REPUBLIC OF NAMIBIA

MINISTRY OF WORKS AND TRANSPORT

DIRECTORATE OF AIRCRAFT ACCIDENT INVESTIGATION

CIVIL AIRCRAFT DRAFT ACCIDENT REPORT

ACCID/050622/01-02

OPERATION	:	**PRIVATE**
AIRCRAFT REGISTRATION	:	**V5-HIR**
LOCATION	:	**SOSSUSVLEI DESERT LODGE, NAMIBIA**
DATE	:	**06 MAY 2022**

REPUBLIC OF NAMIBIA

MINISTRY OF WORKS AND TRANSPORT

Tel : (264)(61)208-8411/10
Fax : (264)(61)208-8495
Telex: (05-908) 811
E-mail: Magnus.Abraham@mwt.gov.na

022

AIRCRAFT ACCIDENT INVESTIGATION
Private Bag 12042
Ausspannplatz
Windhoek
NAMIBIA

Enquiries: Magnus Abraham **Our Ref: 3/48** **Date: 08 August 2022**

To : **Minister of Works and Transport**
Deputy Minister of Works and Transport
ED: Ministry of Works and Transport

From : **Director: Aircraft Incident and Incident Investigation**

RE: CIVIL AIRCRAFT ACCIDENT REPORT

Please find attached the final report on the above subject accident. In accordance with the International Civil Aviation Organization Annex 13 – Aircraft Accident and Incident Investigation – Standard 6.13, final reports shall be published as soon as possible in the interest of accident prevention.

It is recommended that copies of these final reports be made available to the public and other interested parties upon request. Your approval is therefore sought to release the said reports.

Magnus Abraham
DIRECTOR: AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION

"Effective and Efficient Delivery of Service"

All official correspondence must be addressed to the Permanent Secretary

REPUBLIC OF NAMIBIA

MINISTRY OF WORKS AND TRANSPORT

Directorate of Aircraft Accident and Incident Investigations

Accident Reference: ACCID 050622/01-02

Aircraft Accident Investigation Final Report

BELL 206B V5-HIR

RELEASE DATE:

Aircraft Accident Report

DESCRIPTION OF OCCURRENCE: (LOC) Loss of control.
TYPE OF OPERATION: Private.
AIRCRAFT TYPE: Bell 206 (V5-HIR)
LOCATION: GPS: 24°77'95"S 15°88'86"E Sossusvlei Desert Lodge. Namibia
DATE AND TIME: 06th May, 2022(16:35 UTC).

Foreword

This report presents the information, data analysis, conclusions, and safety recommendations reached during the investigation. The purpose of the investigation was to establish the circumstances surrounding this accident.

In accordance with the provisions of Annex 13 to the Convention on International Civil Aviation Organization, the accident's analysis, conclusions, and safety recommendations contained therein are intended neither to apportion blame nor to single out any individual or group of individuals. The main objective was to identify the systematic deficiencies and draw lessons, from the occurrence, which might help to prevent accidents and incidents in the future. To this end, many a time, the reader may be interested in whether or not an issue was a direct cause of the accident (that has already taken place), whereas the investigator is mainly concerned with the prevention of future accidents/incidents.

As a result, the usage of this report for any purpose other than (the latter and spirit of Annex 13 and other relevant statutes) prevention of similar occurrences in the future might lead to erroneous interpretations and applications.

TABLE OF CONTENTS **PAGE**

ABBREVIATION

AMO	-	Aircraft Maintenance Organization
DAAII	-	Directorate of Aircraft Accident and Incident Investigation
ICAO	-	International Civil Aviation Organization
LOC	-	Loss of Control
NCAA	-	Namibia Civil Aviation Authority
NAMCARs	-	Namibian Civil Aviation Regulations
CPL	-	Commercial Pilot License
MPI	-	Mandatory Periodic Inspection
UTC	-	Universal Time Co-ordinated

