



AIRCRAFT ACCIDENT INVESTIGATION BOARD

FINAL AIRCRAFT SERIOUS INCIDENT REPORT FOR A SHORTS 360, 9S – GAP, THAT OCCURRED IN NDOLA (PETER ZUZE MILITARY BASE), ZAMBIA ON 24th OCTOBER, 2021

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INTRODUCTION

On the 24th of October, 2021, a serious incident involving a Shorts 360 Aircraft was reported to the Director General, Civil Aviation Authority (CAA) who immediately relayed the information to the Interim Director of the Aircraft Accident investigation Board (AAIB). The aircraft involved was a Shorts 360, National Registration Marks 9S-GAP, Manufacturer's Serial Number SH3612, belonging to Malu Aviation of the Democratic Republic of Congo (DRC), which was reported to have erroneously landed at Peter Zuze Military Airport in Ndola, Copperbelt Province.

The Interim Director, AAIB immediately constituted an investigation team to travel to the incident scene. The team comprised 4 staff pertaining to the domains of Air Traffic Management, Operations and Engineering.

SYNOPSIS

On October 24, 2021, a Shorts 360 aircraft operated by Malu Aviation in DRC departed from Goma Airport for a scheduled maintenance check to Lanseria Airport in South Africa. On Board were 02 pilots and 03 passengers. The aircraft made radio contact with Lusaka Area Control who handed it over to Ndola Approach [at Simon Mwansa Kapwepwe International Airport (SMKIA)]. Ndola Approach then proceeded to hand the aircraft over to Ndola Tower for final approach. Ndola Tower (SMKIA) did not see the aircraft on final approach Runway 09 and made several attempts to contact it but to no avail. Later, Ndola Approach (SMKIA) called Ndola Tower (SMKIA) reporting that the aircraft was on ground and had erroneously landed at Peter Zuze Military Airport. The investigation team concluded that the cause of the accident was due to Human Factors. Further, other possible contributory and latent factors were identified.

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1. FACTUAL INFORMATION

1.1 History of the Flight

The Shorts 360 aircraft, 9S - GAP operated by Malu Aviation departed Goma Airport in the Democratic Republic of Congo around 05:20UTC, on board were 2 Pilots and 3 Engineers. The planned routing was Goma-Ndola-Joshua Nkhomo-Lanseria, and cruising flight level was FL125 VFR (Visual Flight Rules).

The aircraft made first radio contact with Ndola Approach at 09:13UTC requesting for clearance into Simon Mwansa Kapwepwe International Airport (SMKIA) and was cleared with METAR which was given.

The Pilot requested for descent at 28 nautical miles (nm) and descended to five thousand feet (5000 ft), with advice to report when SMKIA was in sight. At 09:28 UTC, the crew reported SMKIA in sight when on the Left Base for runway in use.

Consequently, Ndola Approach handed over the aircraft to Ndola Tower who cleared it to final Runway 09 with wind direction, speed and a further caution on bird activity.

Later the Tower cleared the aircraft to land on Runway 09 despite not seeing the aircraft on final.

At 09:40 UTC, Ndola Tower (SMKIA) did not see the aircraft on final approach Runway 09 and made several attempts to contact it. Ndola Approach (SMKIA) later called Ndola Tower (SMKIA) reporting that the aircraft was on ground at Peter Zuze Military Airport.

The aircraft landed at Peter Zuze Military Airport which is situated 8nm South East from their intended destination.

Meteorological flight conditions at SMKIA were forecasted as follows:

- a) Surface wind: 140°at 09 knots (Kts),
- b) Temperature: +32 degrees Celsius (°C),
- c) Weather: Cavok (Ceiling and Visibility OK)
- d) QNH: 1019 millibars

1.2 Personnel Information

The Pilot-In-Command has an Airline Transport Pilot License (ATPL) issued by the Congolese Civil Aviation Authority. He has about 22000 hours out of which 5000 are on type.

The First officer has a Commercial Pilot License (CPL) issued by the Congolese Civil Aviation Authority. He has 500 hours out of which about 100 are on type.

