]	CSF criteria met. Call: **"STABLE"** CSF criteria not met. Call: **"NOT STABLE"**

[1] Before Landing Checklist complete requires the aircraft to be in the correct landing configuration.
[2] ILS approaches must be flown within one dot of the glide-slope and localizer.
[3] On Fokker aircraft 1000' Auto Calls are not available. At 1000'RA the PM should call "ONE THOUSAND __"
[4] E190 Call: "GO AROUND FLAP__".

Notes For Tech Crew

- The missed approach area should be assessed prior to commencing the approach, weather and terrain in the missed approach area should not be an inhibitor to conducting a missed approach or continuing to land in an unstable condition.

- Crew are encouraged to meet ATC requests where possible however requests should not be accepted if it's likely to result in the aircraft being put in a high energy state

Non Punitive Go Around Policy

Please note Alliance Airlines has a non punitive go around policy. Refer OPPM 7.12.20.

Regulator Compliance

Unstable approaches that do not meet the companies' stabilised approach criteria are now a mandatory reportable item to the ATSB.

The Alliance Airlines Fokker AOM SUP (v2.5 released March 2024 and v2.6 released 10 June 2025) included the following visual approach standard calls:

11.4.1 Visual Approach Standard Calls

CONDITION	PILOT RESPONSE	
	Pilot Not Flying (Support Pilot)	Pilot Flying (Manipulating Pilot)
At 500 ft AGL **Note:** If using the ILS for guidance, the smart call may not announce 500 ft. In this case, the PNF must also announce "500".	Stable/Not stable	Checked/going around
When outside speed as per OPPM Ch 7 Stable Approach Criteria	Speed	Checked
Below 1000 ft AGL and VSI in excess of 1000 fpm	Sink rate	Checked
When leaving circuit altitude from a visual approach	Checked	Leaving circuit altitude
When any portion of the final approach is flown by reference to VASIS or PAPI, and either: • VASIS indicates more than one dot above or below normal on slope profile, or • PAPI indicates more than one dot high or low	Low on slope, or High on slope	Checked

Hierarchy of manuals

The Alliance Airlines hierarchy of manuals stated that the Operations Policy and Procedures Manual (OPPM) was the primary manual, and the aircraft operating manuals and supplements were supporting manuals. The OPPM section 7 – *Standard operating procedures* stated:

> All Pilots must be fully aware and observant of the procedures and calls outlined in this chapter. Operate Alliance Airlines aircraft in accordance with the appropriate Aircraft Operating Manual and the Alliance Airlines Operations Policy and Procedures Manual. If information in either of these manuals conflict, the information in the most recent revision of the Aircraft Operating Manual or Operations Notice 'date' can be assumed to be valid.

Based on the hierarchy, the operations notice replaced the stabilised approach criteria documented in the OPPM. At the time of the incident, the operations notice had a more recent publication date than the AOM SUP and therefore took precedence where the information conflicted. However, an amendment to the AOM SUP was published after the incident (and subsequent to the operations notice), which did not amend the information that conflicted with the operations notice.

Alliance Airlines advised that it intended the flight crew to comply with the operations notice, which at the time of writing was to be incorporated into an amended OPPM. Additionally, a further amendment would be made to the AOM SUP to remove conflicting information.

Applicable stabilisation height

Alliance assessed that for the visual STAR via OBGOS the applicable stabilisation height was 1,000 ft, 'because the STAR has FMS [flight management system] guidance and is not a visual circuit or circling manoeuvre'. However, Alliance's stabilisation heights depended on whether a visual straight-in approach, instrument approach or visual circling/circuit approach was being conducted. The procedure did not describe the height based on whether an arrival was coded in the FMS. Alliance advised that initially the flight did not flag an exceedance in Alliance's flight data analysis program and would therefore not have been further reviewed had the flight crew not reported setting the incorrect QNH. Having reviewed the recorded flight data, Alliance initially determined that there were no speed exceedances, and although the descent rate exceeded 1,000 fpm between 1,000 and 500 ft, this was considered transitory in nature and therefore was permitted in accordance with the stabilised approach criteria. However, Alliance subsequently assessed that the duration of the speed exceedance was not momentary.