Ministry of Works and Transport

ACCID/050622/01-02

DIRECTORATE OF AIRCRAFT ACCIDENT INVESTIGATION
ACCIDENT REPORT – EXECUTIVE SUMMARY

Aircraft Registration	V5-HIR	**Date of Accident**	06th May, 2022	**Time of Accident**	16:35 UTC
Type of Aircraft	BELL 206B		**Type of Operation**	Private	
Pilot- In - command License Type	CPL Helicopter 95468(NCAA Validation number 0279)	**Age**	35	**License Valid**	VALID
Pilot-In-command Flying Experience	Total Flying Hours	542		**Hours on Type**	165
Last point of departure	Sossusvlei Desert Lodge				
Next point of intended landing	Sossusvlei Desert Lodge				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)					
GPS: 24°77'95"S 15°88'86"E Sossusvlei Desert Lodge					
Meteorological Information	Wind Direction: Westerly, Wind speed: 10 kts, Temperature: 28° C Visibility: +10 km, Cloud cover: Cloud base: CAVOK				
Number of people on board	1	**No. of people injured**	0	**No. of people killed**	0

Synopsis

On the 06th May 2022, at around 16:35 UTC a privately owned, Namibian registered Helicopter got airborne after it drop off passengers at a helipad with the intention of ferrying the helicopter to the hangar for parking. On Board was a pilot the sole occupant.

According to the pilot, after dropping off the two passengers, the passengers proceeded to the awaiting vehicle that was parked 18 meters away from the helicopter at 11 o'clock position relative to the helicopter nose. The pilot further stated that he started the aircraft with the intention of ferrying it to the hangar which was around 1.6 miles from the helipad. The Helicopter was facing in the westerly direction. After the aircraft took off and slightly climbed while turning to the left, the pilot misjudged the distance of the tip blades and the parked vehicle. Two of the blades struck the vehicle's top and thereafter the aircraft lost control, touch down with the left hand skid and roll to the left.

The helicopter sustained damage to the main transmission system, fuselage and windscreen.

The Directorate of Aircraft Accident and Incident Investigation (DAAII) was informed telephonically by the son of the owner. The Minister of Works and Transport Ministry was responsible for the release of the official final accident report.

The pilot was an Andorra citizen who was a holder of a New Zealand Commercial Pilot License helicopter with a NCAA Namibia validation.

The last Mandatory Periodic Inspection (MPI) was carried out and certified on 01/05/ 2022, in accordance with the Bell Maintenance Manual and NAMCARS 2001 by a South African AMO No 040 at 11838.1 airframe hours. The Certificate of Airworthiness was issued on 14/02/2022 with expiry of 13/02/2023. The approval was issued in accordance with Regulations 21.08.2 of the NAMCARS 2001. At the time of the accident, the aircraft accumulated a further 12.5 hours since the last (MPI) was certified.

Probable Cause: Loss of control (LOC).

Contributing factor: Main rotor blades striking the vehicle, Inadequate operational safety guidelines

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator	: Namibia Helicopter Services
Manufacture	: Bell Helicopter
Model	: Bell 206B
Nationality	: Namibian
Registration	: V5 - HIR
Location	: Sossusvlei Desert Lodge GPS: 24°77'95"S 15°88'86"E
Date	: 06th May 2022, Time: 16:35 UTC

All times given in this report are in Co-ordinated Universal Time (UTC).

Disclaimer:

The report is given without prejudice to the rights of the Directorate of Aircraft Accident and Incidents Investigations, which are reserved.

Purpose of the Investigations:

In terms of the Namibia Civil Aviation Act (Act No. 6 of 2016) and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of risk of aviation accidents or incidents and **not to establish blame or legal liability.**

This report contains facts relating to aircraft accidents or incidents that have been determined at the time of issue. The report may therefore be revised should new and substantive facts are made available to the investigator (s).

1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 On the 06th May 2022, at 16:35 UTC a Namibian registered helicopter a Bell 206B struck a parked vehicle top with two main rotor blades on take-off, loss control and crashed. There was a single pilot on board the accident happened at Sossusvlei Desert Lodge.

1.1.2 According to the pilot after dropping off the two passengers who went to the vehicle parked 18 meters away from the helicopter, he started the Helicopter with the intention of flying it to the hangar area for parking. The helicopter took-off in the westerly direction and after lift-off from the helipad it slightly climbed while turning to the left in the process two main rotor blades struck a parked vehicle's top that was parked 18 meters from the aircraft at 11 o'clock resulting in a loss of control and crashed thereafter ending up lying on the left hand side relevant to the helicopter nose.