1.3 Aircraft Information

The Shorts 360, S/N SH3612 is a dual engine aircraft with Pratt and Whitney engines type PT6A 65AR with variable pitch propellers. It has dual controls.

The aircraft was issued with a Certificate of Airworthiness (C of A) on 15th January, 2018 with the latest endorsement on 11th July, 2021 and was confirmed airworthy.

This aircraft was flown by other pilots during the period of the C of A.

The aircraft had the following documents on board;

- | | | |
|----|------------------------------|---|
| a) | Certificate of Reinsurance | Valid until 9 th February, 2022. |
| b) | Certificate of Airworthiness | Valid until 10 th January, 2022. |
| c) | Radio license | Valid |
| d) | Certificate of Registration | Valid |
| e) | Air Operator Certificate | Valid |
| f) | Weight Schedule | |
| g) | First Aid Kit | |
| h) | Fire Extinguisher | |

The Shorts 360, registration number 9S-GAP, S/N SH3612 has the following Technical Specifications:

Exterior

- Exterior Height: 7m
- Wing Span: 22.8m
- Length: 15m

Interior

- Cabin Height: 1.8m
- Cabin Width: 1.8m
- Cabin Length: 8m

Occupancy

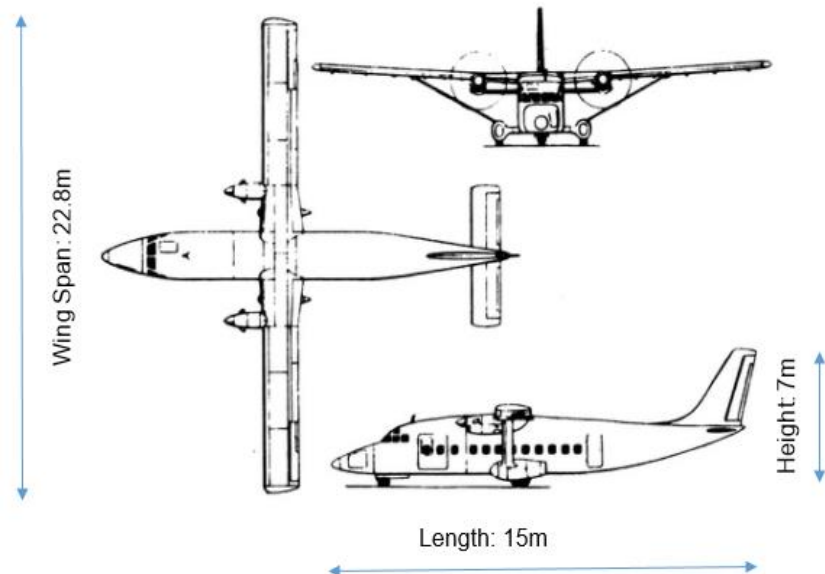
- Crew: 2
- Passengers: 36

Operating Weights

- Max T/O Weight: 26500 Lbs (12,020 kg)
- Max Landing Weight: 26100 Lbs (11,839 kg)
- Empty Weight: 16800 Lbs (7,620 kg)
- Fuel Capacity: 5750 Lbs
- Max Pay Load: 8500 Lbs (3,856 kg)

Range

- Max Range: 1200Nm
- Endurance: 7 hrs
- Service Ceiling: 25000 ft



Distances

- Take off distance at MTOW: 1200m
- Landing Distance: 800m

Performance

- Rate of Climb: 645 ft/m
- Max cruise level: 20000ft
- Cruising Speed: 165 Indicated Air Speed (IAS)

Power Plant

Engines: 2

Type: Pratt and Whitney PT6A 65AR

Manufacturer: Pratt and Whitney

Left Engine	Right Engine
Serial Number: PCE 97100 Date of Manufacture: --- TBO: 6000 hrs CSN: 50711 TSO: 2518 hrs CSO: 2996	Serial Number: PCE 97422 Date of Manufacture: --- TBO: 6000 hrs CSN: 16768 TSO: 5380 hrs CSO: 6288

Propellers: 2

Left Propeller	Right Propeller
Type: -- Manufacturer: Hartzell Serial Number: -- Date of Manufacture: --- Number of Blades: 5 TBO: --- TTD: ---	Type: -- Manufacturer: Hartzell Serial Number: -- Date of Manufacture: --- Number of Blades: 5 TBO: --- TTD: ---

1.4 Injuries to Persons

There were no injuries.

