SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Accident and Incident Investigations Division** Form Number: CA 12-57

LIMITED INCIDENT INVESTIGATION

Reference Number	CA18/3/2/1343										
Classification	Incident		**Date**	10 May 2021		**Time**	1408Z				
Type of Operation	Flight Training (Part 141)										
Location											
Place of Departure	Wonderboom National Aerodrome		**Place of Intended Landing**			Wonderboom National Aerodrome					
Place of Accident	FAD 127 Wonderboom General flying Area										
GPS Co-ordinates	Latitude	25˚29'24.95" S	Longitude	028˚14'25.80" E		Elevation	7000 feet				
Aircraft Information											
Registration	ZS-GDA										
Registration	ZS-PMX										
Model/Make	Cessna 172 P (Both)										
Damage to Aircraft ZS-GDA	None		Total Aircraft Hours			18 141.1					
Damage to Aircraft ZS-PMX	None		Total Aircraft Hours			6 362.5					
Pilot-in-command											
Licence Type ZS-GDA	Commercial Pilot Licence		Gender		Male		Age 27				
Licence Type ZS-PMX	Airline Transport Licence		Gender		Male		53				
Licence Valid	Both Valid										
Total Hours on Type ZS-GDA	980.0 for		Total Flying Hours			1 010.0					
Total Hours on Type ZS-PMX	1 664.2		Total Flying Hours			13 350.3					
People On-board ZS-GDA	1 + 1	Injuries	0	Fatalities	0	Other (On Ground)	0				
People On-board ZS-PMX	1 + 1	Injuries	0	Fatalities	0	Other (On Ground)	0				

What Happened

On Monday afternoon, 10 May 2021, a flight instructor accompanied by a student pilot on-board a Cessna 172P with registration ZS-GDA took off from Wonderboom National Aerodrome (FAWB) at 1333Z. After take-off, the duo flew north to conduct aerial work at FAD 127 (Danger Flying Area 127), which is a designated flight-training area. Once they entered the general flying area, they routed towards the centre field while climbing to 7 000 feet (ft) where they commenced with exercise 10 (Stalling).

At 1353Z on the same day, a Cessna 172P aircraft with registration ZS-PMX also departed FAWB on a training flight to the same general flying area. On-board the aircraft were a flight instructor and a student pilot. The intention of the crew was to conduct aerial work at the FAD 127. Although the

transponder code of 2000 was selected, no mode C (Charlie) was detected by air traffic control (ATC) radar for this aircraft.

The ZS-PMX aircraft was tracked on Secondary Surveillance Radar (SSR); it entered FAD 127 general flying area at 13:59:29Z, flying in a northerly direction. Approximately 1 minute later, the aircraft commenced a left turn, flying in a north-westerly direction. At 14:03:09Z, it commenced another left turn flying in a south-easterly direction and was observed turning left again at 14:06:24Z, flying in a north north-easterly direction towards the north-eastern corner of FAD 127. (*The track that the aircraft flew is depicted in Figure 1, indicated by the orange dotted line.*) The flight instructor stated that they communicated with ATC prior to and after take-off on radio 1 (Comm 1) without any problem. Once at FAD 127 general flying area, the instructor allowed the student pilot to do radio work using the same radio. The student pilot did numerous blind transmissions, but it seemed as though they were not audible; they then changed to radio 2 (Comm 2) where they were able to communicate with other traffic in the area. The flight instructor stated that while they were flying towards the north-eastern corner of FAD 127, they saw another aircraft on their right-side just below them turning right towards north-west. The instructor and the student pilot continued with their flight. On their return to FAWB, they communicated with ATC, alternating between the two radios without any communication problems.

The path of the ZS-GDA aircraft that took off 20 minutes prior to ZS-PMX from FAWB to carry out aerial work in the north-eastern section of FAD 127 is depicted in Figure 1, (indicated by the yellow dotted lines). According to the radar data, at 14:08:18Z, the two aircraft came too close to each other. The ZS-GDA aircraft was flying at 6 900ft in a southerly direction at the time. The transponder mode C on ZS-PMX aircraft was switched off or was not functional at the time as it was not possible for radar to detect the height the aircraft was flying at while heading in a north north-easterly direction towards the north-eastern corner of FAD 127. The red dotted line shows another training aircraft that was flying within FAD 127 on the eastern boundary; the aircraft took off from FAWB approximately 4 minutes after ZS-PMX. From the statement of the flight instructor on-board ZS-PMX, their aircraft was slightly higher than the ZS-GDA aircraft as he had observed the aircraft flying below theirs. The flight instructor of ZS-GDA aircraft stated that he read the registration of ZS-PMX and made a radio call as they were not aware of their intention at FAD 127.