1.1.3 The helicopter impacted the ground with the left hand skid and rolled to the left. There was no airworthiness defect or operational difficulties reported prior to the accident.

1.1.4 The aircraft was substantially damaged. No injuries sustained by the pilot.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-

1.3 Damage to Aircraft

1.3.1 The helicopter was substantially damage.

Figure 1: Picture showing damage to the aircraft especially to the main transmission system.

Figure 2: Picture showing the rotor head that broke off from the mast.

Figure 3: Picture showing a little damage to the belly and horizontal stabilizer

1.4 Other Damage

1.4.1 The vehicle was damage at the top side but no injuries to the passengers that were in the Vehicle.


Figure 4: A picture showing the top of the vehicle that was damage by the two main rotor blades.

1.5 Personnel Information

1.5.1 Pilot-in-in command

Nationality		Andorra			
Licence No	95468	Gender	Male	Age	35
Licence valid		Valid	Type Endorsed	yes	
Type Ratings		yes			
Medical Expiry Date		25/08/2022			
Restrictions		None			
Previous Accidents		Unknown			

Total Hours	543
Total Past 90 Days	100
Total on Type Past 90 Days	100
Total on Type	165

1.6 Aircraft Information

BELL 206B

Figure 5: picture for illustration purpose from Bell Helicopter Textron

Aircraft Info:

The Bell 206 JetRanger is a single-engine five-seat light utility helicopter produced by the US-American manufacturer Bell Helicopter Company, today Bell Helicopter Textron.

Specifications

GROSS WEIGHT INTERNAL - 3250 LBS. / 1474 KGS.
GROSS WEIGHT EXTERNAL- 3350 LBS. / 1519 KGS.
EMPTY WEIGHT - 1900 LBS. / 862 KGS.
USEFUL LOAD INTERNAL - 1350 LBS. / 612 KGS.
MAXIMUM LIFT EXTERNAL - 1000 LBS. / 454 KGS.
LOADS MAY VARY DEPENDING ON CONDITIONS AND FUEL REQUIRED
CRUISE AIRSPEED - 115 MPH / 185 KPH
FUEL TYPE - JET A/B
FUEL CAPACITY - 96.7 US GALLONS / 366 L
AVERAGE CRUISE FUEL CONSUMPTION - 30 US GPH / 114 LPH
ROTOR DIAMETER - 34 FEET
PASSENGERS - 4 PLUS PILOT

Airframe:

Type	Bell 206B
Serial No.	1686
Manufacture	Bell Helicopter
Year of Manufacture	1984
Total Airframe Hours (At time of Accident)	11850.5
Last MPI (Date & Hours)	01/05/2022 at 11838.1airframe hours
Hours since Last MPI	12.5 hours
C of A	14/02/2022 valid till 13/02/2023
Operating Categories	Standard A,D,F

Engine:

Type	Rolls Royce
Serial No.	S/N CAE 270153
Hours since New	26132.5

1.7 Meteorological Information

Wind direction	Westerly	Wind speed	10 kts	Visibility	+10 km
Temperature	28° C	Cloud cover	clear	Cloud base	Cavok

1.8 Aids to Navigation

1.8.1 The was no navigation aid at the place where the accident occurs nor was it required by relevant Regulations.

1.9 Communications.

1.9.1 The aircraft was equipped with standard communication equipment as approved by the Regulator for the type.

1.10 Aerodrome Information

1.11 The accident occurred during daylight at Sossusvlei Desert Lodge.

Figure 6: picture showing the helipad and the park Vehicle that was struck by the helicopter blades

1.11.1 Flight Recorders

1.11.1 The helicopter was not equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR)nor was it required by the relevant aviation regulations.

1.12 Wreckage distribution and Impact Information

The accident occurred at a Sossusvlei Desert Lodge. The helicopter's two main rotor blades struck a parked vehicle top lost control and impacted the ground with the left hand skid and roll to the left. The rotor head with the two blades attached broke off from the main transmission system and was found 5 meters from the wreckage at 11 O'clock. One rotor blade broke into half and the other piece was found around 50 meters from the wreckage at 3 O'clock.

