



सत्यमेव जयते

**Final Investigation Report on accident involving M/s Kestral Aviation's
Agusta AW119 MK-II Helicopter VT-RNK at Kedarnath helipad on 23 April 2023**

**Government of India
Ministry of Civil Aviation
Aircraft Accident Investigation Bureau**

FOREWORD

In accordance with Annex 13 to the Convention on International Civil Aviation Organization (ICAO) and Rule 3 of Aircraft (Investigation of Accidents and Incidents), Rules 2017, the sole objective of the investigation of an Accident/Incident shall be the prevention of accidents and incidents and not to apportion blame or liability. The investigation conducted in accordance with the provisions of the above said rules shall be separate from any judicial or administrative proceedings to apportion blame or liability.

This document has been prepared based upon the evidences collected during the investigation, opinion obtained from the experts and laboratory examination of various components. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.

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GLOSSARY

AAIB	Aircraft Accident Investigation Bureau
AMSL	Above Mean Sea Level
AOP	Air Operator Permit
ARC	Airworthiness Review Certificate
ATC	Air Traffic Control
ATPL	Aircraft Transport Pilot License
AUW	All Up Weight
CEO	Chief Executive Officer
CoA	Certificate of Airworthiness
CAR	Civil Aviation Requirements
CVR	Cockpit Voice Recorder
DCP	Dry Chemical Powder
DFDR	Digital Flight Data Recorder
DGCA	Directorate General of Civil Aviation
FATO	Final Approach and Take-off Area
FTROL	Flight Radio Telephony Operators License
GMVN	Garhwal Mandal Vikas Nigam
GPS	Global Positioning System
HIGE	Hover in Ground Effect
HOGE	Hover out of Ground Effect
Hrs	Hours
kgs	Kilograms
Kts	Knots
LH	Left Hand
m	meter
MEL	Minimum Equipment List
MHz	Megahertz
MTOW	Maximum Take Off Weight
NM	Nautical Miles
PIC	Pilot in Command
RFM	Rotorcraft Flight Manual
RH	Right Hand
SB	Service Bulletin
SOP	Standard Operating Procedures
UCADA	Uttarakhand Civil Aviation Development Authority
VHF	Very high frequency

SUMMARY

Final Investigation Report on Accident to M/s Kestral Aviation's Agusta A119 MK-II helicopter VT-RNK at Kedarnath Helipad on 23 April 2023			
1.	Aircraft	Type	Agusta A119 MK-II
		Nationality	Indian
		Registration	VT-RNK
2.	Owner	M/s Kestral Aviation Pvt. Ltd.	
3.	Operator		
4.	Pilot in Command	CPL (H)	
5.	No. of Persons on board	The accident occurred on ground with pilot as the sole occupant.	
6.	Date & Time of Accident	23 April 2023, 1340 IST	
7.	Place of Accident	Kedarnath Helipad	
8.	Co-ordinates of Accident Site, AMSL	30° 43' 53" N, 079° 04' 00" E, 11,000 Feet (Approx.)	
9.	Last point of Departure	Sersi Helipad	
10.	Intended landing place	Guptkashi Helipad	
11.	Type of Operation	Non-Schedule Flight	
12.	Phase of operation	Accident Occurred on Ground	
13.	Type of Occurrence	Ground Handling	
14.	Extent of Injuries	Passenger on ground received Fatal Injury	

(All the timings in this report are in Indian Standard Time unless otherwise specified)

SYNOPSIS

On 23 April 2023, M/s Kestral Aviation Pvt. Ltd. Agusta AW119 MK-II helicopter VT-RNK was involved in an accident on ground at Kedarnath Helipad. The helicopter was on ground and under the command of a Pilot holding CPL(H) on type.