During an interview with both flight instructors, they confirmed that the correct very high frequency (VHF) mode for FAD 127 general flying area is 124.40 megahertz (MHz). Both these aircraft were broadcasting their intentions and positions on this frequency. The radio work was mostly carried out by the respective student pilots during the flights to get familiar with using it, as well as the procedures that needed to be followed.

The serious incident occurred during the day at Global Positioning System (GPS) determined to be 25˚29’24.95” South 028˚14’25.80” East.

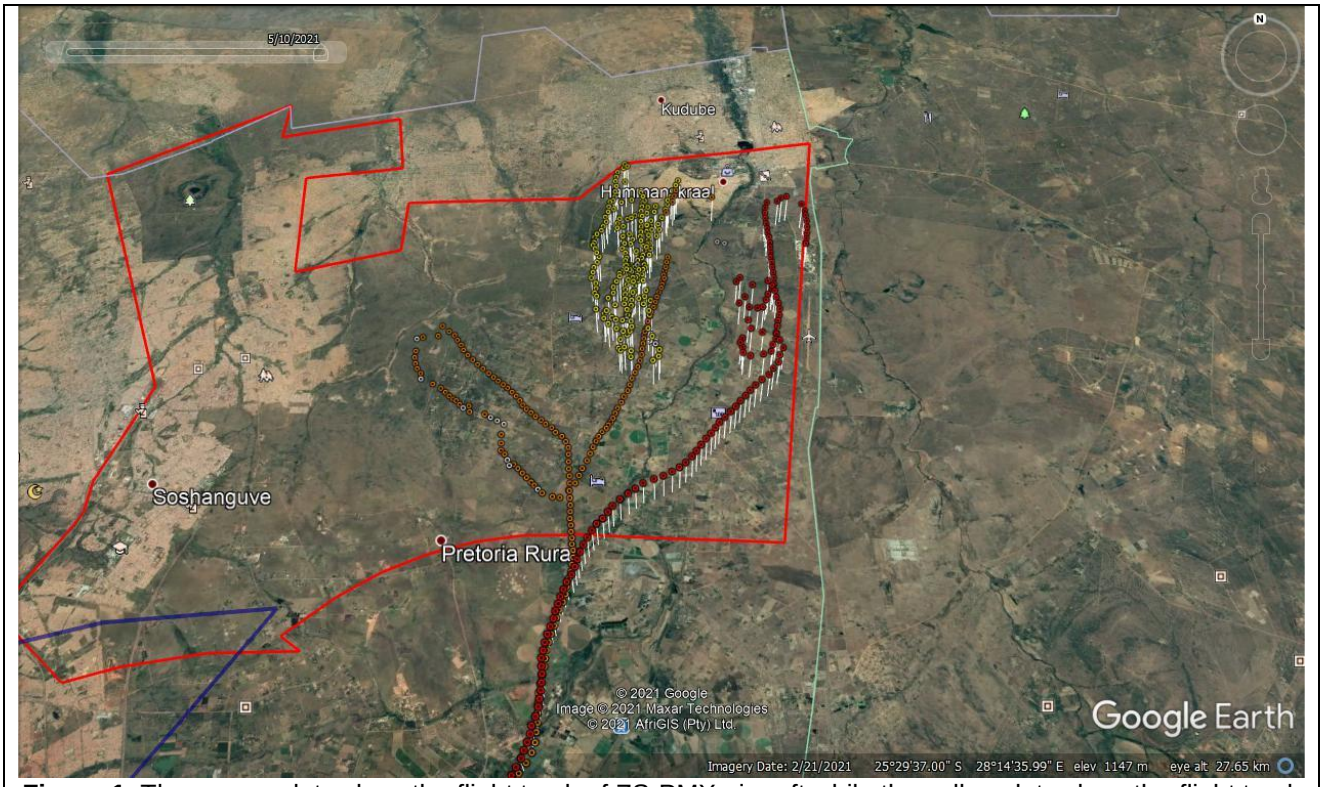

Figure 1: The orange dots show the flight track of ZS-PMX aircraft while the yellow dots show the flight track of ZS-GDA aircraft.

Probable cause:

The investigation revealed no evidence of avoidance manoeuvre from the radar records. It is likely that when entering the FAWB GFA, the ZS-PMX aircraft did not correctly change the radio frequency, resulting in them not being heard by other aircraft in the GFA. It is also possible that the two aircraft may have flown very close to each other. It is always important for aircraft to make position reports and intentions using the correct frequency.