Figure 7: Picture showing the Vehicle top that was struck by the two main rotor blades

Figure 8: Picture showing the rotor head at 5 meters from the wreckage

1.13 Medical and Pathological Information

1.13.1. There was no medical and pathological investigation carried out.

1.14 Fire

1.14.1. There was no pre or post impact fire.

1.15 Survival Aspects.

1.15.1 This was a survivable accident as the impact forces were minimal and no compression of the cabin.

1.16 Tests and Research.

1.16.1. None was conducted and none was required.

1.17 Organizational and Management Information.

1.17.1. The aircraft was flown for private use.

1.18 Additional Information

1.18 .1 During the investigation face it was found that there is no safety operation protocol or guidelines in place that regulate the safe operation of the helicopter to and from the helipad, the cars and passenger's movement. The operation was found to pose safety Hazards in its current form, hence the investigator had engaged the stakeholder (Beyond Sossusvlei Desert Lodge) to address the safety hazards that were found during the investigation. The engagement was fruitful because the establishment was forth coming and acted promptly to address the concern.

The establishment has developed a comprehensive Helicopter Safety Guidelines that address the hazards and safety concern. These Safety Guidelines will be taught to all the stakeholders involved and will be adopted as the safety operational protocols to be followed.

These Safety guidelines will act as safety nets to prevent future reoccurrence of accident/incident from helicopter flight operation or any other activities associated with flight operations. **See Appendix 1.**

1.19 Useful or Effective Investigation Techniques.

1.19.1 Not applicable.

2. ANALYSIS

2. 1. PILOT

The pilot is a holder of a valid Commercial Pilot License Helicopter and a valid Medical Certificate issued by New Zealand Civil Aviation Authority on the 06 May 2021 and 15 August 2021 valid till 25 August 2022 respectively. The Bell 206B rating was endorsed in his licence on the 30 November 2021. The pilot was issued with a Namibian Foreign Licence Validation Certificate by the Namibian Civil Aviation Authority valid from the 21/04/2022 until 29/06/2022. With the above records in place it is the view of the investigator that the pilot was legally qualify to operate the flight.

It is the view of the investigator that if the pilot could have taken more safety precaution especially knowing fully that during take-off face, a lot of aerodynamics forces acting on the aircraft could induce the helicopter take-off performance. In this regard if he could have waited for the vehicle to drive away to a safe distance before take-off the accident could have been prevented

2.2 Machine (helicopter)

The last MPI was conducted on 01 May 2022 at 11838.1 airframe hours. The aircraft had flown a total of 12.5 hours since its last MPI. The aircraft was issued a Certificate of Airworthiness on the 14 February 2022 valid till 13 February 2023.
On-site investigation and further post-accident inspection of the wreckage (airframe and engine) revealed no pre-existing failures prior to the accident; all damage was caused during the accident. Records indicated that the aircraft was airworthy at the time. There were no recorded defects or operational difficulties experience before the accident.

2. 3 Weather

The weather at the time of the accident was good with clear visibility and all other parameter in relation to the safe conduct of the flight were within the limit. Those the weather was not a contributing factor to the accident.

2.4 Management

The lodge Management had safety operational guidelines in place but they were not adequate enough to prevent the occurrences of accident/incident, however it was enhanced after they were engaged on the matter. It is the view of the investigator that those enhance safety guidelines will make flight operation safer.

3. CONCLUSION

3.1 Findings

3.1.1 The maintenance records indicated that the aircraft was certified, equipped and maintained in accordance with existing regulations and approved procedures.

3.1.2 The aircraft had a valid Certificate of Airworthiness.

3.1.3 There was no evidence of airframe failure or system malfunction prior to the accident.

3.1.4 The pilot had a valid Commercial Pilot Licence.

3.1.5 The helipad where the helicopter too-off from was safe for such operation and there was no any permanent obstruction that could prevent safe operation from there.