1.5 Damage to the Aircraft

There was no damage to the aircraft.

1.6 Meteorological Information

The Meteorological information at SMKIA were broadcast as follows:

- a) Meteorological information – Clear sky, light winds
- b) Aids to Navigation – Available
- c) Communications – SMKIA Approach and Tower

1.7 Aerodrome Information – Peter Zuze Military Airport

- a) Coordinates 1259.7S 02839.4E
- b) Elevation 4166 Ft
- c) Length 2500 m
- d) Width 46 m
- e) Orientation 10/28
- f) Surface Bitumen
- g) ATM Controlled

The air field has Navigation aids but landing was purely on Visual Flight Rules (VFR).

1.8 Flight Recorders

The Shorts 360 is equipped with a flight data recorder and voice recorder.

1.9 Wreckage and Impact Information

The aircraft was not involved in an accident hence there is no wreckage and impact information.

1.10 Fire

There was no evidence of fire.

1.12 Organization and Management

The PIC is a Belgian citizen. He works for Malu Aviation an Air Operator Certificate (AOC) holder in the Democratic Republic of Congo (DRC). The Aircraft was scheduled to fly from Goma in the DRC to Lanseria in South Africa via Ndola for a scheduled maintenance check.

1.13 Additional Information

The Investigating Team received additional information relating to this incident from the two pilots, staff from the Zambia Air Force and Zambia Airports Corporation Limited.

- a) Pilot In-Command (PIC)

The Captain reported that he, the Co-pilot and three engineers took off from GOMA Airport in the Democratic Republic of Congo at about 05:20 UTC. The aircraft routing was FZNA-FLND-FVJN-FALA. They made first contact with Lusaka Area Control at their point of entry SOBTO and were cleared to EGSAR. He then contacted Ndola Approach who cleared them for Runway 09 and requested to report left base for runway 09. At left base runway 09 they contacted Tower who cleared them to land. When the aircraft was on ground, they realized that they were at a Military Base.

He further reported that they did not receive notification of a new airport and that Lusaka Area Control, Lubumbashi Control and Ndola did not inform them of this change in Airport.

b) Zambia Air Force

Officer Commanding Operations

On 24th October, 2021 he was conducting fire drills on the apron. At around 11:35 hours local time, he saw a Shorts 360 aircraft landing at Peter Zuze Military Airport. The aircraft taxied and later parked at the apron. When the aircraft parked it was at that moment he saw that it was operated by Malu Aviation. Before the pilots disembarked, he got a call from SMKIA where he immediately reported that the aircraft had landed at the military base. He notified SATCO at SMKIA and proceeded to the aircraft. He interviewed the pilots who indicated to him that they were unaware of the new airport and that they didn't receive the Notam of the de-operationalisation of Ndola International Airport. He later called his superior, who advised him to leave the matter with SMKIA and the Civil Aviation Authority (CAA) and to facilitate for the aircraft take-off to SMKIA.

Air Traffic Controller

On that day at around 11:35 hours local time he saw an aircraft not on frequency landing. He was surprised because he was not in contact with it. Initially he was able to monitor that there was an aircraft being communicated to that was handed over to frequency 118.0. When it landed at Peter Zuze Military Airport, he informed the Officer Commanding Operations (OC Ops) who went to interview the crew on the aircraft.

c) Simon Mwansa Kapwepwe International Airport (SMKIA)