WONDERBOOM AREA

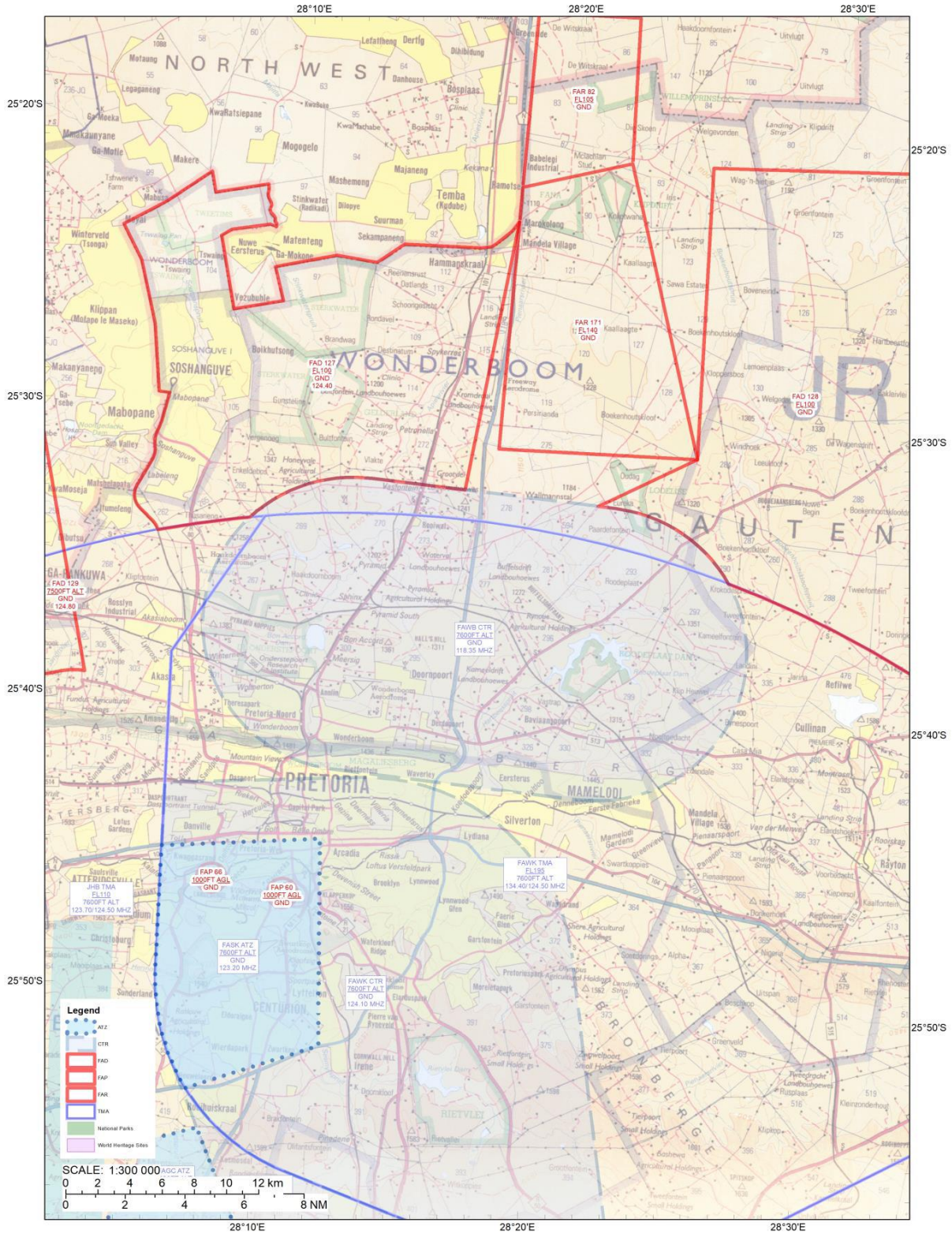

Figure 2: Airspace map indicating the incident site within FAD 127 Flying Training Area.

Safety Action/s

None.

Safety Message and/or Safety Recommendation/s

1 It is recommended that all aircraft flying in South Africa file a flight plan. This allows for all aircraft to be allocated a squawk code as well as making it possible to be tracked by radar. Should a distress situation arise, the last known position of the aircraft would be known in case any search and rescue action is required. Pilots should view filing a flight plan as their advantage. In this incident, neither aircraft filed a flight plan, therefore, none were allocated a squawk code, which made it difficult to identify these aircraft on radar.

2 It is recommended that pilots always remain vigilant during flights as the general flying areas can get congested quickly, especially in areas in and around Gauteng where there is a substantial number of aircraft training organisations (ATOs). A proper lookout and frequent radio transmission on the correct frequency in those areas is recommended.

3 It is recommended that pilots always ensure that the aircraft radios are in good working condition. It is known that these devices can fail without any warning, therefore, hand-held radios are recommended to be always carried with on-board aircraft.

Purpose of the Investigation

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 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 apportion blame or liability****.*

About this Report

Decisions regarding whether to investigate, and the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, no investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this brief report. The report has been compiled using information supplied in the initial notification, as well as follow-up information to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar accident.

This report provides an opportunity to share safety message/s in the absence of an investigation.

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

Disclaimer

This report is issued by:

Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa