AIRCRAFT INCIDENT SHORT REPORT

CA18/3/2/1204: ZS-ALO, Loss of separation between aircraft 1 and 2 on final approach for runway 29

Date and time	:	17 April 2018 at 0955Z
Occurrence type	:	Serious Incident
Aircraft registration	:	ZS-ALO
Aircraft manufacturer and model	:	Embraer ERJ-135LR
Last point of departure	:	Cape Town International Aerodrome (FACT)
Next point of intended landing	:	Wonderboom Aerodrome (FAWB)
Location of incident site with reference to easily defined geographical points (GPS readings if possible)		On approach for runway 29 at FAWB (GPS position; 25°39'19.11" South 028°13'16.81" East)
Meteorological information	:	Surface wind: 230°/ 6kts, Temperature: 23°C, Clouds: SCT at 8000 feet, Visibility: 10km
Type of operation	:	Air Transport Operations (Part 121)
Persons on board	:	3 + 29
Injuries	:	None
Damage to aircraft	:	None

All times given in this report is Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to establish blame or liability.***

Disclaimer:

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1. SYNOPSIS

1.1 On Tuesday 17 April 2018, during daylight time, flight SA8678, an Embraer ERJ-135 with registration markings ZS-ALO departed from FACT on scheduled domestic flight to FAWB. On board the aircraft were 3 crew members and 29 passengers. The flight was conducted in accordance with the provisions of Part 121 of the Civil Aviation Regulations (CARs) 2011 as amended. An IFR flight plan was filed and the aircraft departed FACT at 0758Z with an estimated arrival time of 0955Z at FAWB.

1.2 On final approach, SA8678 was asked to continue the approach for runway 29, however slower traffic, a Cessna 172, ZS-OHN was cleared by air traffic control (ATC) for a touch-and-go ahead of SA8678. This resulted in a loss of separation whereby the crew of SA8678 initiated a go around by performing a non- standard left-hand turn to prevent a possible mid-air collision.

1.3 They re-joined on final approach for runway 29 and landed safely. The approach to land was carried out during daylight with visual meteorological conditions (VMC) prevailing.

2. HISTORY OF FLIGHT

2.1 On Tuesday 17 April 2018 at 0758Z, a domestic schedule flight with the call sign SA8678 departed FACT on an IFR flight plan to FAWB. On board the aircraft were 3 crew members and 29 passengers.

2.2 The flight to FAWB was uneventful until SA8678 was handed over from Johannesburg Radar while flying at 8 000 feet above mean sea level (AMSL). They were informed to contact air traffic control (ATC) at FAWB tower. At that stage they were just below the cloud base and they had FAWB in sight and they requested a visual approach but were advised by ATC to standby and route via the Whisky Bravo (WB) Non-Directional Beacon (NDB) (see approach chart attached as Annexure B). The crew noted that the circuit was very busy. ATC then cleared SA8678 for the visual approach and to join on a right downwind for runway 29 and to descend to 7 000 ft. At no stage did ATC ask the crew of SA8678 their position prior to issuing the clearance.

2.3 It was not possible for the crew to join on a right downwind from their current position and the pilot opted to fly over the WB beacon and position for a wide teardrop, which put the aircraft on a late downwind / base leg for runway 29. They assumed that this would have allowed enough spacing between them and the preceding student pilot in a Cessna 172 (ZS-OHN). Once they turned base they requested ATC to descend. They were advised to continue with the approach and they were number 2 for landing.

2.4 The crew of SA8678 saw on their traffic collision and avoidance system (TCAS) that there were about four training aircraft in the right-hand circuit for runway 29. At about 500 ft. above ground level (AGL) they saw the Cessna 172 approximately 2nm ahead of them.

2.5 The Cessna 172 pilot was then instructed by ATC to abort his touch-and-go and go-around and to re-join the right-hand circuit. At that stage the crew of SA8678 felt that the separation was inadequate and they immediately committed to the go around and entered a left-hand non-standard pattern to avoid the slower visual flying rules (VFR) traffic in the right-hand pattern. This action by the crew of SA8678 was to avoid a possible mid-air collision with the Cessna 172.

2.6 During the go-around ATC informed the crew of SA8678 that she had them visual and that they should turn base overhead Roodeplaat dam, they were number 2 on the approach behind a solo student pilot, who was flying a Piper PA-28-140 (ZS-SPT).

2.7 At this stage the PIC took control of the radio communication and informed ATC that this was unacceptable as they were scheduled airline traffic and they must have priority and they should keep the training aircraft in the circuit until they had landed. The ATC then told the PIC that they would discuss this further once they were on the ground. It was then that the ATC on duty vacated her position in the tower and another ATC took over. The aircraft continued with the approach and an uneventful landing followed.

3. FACTUAL INFORMATION

3.1 The pilot-in-command (PIC) held a valid Airline Transport Pilots License (ATPL) which was initially issued on the 1st August 2011 and expires on the 30th April 2019, as well as the necessary rating to operate the aircraft. The PIC's aviation medical certificate was valid at the time of the incident and expires on the 28th February 2019.

3.2 The first officer (FO) held a valid Airline Transport Pilots License (ATPL) which was initially issued on 21st June 2017 and expires on the 30th June 2019, as well as the necessary rating to operate the aircraft. The FO's aviation medical certificate was valid at the time of the incident and expires on the 28th of February 2019.

3.3 The air traffic controller (ATC) on duty held a valid air traffic service (ATS) license which expires on the 11th of September 2018, as well as the necessary rating to operate as an aerodrome controller. The ATC's aviation medical certificate was valid at the time of the incident and expires on the 28th February 2022.

3.4 There were four aircraft undergoing training flights under visual flying rules (VFR) in the circuit at the time of the incident.

3.5 Fine weather conditions prevailed and the approach was flown during visual meteorological conditions (VMC).

4. PROBABLE CAUSE

4.1 The crew of flight SA8678 took evasive action (left turn) while on final approach for a full stop landing when the separation between them and the slower traffic ahead of them reduced as such that the safety of the aircraft and its occupants was being compromised.

5.1 CONTRIBUTING FACTORS

5.1.1 Air traffic control allowed VFR traffic (Cessna 172) to proceed with a touch-and-go ahead of a much faster aircraft that was on an IFR flight plan, which resulted in a loss of adequate separation.

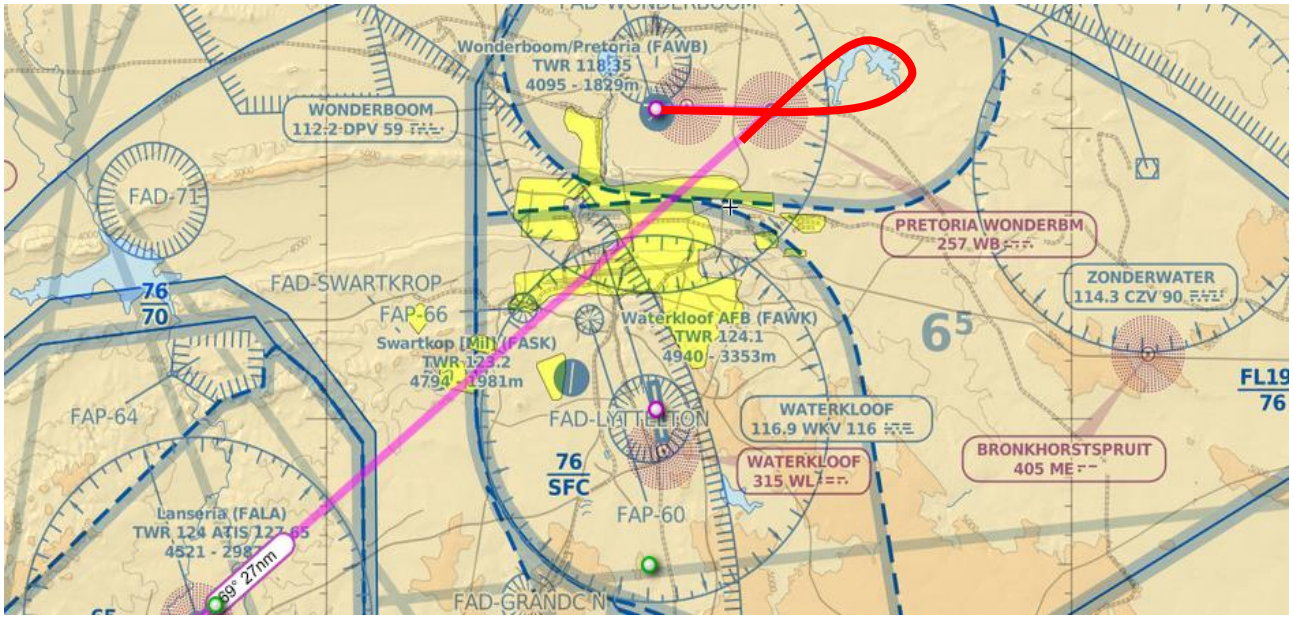


Figure 1: The flight plan routing from LIV to WB (Skyvector)

The red portion shows the tear-drop pattern to join on final approach that SA8678 carried out

Figure 2: ZS-ALO an Embraer ERJ-135 (photograph courtesy of www.Jetphotos.com)

Figure 3: ZS-OHN a Cessna 172N (photograph courtesy of www.Jetphotos.com)

6. REFERENCES USED ON THE REPORT

Air Traffic and Navigation Services Mandatory Occurrence Report Number WB-30-2018