The captain and first officer were familiar with the content of the operations notice. The first officer identified the approach as a straight-in visual approach and therefore made the appropriate callout of '1,000 ft', assessed that the stabilised approach criteria were met, then called 'stable'. The first officer reported that due to the 'busyness of [turning] the corner', this check may have occurred slightly below 1,000 ft. Additionally, they reported assessing that the airspeed was reducing as required and subsequent vertical speed exceedances were momentary and therefore acceptable within the criteria.

Prior to Alliance Airlines issuing operations notice 25-038, 26 days prior to the occurrence, the stabilisation height for a visual approach in VMC was 500 ft. However, the captain assessed that the visual approach via the STAR and waypoint OBGOS was not specifically defined in the operations notice, either by a visual approach with a 5 NM final, or a visual circuit, which did not permit joining the circuit on a base leg. Further, that for the intent of a stabilised approach, the approach was more aptly comparable to a visual circuit, albeit that the aircraft entered the circuit on base leg before turning onto final. The captain therefore interpreted the applicable stabilisation height to be 500 ft. As pilot flying, the captain reported having flown the approach with the intent to be stable by 500 ft, and had observed that otherwise the airspeed was too high at 1,000 ft.

The ATSB assessed that the approach was a straight-in visual approach, though by design had a final leg somewhat less than 5 NM, and therefore based on the operations notice, the applicable stabilisation height was 1,000 ft.

Safety analysis

The flight crew reported performing the transition checks, which required each flight crewmember setting and then crosschecking that all 3 altimeters were set to the correct pressure subscale. However, neither flight crewmember identified that the captain's primary flight display (PFD) had not been switched from standard (STD) to barometric pressure (QNH). This was again missed at the required 5,000 ft check, which coincided with air traffic control (ATC) advising of a change in the QNH.

The flight crew also did not identify the error when they later crosschecked that the radio altitudes matched on both PFDs, when passing about 2,500 ft. It could not be determined why this was missed, but it resulted in the captain's PFD indicating about 300 ft lower than the aircraft's actual height.

Having the altimeter set correctly is important to ensure the aircraft is operating at the same height basis as other aircraft in the same airspace, and to ensure adequate separation from terrain. In this case, indicating 300 ft lower than actual did not increase the risk of a collision with terrain. Additionally, had the captain, as pilot flying, based the approach profile on the indicating lower altitude, it should have resulted in the aircraft being stabilised 300 ft higher than the stabilisation height. However, by that stage, the flight crew were referencing radio altitude rather than barometric altitude.

The captain reported identifying the discrepancy between the altimeter and the radio altitude at about 1,500 ft, during the turn onto final. Their focus on the discrepancy may have contributed to the delay in achieving the required stabilised speed. However, having assessed the required stabilisation height as 500 ft, the captain was unconcerned (although aware) that the airspeed was fast at 1,000 ft. The airspeed reduced below the stabilisation criterion by 800 ft.

The first officer's assessment that the 1,000 ft stabilised height applied, and all requirements were met, was consistent with Alliance Airlines' assessment that the vertical speed deviations were transient and acceptable within the stabilisation criteria. However, at 1,000 ft, the airspeed was 26 kt above the approach speed, with only a 10 kt exceedance permitted. The pilot monitoring did not call 'unstable' as required by the stabilised approach policy. This may have been influenced by the pilot monitoring experiencing the turn onto final as a 'busy corner', the required checks being completed slightly below 1,000 ft and an assessment that the airspeed was reducing.

The ATC speed instructions resulted in the aircraft being significantly faster than the published speeds during the standard instrument arrival (STAR). Additionally, the captain reported some pressure to keep the speed up during the approach. However, according to the Airservices Australia Aeronautical Information Publication (AIP), an ATC-issued speed instruction only applied to the point where the flight crew would reduce the speed on the normal profile for the approach. Furthermore, if flight crew assessed a speed control instruction was unacceptable, they were to request an alternative.