The Duty Air Traffic Controller (DATCO) – Approach at SMKIA

The Duty Air Traffic Controller (DATCO) – Approach at SMKIA, reported that on 24th October 2021 he received estimates from Lusaka Area Control around 07:30 UTC concerning 9S – GAP which was coming from Goma to Ndola. Later, he received a call from Lumumbashi revising the estimates of the aircraft to 08:42 UTC for SOBTO and 09:53UTC for SMKIA. Approach later advised Lusaka Area Control of these changes. The DATCO – Approach at SMKIA reported that he did not receive a written flight plan for 9S – GAP from which he could cross examine information pertaining to the flight. At 09:13 UTC, 9S – GAP made first Radio contact reporting position EGSAR at flight level 125. The aircraft was cleared to SMKIA Runway 09 with airfield information given as follows: “9S – GAP cleared into Simon Mwansa Kapwepwe Airport, Runway 09, surface wind 140 at 09 kts, CAVOK, temperature +32°C, QNH 1019.” 9S – GAP read back Runway in use, temperature and the QNH. At 09:14UTC 9S – GAP reported twenty-eight miles and requested for decent. Decent was granted and instructed to report when SMKIA is insight. At 09:28 UTC the aircraft reported field in sight at left base and was transferred to DATCO-Tower on frequency 118.0

MHZ. He later advised Tower that the transfer point was left base. After a while, Tower called approach informing them that the aircraft cleared was not seen.

The Duty Air Traffic Controller (DATCO) – Tower at SMKIA

The Duty Air Traffic Controller (DATCO) – Tower at SMKIA reported that at 09:34 UTC he contacted 9S – GAP when it was at left base. The aircraft was cleared to final Runway 09 and later reported final Runway 09. After this report, the aircraft was cleared to land with wind direction and speed given. As DATCO-Tower looked out and waited for the aircraft, he did not see it on final approach for Runway 09. He also explained that in as much as the METAR indicated CAVOK, visibility was a slight challenge due to Haze. DATCO – Tower raised the aircraft several times but to no response. DATCO - Tower advised DATCO – Approach to raise the aircraft, but had no response as well. Later, DATCO – Approach informed DATCO – Tower that the aircraft had landed at Peter Zuze Military Airport.

The Senior Air Traffic Controller (SATCO) – SMKIA

On 24th October at about 11:40 hours local time he received a report that an aircraft cleared on final approach did not land at SMKIA. He immediately called nearby aerodromes which included beehive and Peter Zuze Military Airport. He states that OC Ops from ZAF confirmed that the aircraft landed at Peter Zuze Military Airport. He later informed the SMKIA Airport Manager (APM) and Manager Air Traffic Services (MATS) ZACL. He later went to collect statements from Approach and Tower. After 2 hours, the aircraft was cleared to take off for SMKIA.

2. ANALYSIS

2.1 Human Factor Elements

There was a series of Human Factor related events that were not put into consideration by both the crew of 9S-GAP and Service Providers which can be broken down as follows: -

- a) Crew – It is very unlikely that this crew of 9S-GAP navigated the traditional way using maps, computer Appleyard scale following principles of Degrees, Distances and fixes.

It can be deduced from the pilot account that the crew navigation was supported by GPS backed navigation equipment. The fact that this aircraft was on a path to Ndola from Goma can only be as result of the following: -

- It is very much possible that the route was planned via Ndola and as such since airport data existed as published, an entry of waypoint Ndola validated this planned route as followed by crew.
 - It is very unlikely that FLSK was selected as waypoint by 9S-GAP crew and as such the GPS information was used to navigate the aircraft as planned to Peter Zuze Military Airport (FLND).
- b) Crew Resource Management – At least the PIC indicated that he had flown through Ndola Airport before and as such should have raised questions as to why the runway had shifted from 10/28 to 09/27(This is evidenced in reports from all Air

Traffic Controllers who repeated the runway in use as 09 and the Pilots being familiar with Ndola's runway 10 should have realized that there was an indication that they were being cleared to a runway that they were not familiar with. A simple request for clarification could have been made and 9S-GAP was going to receive updated information to navigate to the correct airport.)

- c) Goma Airport, Democratic Republic of the Congo (DRC) – had not updated Notams on Ndola Airport closure and opening of Simon Mwansa Kapwepwe International Airport.
- d) Goma Airport, DRC – There was no scrutiny or interrogation of Flight plan by Goma Airport briefing office for 9S-GAP filed as FZNA-FLND-FVJN-FALA
- e) Lubumbashi Airport, DRC – There were no updated Notams on Ndola /Simon Mwansa Kapwepwe International Airport
- f) Lubumbashi Airport, DRC – Lumumbashi Airport did not scrutinize the Flight plan by Briefing office for 9S-GAP filed as FZNA-FLND-FVJN-FALA
- g) The 9S – GAP crew applied for an airspace flight permit to fly from Goma (FZNA) in DRC, make a stopover at Ndola Airport (FLND) (Now Peter Zuze Airport) then to Joshua Nkhomo (FVJN), finally Lanseira (FALA) in Republic of South Africa and it was approved by the Zambian Government through the Zambia Air Force. ZAF Operations did not notice the error on route via Ndola instead of Simon Mwansa Kapwepwe International Airport (FLSK).
- h) Simon Mwansa Kapwepwe International Airport – Visibility was less than 10Km due to reported haze within the Airport traffic pattern and hence the tower controller failing to see the aircraft at the expected distance to sight the aircraft on final approach.
- i) The Tower controller cleared the aircraft to land despite not physically seeing the aircraft.

Hand over/take over formalities between Zambia Airports Corporation Limited and Zambia Air Force Command

- j) It is very much evidenced from the reports that Zambia Air Force Command at Peter Zuze Military Base were not prepared for this incident. The situation on ground at the time indicated that there were personnel manning the tower and monitoring radio transmissions between aircraft within SMKIA traffic pattern. The situation on ground at the time indicated Peter Zuze staff were conducting “fire drills” which was okay within the ZAF mandate. Further, the airport was not fully prepared with Rescue and Fire Services to match the airport category at the time of hand over from Zambia Airports Corporation Limited.
- k) Despite the Peter Zuze Military Airport being handed over to ZAF, there were no published interim airspace restrictions to keep unsuspecting Civil Traffic from mistakenly flying into the Peter Zuze Military Airport.
- l) The location Indicator and all the published procedure for FLND were still very much active at the time of incident.
- m) The Risk analysis conducted by both the CAA and ZACL teams was not availed to indicate the mitigation that was put in place looking at the pertinent air space management regarding the two airports.
- n) Zambia Air Force was unable to update investigators with any existing Standard Operating Procedures.
- o) There was no evidence of an agreement or Memorandum of Understanding with regards the two airports (Peter Zuze Military Airport and Simon Mwansa Kapwepwe International Airport) between Zambia Air Force and Zambia Airports Corporation Limited.

2.2 Flight Planning

The planned routing was Goma-Ndola-Joshua Nkhomo-Lanseria, and cruising flight level was FL125 VFR (Visual Flight Rules). This was the exact flight path followed by the pilots of 9S-GAP which was a wrong flight plan as it should have been Goma-Simon Mwansa Kapwepwe-Joshua Nkhomo-Lanseria, and cruising flight level was FL125 VFR (Visual Flight Rules). It was discovered that AFTN communication link between DR Congo and Zambia is very unreliable. However, the crew had applied for an airspace flight permit to fly from Goma (FZNA) in DRC, make a stopover at Ndola Airport (FLND) (Now Peter Zuze Airport) then to Joshua Nkhomo (FVJN), finally Lanseria (FALA) in Republic of South Africa and it was approved by the Zambian Government through the Zambia Air Force. Hence the crew **homed** for the old Ndola Airport. The crew claimed they did not receive prior notification through a NOTAM or Aeronautical Information Chart (AIC) regarding the new Simon Mwansa Kapwepwe International Airport.

2.3 Safety

Human factor events indicated above show that a number of safety nets had been breached both by the crew and service providers as follows:

- a) The crew did not adequately plan as expected as there was no mention of updated Notams in their planning.
- b) The nav data for Ndola Airport was still valid and as such GPS information did not bring out any questions of suspicions as expected of a non-existing airport data.
- c) The Pilots kept receiving runway in use as 09 but were not raising a red flag that their situational awareness was affected by this runway discrepancy.
- d) There were breaches in safety when an aircraft was cleared to land on a visual approach when it was not physically identified by the controller on duty.
- e) There was no existing Airport Emergency Response plan availed by Zambia Air Force, Peter Zuze Command.