3.1.6 The establishment was found no to have Safety guidelines on how flight operation will be conducted safely.

3.2. Cause/s

3.2.1. Loss of control (LOC)

3.3 Contributing factor

3.3.1 Main rotor blades striking the vehicle.
3.3.2 Inadequate operational safety guidelines.

4.0 Safety Recommendations

Sossusvlei Desert Lodge 01/2022 V5-HIR

4.1 DAAII recommend that Sossusvlei Desert Lodge to develop and implement helicopter Operation safety guidelines.

4.2 **Corrective action**

The Sossusvlei Desert Lodge has developed the Helicopter Operational Safety guidelines. **See appendix 1 attached**

.....

Thomas.H.Herman
Investigator-in-Charge

Date: 10/8/2022

Released by:

.....

Hon John Mutorwa, MP
MINISTER: MINISTRY OF WORKS AND TRANSPORT

Date: 10/8/2022

MINISTRY OF WORKS & TRANSPORT
Office of the Minister
2022 -08- 10
Private Bag 13341, Windhoek
REPUBLIC OF NAMIBIA

&BEYOND

Helicopter Safety Guidelines

Purpose

The helicopter is used in the transportation of guests for the enjoyment of scenic flights. Therefore all personnel that are associated with the operation must be trained and competent with all aspects of operating around the aircraft in a safe manner.

Main Danger Areas on the Helicopter

Tail Rotor

The tail rotor is unprotected and when turning under power, very difficult to see. It has a diameter of 1.5m and reaches down to 1m off the ground. It is for these reasons that people should always be kept to the front of the helicopter and approach and depart to the front of the helicopter. People should always be supervised and where possible escorted by ground crew or pilot.

Main Rotor

The main rotor is generally high enough not to be a problem for people on the ground. However when conditions are gusty or the helicopter is on a slope greater care should be taken when moving around or under the main rotor.

Radio Antennae

These can cause radiation when in use; they are also fragile and easily damaged. Therefore they should not be touched at any time, unless by engineers during maintenance.

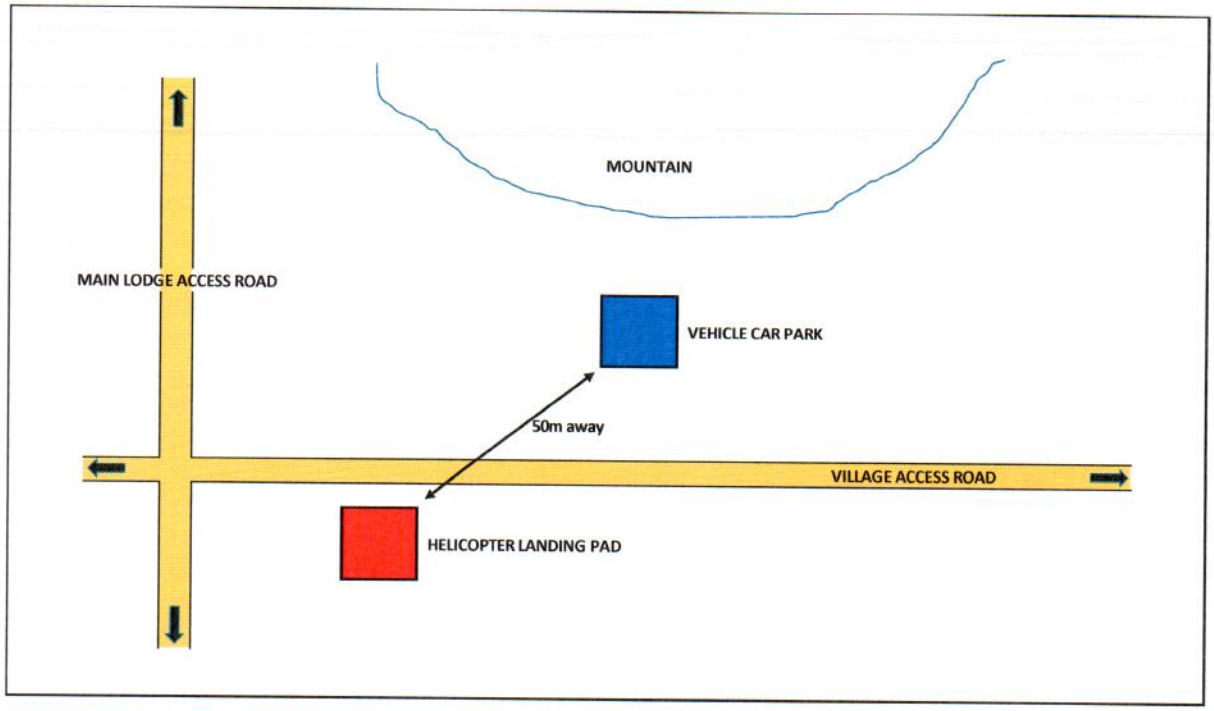
Particle Separator Outlet (Turbine)

These function to dissipate debris away from the filter and should be avoided by personnel when the engine is running. The outlets are above head height but ground personnel should be aware of them.

Approaching the Helicopter Safely

These guidelines have been implemented to help approach a helicopter in a safe and efficient way.

Site Layout



Parking Vehicles

- All vehicles should be parked at a distance of at least 50 meters away from the helicopter in the designated parking area (less chance of being covered in dust during landing/take-off).
- Always park to the front of the helicopter with a clear view of the pilot so you can see any signal he may give.
- Keep all passengers in the vehicle until signalled otherwise by the pilot, as the pilot may need to offload passengers, bags etc. before meeting and collecting your passengers. Passengers can sit in the shade of the vehicle for the Safety Briefing, and whilst the pilot puts any bags in the helicopter.

Approaching the helicopter

- Always wait until the pilot has signalled that it is okay to approach the helicopter. This will be indicated by a waving hand towards him/her, thumbs up, or by being escorted by the pilot.
- Always approach from the front of the helicopter and in clear view of the pilot.
- Keep luggage and any tall items low and horizontal to avoid interference with the main rotor. Do not carry luggage on your shoulders or head.
- Leave bags and luggage for the pilot to load in the helicopter.

When the helicopter takes off:

- Stay at an adequate distance of 50 meters or more.
- Make sure that spectators and other bystanders or guests stay close to the vehicle during helicopter take off.
- Be aware of any dust or grass that might be blown up by the helicopter down-wash during take-off.

Driving Vehicles

- Any vehicle driving within the area of the heli pad should be aware of helicopter movements.
- The helicopter always has right of way so vehicles should stop moving at least 50m away when helicopter is taking off or landing so as not to create any dust.
- Vehicles may only drive on or leave the parking area once the helicopter has taken off and left the area or landed and the engines have been fully shut down.

General Safety

Dust

Helicopters will blow up a lot of dust and sand when taking off and landing. This will be even more pronounced when landing in the sand. Ensure that you wear protective glasses or cover your eyes with your hand until the helicopter has landed. Do not approach the helicopter as it is lifting off or landing, as this will be when the dust is at its worst. Advise any guests about the threat of dust as above.

Loose Items/Objects

Hold on tightly to any loose items or articles of clothing whilst approaching or departing the helicopter if the rotors are turning. Ensure that any passengers are clear of any loose items or caps, scarves etc. If anything does blow away ensure that you or the passengers do not chase after it or reach up to catch it due to the threat of both the main and tail rotor. Passengers must be briefed prior to approaching helicopter to ensure no items are loose.

Smoking

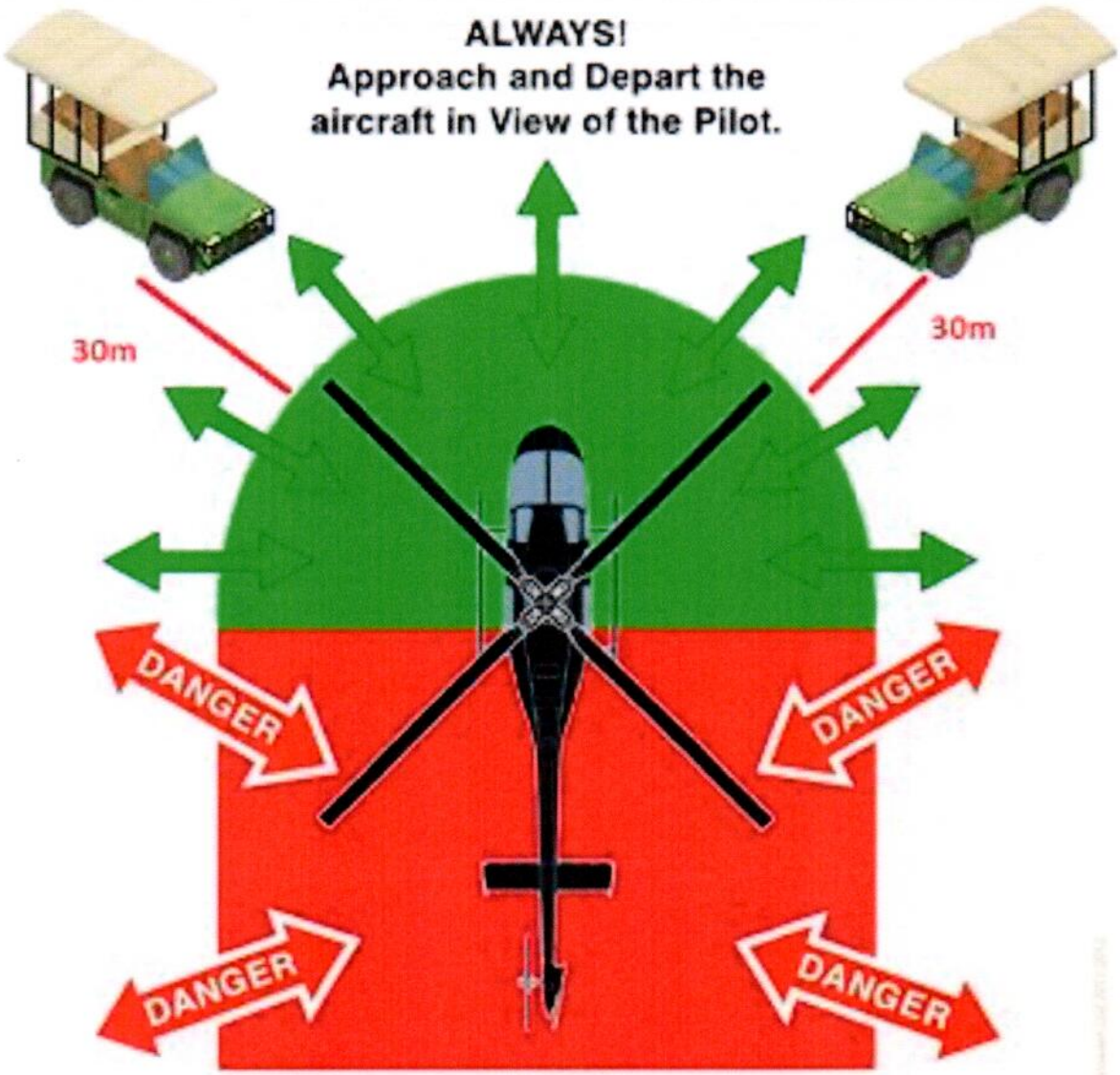
Smoking is not permitted in the helicopter at any time. Smoking is not permitted within 50m of the helicopter. Smoking is not permitted within 50m of any fuel storage or fuel drum.

Passenger Safety Briefing

- Passengers must be briefed about approaching and departing the helicopter to the front of the helicopter. The rear of the helicopter must be avoided completely.
- Seatbelts must be worn at all times.
- If doors are removed, all loose items must be stowed away and any hats and scarves removed. Passengers should not hold a phone or I-pad out of the door when travelling at high speed.
- If the doors are on, explain that the pilot will ensure the doors are securely closed and latched.
- Headsets are available for each passenger - explain that microphone must be placed close to the mouth to be able to communicate.
- Safety equipment is carried on board (Satellite phone, First Aid Kit, Emergency Water and Fire Extinguisher) and the pilot will explain their locations.
- Passengers may only to exit the helicopter when the Pilot-In-Command has said that it is safe to do so. Passengers should remember to remove their headsets before they exit and exit to the front of the helicopter.

APPROACHING & DEPARTING AIRCRAFT

ALWAYS!
Approach and Depart the aircraft in View of the Pilot.



NEVER!
go beyond the Rear Passenger Door area indicated in red.

SAFE LZ