The aircraft's average descent rate was less than 2,000 fpm between about 14,000 ft to 5,000 ft, during which 270 kt airspeed was maintained. As Alliance permitted up to 3,000 fpm above 3,000 ft, there was opportunity to descend faster earlier in the approach, which would have facilitated more effective speed reduction later in the approach. The airspeed was below the 200 kt landing gear extension speed for about 1 minute before the landing gear fully extended during the turn onto final. As the airspeed was only above the required stabilised approach speed at 1,000 ft for 9 seconds, extending the landing gear, flap, and/or speed brake slightly earlier, would likely have ensured the stabilised criteria could be met.

Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include ‘contributing factors’ and ‘other factors that increased risk’ (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition ‘other findings’ may be included to provide important information about topics other than safety factors.

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

From the evidence available, the following findings are made with respect to the unstable approach involving Fokker 100, VH-FKF, near Perth Airport, Western Australia on 29 April 2025.

Contributing factors

- The pilot flying incorrectly assessed that the applicable stabilisation height was 500 ft. As a result, they did not manage the aircraft's energy state to ensure the stabilised approach speed requirement was met by 1,000 ft.
- The pilot monitoring did not announce that the approach was unstable when the speed-related stabilised approach criteria was not met at 1,000 ft. This may have been influenced by workload, the required check being completed slightly late, and an assessment that the airspeed was reducing.

Other factors that increased risk

- Passing the transition level, the captain inadvertently omitted to change the altimeter setting from standard pressure to QNH, resulting in the left altimeter indicating 300 ft lower than the right altimeter. Neither flight crewmember detected the incorrect setting during 2 subsequent checks prior to landing.

General details

Occurrence details

Date and time:	29 April 2025 – 1540 Western Standard Time	
Occurrence class:	Incident	
Occurrence categories:	Unstable approach, aircraft preparation	
Location:	near Perth Airport, Western Australia	
	Latitude: 31.9403° S	Longitude: 115.9669° E

Aircraft details

Manufacturer and model:	FOKKER AIRCRAFT B.V. F28 MK 0100	
Registration:	VH-FKF	
Operator:	ALLIANCE AIRLINES PTY LTD	
Serial number:	11365	
Type of operation:	Part 121 Australian air transport operations - Larger aeroplanes-Standard Part 121	
Activity:	Commercial air transport-Scheduled-Domestic	
Departure:	West Musgrave Airport (Mantamaru), Western Australia	
Destination:	Perth Airport, Western Australia	
Persons on board:	Crew – 4	Passengers – 15
Injuries:	Crew –none	Passengers – none
Aircraft damage:	None	

Sources and submissions

Sources of information

The sources of information during the investigation included:

- the flight crew
- Alliance Airlines
- Honeywell
- Airservices Australia
- the Bureau of Meteorology
- recorded flight data from the aircraft.

Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- the flight crew
- Alliance Airlines
- Airservices Australia
- the Civil Aviation Safety Authority
- Fokker
- the Dutch Safety Board.

Submissions were received from:

- Alliance Airlines
- Airservices Australia
- Fokker
- the Dutch Safety Board.

The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.

About the ATSB

The **Australian Transport Safety Bureau** is the national transport safety investigator. Established by the *Transport Safety Investigation Act 2003* (TSI Act), the ATSB is an independent statutory agency of the Australian Government and is governed by a Commission. The ATSB is entirely separate from transport regulators, policy makers and service providers.

The ATSB's function is to improve transport safety in aviation, rail and shipping through:

- the independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis, and research
- influencing safety action.

The ATSB prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, international agreements.

Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety. This is done through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings.

At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

About ATSB reports

ATSB occurrence investigation reports are organised with regard to international standards or instruments, as applicable, and with ATSB procedures and guidelines.

An explanation of ATSB terminology used in this report is available on the ATSB website.