2.4 Maintenance

The aircraft documents availed indicated a fully serviceable aircraft with no known outstanding maintenance issues.

2.5 Weather

The weather was relatively clear skies in Haze through with moderate easterly winds and reported by Air Traffic Controllers as surface wind 140 at 09 kts, CAVOK, temperature +32°C and QNH 1019.

Even though the reported weather indicated CAVOK, all the controllers interviewed did indicate a presence of moderate Haze.

2.6 Observations by the Investigation Team

The investigation team did observe that in as much as ZACL handed over Ndola Airport (now Peter Zuze Military Base) to ZAF following the opening of Simon Mwansa Kapwepwe International Airport, the Human Factor gaps indicated above also exposed a number of inconclusive reasons such as:-

- a) None existence of Memorandum of Understanding between Zambia Air Force Peter Zuze Command and Zambia Airports Corporation Ltd, Simon Mwansa Kapwepwe Management.
- b) FLND (Ndola Airport) Nav data for arrivals, approach, departure procedures were still available as published to international airways publishers.
- c) Simon Mwansa Kapwepwe International Airport had incomplete Arrival and Departure procedures.
- d) Simon Mwansa Kapwepwe International Airport had an Instrument Landing System installed but not published as there was no procedure in place.
- e) The Risk Analysis conducted by teams from the CAA and ZACL excluded CAA Operations inspectors.
- f) The Risk analysis conducted by ZACL and the closure of Ndola Airport and opening of Simon Mwansa Kapwepwe International Airport was not availed to indicate how the mitigation was put in place to prevent traffic infringements between the two airports as in this incident.
- g) There are no meteorological visibility markers published for SMKIA by the MET department for use by ATM staff.
- h) ATM staff were at times using nonstandard ICAO phraseology as noted in the tape transcript.
- i) ATM staff have no met observation rating hence their inability to correct weather reports as promulgated from the Meteorological Department.
- j) All ATCOs have no letters of authority written to them by the Minister through the Director of Civil Aviation Authority so that they can be empowered to enforce the law on the air regulation offenders. Hence they are unable to demand for licences, medicals and any other documents deemed necessary for from the offending crew themselves.
- k) ATM staff did not use visual communication procedures.
- l) ATM staff has adopted the wrong procedure for aircraft landing in Visual Meteorological Conditions (VMC). Aircraft approaching to land are cleared to land even when ATC has not sighted them.
- m) No audio tape transcript were availed to the investigation team. Only a written one which the controllers refuted as not being correct.
- n) They are no avoidance procedures (SIDs and STARs) put in place for Peter Zuze Military airport for either landing or departing aircraft.
- o) Some ATM staff at Peter Zuze Airport are operating without civil aviation licences hence civil aircraft cannot be handled by them.
- p) Some ATM staff at Peter Zuze Airport did not know how to use the Aldis Lamp for visual communication with non-radioed aircraft despite having the facility in the control Tower.
- q) SMKIA management insisted that the onus of sighting SMKIA lies the with VFR pilots themselves since they are a lot of airstrips surrounding the said airport and not the controllers to guide them even when visual landing procedure have not been put in place by ATM.

3. CONCLUSION

The cause of this incident from submitted reports and all related documentation gathered indicate that this aircraft was flown on route with a wrong way point (Ndola Airport). All the briefing offices were unable to pick up this mistake by the crew of 9S-GAP. The aircraft was operated by experienced pilots who were very familiar with the

route operated via Ndola Airport. Their surprise landing at Peter Zuze airport also confirms that they did not receive the Notams issued with regards to the closure of Ndola Airport and transfer to Simon Mwansa Kapwepwe International Airport.

Human Factors is the cause of this incident mainly due to both organizational arrangements put in place prior to the flight and also service providers who missed the stop gaps by not noticing that a wrong way point had been indicated on the filed flight plan i.e. *Ndola Airport (FLND) instead of Simon Mwansa Kapwepwe International Airport (FLSK)*.

The investigation team notes that both pilots did not observe updated notams and as such missed critical information required for the safe navigation without incident.

4. SAFETY RECOMMENDATIONS

The Investigation Team recommends the following;

4.1 To Zambia Airports Corporation Limited (ZACL)

AAIB/SR/2022/014

ZACL is recommended to conduct Air Traffic Controller (ATCO) Refresher course training for its staff.

AAIB/SR/2022/015

ZACL is recommended to consider training some Tower ATCOs as MET observers for them to be able to advise on met information.

AAIB/SR/2022/016

ZACL is recommended to urgently publish Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs) and Visual approach and landing charts for SMKIA.

AAIB/SR/2022/017

ZACL is recommended to urgently publish Instrument Landing System (ILS) Charts for SMKIA.

AAIB/SR/2022/018

ZACL is recommended to ensure availability of Audio Transcript for incident and accidents for investigations.

AAIB/SR/2022/019

ZACL is recommended to ensure that Aeronautical Information Services be improved between Zambia and Congo DRC.

AAIB/SR/2022/020

ZACL is recommended to ensure that deliberate procedure for verbally warning foreign VFR pilots of the proximity of the military airport and provide avoidance action for the same.

AAIB/SR/2022/021

ZACL is recommended to revisit the Risk Analysis for the joint airports i.e., SMKIA and Peter Zuze Airport.

4.2 To the Zambia Air Force (ZAF)

AAIB/SR/2022/022

ZAF is recommended to ensure accuracy of all flight plans filed for clearance.

AAIB/SR/2022/023

ZAF is recommended to publish a new Location indicator and coordinate with ZACL in cancelling expired FLND location indicator including its associated navigation procedures with International aeronautical charts publishers.

AAIB/SR/2022/024

ZAF is recommended to publish Airspace Restriction for Peter Zuze Military base from Ground to 2000ft AGL.

4.3 To the Civil Aviation Authority (CAA)

AAIB/SR/2022/025

The Civil Aviation Authority is recommended to ensure that ZACL publishes Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs), Visual approach and landing charts and Instrument Landing System (ILS) Charts for SMKIA.

AAIB/SR/2022/026

The Civil Aviation Authority is recommended to carry out an ad-hoc audit of ZACL Aeronautical Information Services to ensure reliability and effectiveness of Aeronautical Information Services between Zambia and Congo DR.

4.4 To the Civil Aviation Authority, ZACL and ZAF

AAIB/SR/2022/027

A secondary Risk Analysis must be conducted by Zambia Airports Corporation Ltd and Zambia Air Force Command with regards airspace management between Peter Zuze Airport and Simon Mwansa Kapwepwe International Airport. Further, mitigation measures should help in developing Standard Operating Procedures (SOPs) for use at both airports covering all aspects of aircraft operations as far as normal and abnormal flight operations.



Fig 1: Shorts 360 Aircraft Front View



Fig 2: Shorts 360 Aircraft Left Side View



Fig 3: Shorts 360 Aircraft Right Side View

APPENDIX A – GLOSSARY

AAIB – Aircraft Accident Investigation Board
AOC – Air Operator Certificate
ATPL – Airline Transport Pilot Licence
CAA – Zambia Civil Aviation Authority
CAVOK – Ceiling and Visibility OK
CPL – Commercial Pilot Licence
CSN – Cycles Since New
DATCO – Duty Air Traffic Control Officer
DRC – Democratic Republic of Congo
Ft – Feet
Ft/m – Feet per minute
Hrs – hours
IAS – Indicated Air Speed
Kg – kilograms
Kts – Knots
Lb – Pounds
M – Meters
MTOW – Maximum Take Off Weight
NM – Nautical Miles
PIC – Pilot in Command
SATCO – Senior Air Traffic Control Officer
SMKIA – Simon Mwansa Kapwepwe International Airport
TBO – Time Before Overhaul
TSN – Time Since New
TSO – Time Since Overhaul
UTC – Universal Time Coordinated
VFR – Visual Flight Rules
ZACL – Zambia Airports Corporation Limited
ZAF – Zambia Air Force