SA Airlink Hazard Report Number 6049

CAA Standards & Procedures (ATCIs) Manual, Section 2, Revision February 2013

7. SAFETY RECOMMENDATION

None

8. APPENDICES

Annexure A (CAA Standards & Procedures (ATCIs Manual, Section 2 Revision February 2013)

Annexure B (FAWB Breakcloud NDB Runway 29 procedure)

ANNEXURE A

6.1.2 **Visual Approach**

a) To expedite traffic IFR flights may be cleared to execute visual approaches, whilst still maintaining IFR Flight Plan status, when:

i. The pilot can maintain visual reference to the terrain; *and*

ii. The reported cloud ceiling is above the initial approach altitude;

OR

The pilot reports at the Initial approach level or at any time during instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed; *and*

iii. The aircraft is within 25NM of the destination aerodrome;

iv. A Visual Approach may be requested by the pilot or initiated by an ATC. When initiated by the ATC the concurrence of the pilot is required.

v) The reported ceiling is at or above the level of the beginning of the initial approach segment for the aircraft so cleared; or

vi) The pilot reports at the level of the beginning of the initial approach segment or at any time during the instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed

Note: *The following RT may be used:*

Pilot request: *"Field (terrain) in sight, request visual approach".*

ATC response: *"…….. (callsign) are you able to accept a visual approach runway…?"*

b) During a visual approach the ATSU shall remain responsible to provide separation between all aircraft. The pilot shall remain responsible for terrain clearance as well as remaining within controlled airspace.

c) Controllers shall exercise caution in initiating a visual approach when there is reason to believe that the flight crew concerned is not familiar with the aerodrome and its surrounding terrain. Controllers should also take into consideration the prevailing traffic and weather conditions when initiating visual approaches.

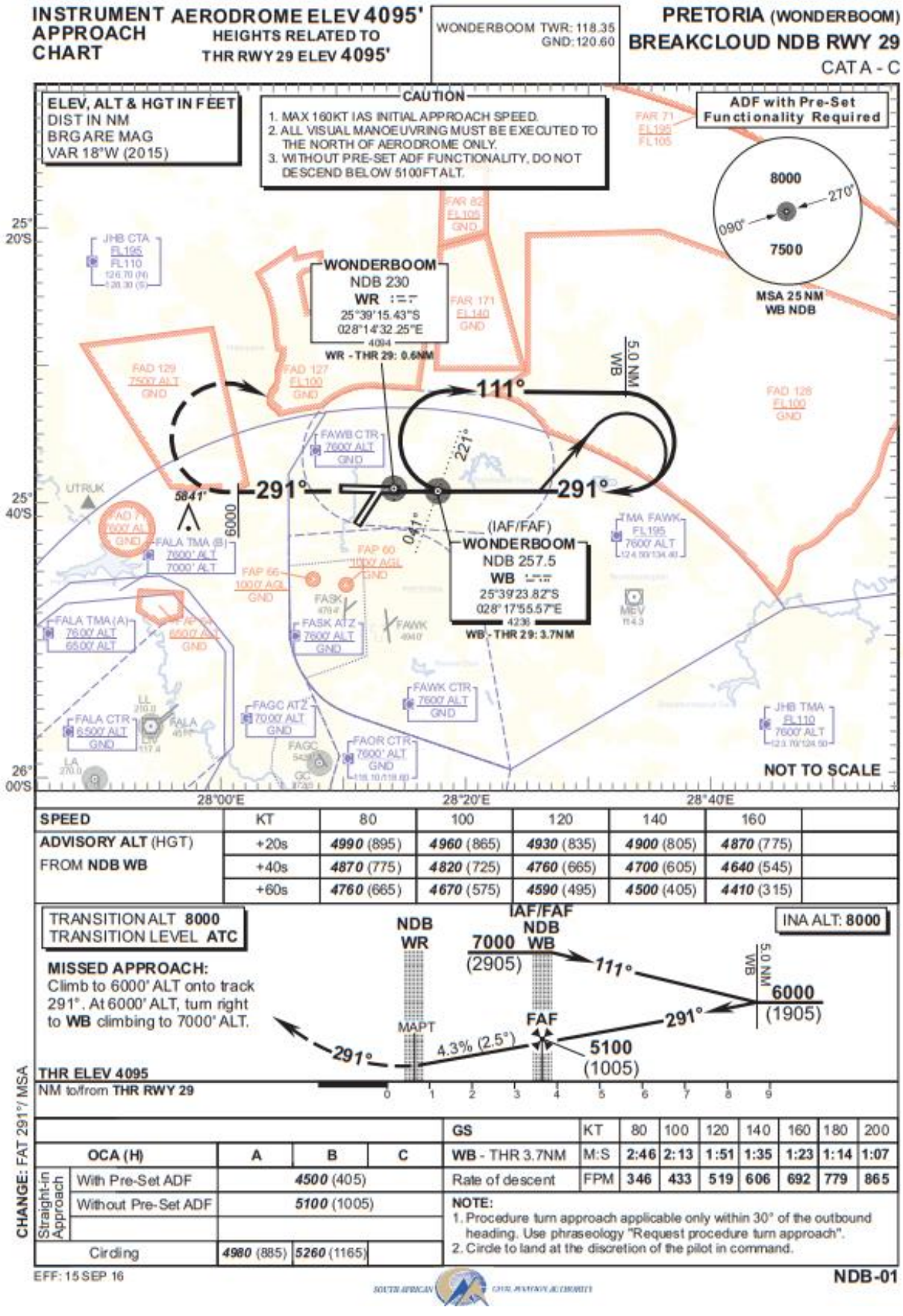
d) Standard separation shall be provided between an aircraft cleared to execute a visual approach and all other controlled flights.

Note 1: *The term visual approach is only associated with an instrument approach procedure, where the Instrument Approach is abbreviated in total or in part.*

Note 2: *Separation may be based upon pilot or ATC sighting and maintaining visual separation between succeeding aircraft in the vicinity of an aerodrome.*

Note 3: *When an aircraft is receiving vectors, a clearance for a visual approach shall only be issued when a pilot reports the aerodrome in sight OR the preceding aircraft in sight, at which time the vectoring/control will be terminated; however the aircraft will still be provided with* an ATS surveillance *service.*

ANNEXURE B


INSTRUMENT APPROACH CHART
AERODROME ELEV 4095'
HEIGHTS RELATED TO THR RWY 29 ELEV 4095'
WONDERBOOM TWR: 118.35
GND: 120.60
PRETORIA (WONDERBOOM)
BREAKCLOUD NDB RWY 29
CAT A - C
ELEV, ALT & HGT IN FEET
DIST IN NM
BRG ARE MAG
VAR 18°W (2015)
CAUTION
1. MAX 160KT IAS INITIAL APPROACH SPEED.
2. ALL VISUAL MANOEUVRING MUST BE EXECUTED TO THE NORTH OF AERODROME ONLY.
3. WITHOUT PRE-SET ADF FUNCTIONALITY, DO NOT DESCEND BELOW 5100FT ALT.
ADF with Pre-Set Functionality Required
8000
7500
090°
270°
MSA 25 NM WB NDB
WONDERBOOM
NDB 230
WR
25°39'15.43"S
028°14'32.25"E
4094
WR - THR 29: 0.6NM
111°
291°
291°
5.0 NM WB
6000
5841'
(IAF/FAF)
WONDERBOOM
NDB 257.5
WB
25°39'23.82"S
028°17'55.57"E
4236
WB - THR 29: 3.7NM
NOT TO SCALE
28°00'E
28°20'E
28°40'E
25° 20'S
25° 40'S
26° 00'S
SPEED | KT | 80 | 100 | 120 | 140 | 160
ADVISORY ALT (HGT) FROM NDB WB | +20s | 4990 (895) | 4960 (865) | 4930 (835) | 4900 (805) | 4870 (775)
+40s | 4870 (775) | 4820 (725) | 4760 (665) | 4700 (605) | 4640 (545)
+60s | 4760 (665) | 4670 (575) | 4590 (495) | 4500 (405) | 4410 (315)
TRANSITION ALT 8000
TRANSITION LEVEL ATC
INA ALT: 8000
MISSED APPROACH:
Climb to 6000' ALT onto track 291°. At 6000' ALT, turn right to WB climbing to 7000' ALT.
NDB WR
IAF/FAF NDB WB
7000
(2905)
111°
5.0 NM WB
6000
(1905)
291°
MAPT
FAF
4.3% (2.5°)
291°
5100
(1005)
THR ELEV 4095
NM to/from THR RWY 29
0 1 2 3 4 5 6 7 8 9
CHANGE: FAT 291°/ MSA
OCA (H) | A | B | C
Straight-in Approach: With Pre-Set ADF | 4500 (405)
Without Pre-Set ADF | 5100 (1005)
Circling | 4980 (885) | 5260 (1165)
GS | KT | 80 | 100 | 120 | 140 | 160 | 180 | 200
WB - THR 3.7NM | M:S | 2:46 | 2:13 | 1:51 | 1:35 | 1:23 | 1:14 | 1:07
Rate of descent | FPM | 346 | 433 | 519 | 606 | 692 | 779 | 865
NOTE:
1. Procedure turn approach applicable only within 30° of the outbound heading. Use phraseology "Request procedure turn approach".
2. Circle to land at the discretion of the pilot in command.
EFF: 15 SEP 16
NDB-01