The helicopter with the pilot and a ground handler on board landed at Kedarnath Helipad to pick up 03 passengers (UCADA Officials). The helicopter was also carrying some items to be offloaded at Kedarnath helipad. The 03 passengers along with UCADA officials were waiting at helipad to board the helicopter. After landing at Kedarnath helipad the pilot asked the passengers to stop approaching the helicopter by raising hand. Thereafter, the ground handler deboarded the helicopter and started offloading the items from the left-hand side of the helicopter. After offloading the items, the ground handler came to the right side and opened the right-side door for boarding of passengers. The ground handler then moved towards the left side to close the LH door. The 03 passengers along with other UCADA officials escorting them started approaching the helicopter and one of the passengers suddenly started moving towards rear of the helicopter from right side of the helicopter to go towards left side of helicopter. The passenger came in contact with running tail rotor blades and received fatal injuries.

The occurrence was classified as Accident as per the Aircraft (Investigation of Accidents and Incidents) Rules, 2017. DG-AAIB vide Order INV-11011/05/2023-AAIB dated 25.04.2023 appointed Shri Jasbir Singh Larhga, Deputy Director as IIC and Shri K Ramachandran, Assistant Director as an Investigator.

1. FACTUAL INFORMATION

1.1 History of flight

Kestrel Aviation was one of the helicopter service providers engaged by UCADA for providing Helicopter Shuttle Services at Kedarnath. As per the contract awarded by UCADA, all contracted operators are supposed to reserve 10 Flying Hours in a year for use of UCADA.

On 22 April 2023 at around 2030 Hrs, UCADA gave requisition to Kestrel Aviation for transportation of its officials to helipads at Kedarnath and Guptkashi from Sahastradhara. As per the requisition, 02 passengers (UCADA officials) were to fly from Sahastradhara to TBA Helipad Guptkashi, where 02 more passengers were supposed to board for Kedarnath. The return flight sector as informed was from Kedarnath to Guptkashi and then to Sahastradhara. As informed by UCADA the purpose of the flight was to inspect the facilities at various stations before start of the pilgrimage season at Kedarnath Shrine.

As planned, the operator deputed a pilot to carry out the sortie. The pilot reported for duty early morning on 23 April 2023 and did his PFMC at around 0552 hrs. Before operating the flight for UCADA, in the morning, the pilot operated Sahastradhara-Kharsali-Sahastradhara (02 sorties) in another aircraft (VT-CLN) of the company. After completing the two sorties the pilot landed back to Sahastradhara by 09:15 Hrs. Thereafter, the pilot took some rest and then carried out 10 minutes of ground run & hover check on VT-RNK, before operating the flight to TBA helipad, Guptkashi and Kedarnath for UCADA officials.

One of the UCADA official (the deceased passenger) reached the helipad first and was escorted by UCADA staff and Kestrel commercial staff directly to the helicopter. As per the statement of ground staff and pilot, the passenger was having a chat with ground personnel regarding the aircraft about its specification, cost, etc. They were waiting for the other official. Later, the other official also arrived at helipad and was escorted by UCADA staff and Kestrel commercial staff directly to the helicopter. In normal practice as per procedure, the passengers after they arrive at the Sahastradhara helipad are taken to the terminal building for safety briefing before they board the helicopter. However, in this case the same was not done and the passengers (UCADA officials), were escorted directly to the helicopter by their personnel.

The helicopter then took-off from Sahastradhara at around 1035 Hrs with 02 passengers and one engineer on board and landed at TBA Guptkashi at around 1100 Hrs. The UCADA officials decided to take a halt for their work at Guptkashi. After around 01 hour 45 mins of halt the helicopter took-off from TBA Helipad, Guptkashi at around 1245 Hrs with additional 02 passengers, with a total of 4 passengers and an engineer on board for Kedarnath. The helicopter landed at Kedarnath, dropped the 04 passengers and then took-off for Sersi with the pilot and engineer on board. The helicopter landed at Sersi at around 1310 hrs and was switched off. Later when the pilot got the information from the company staff through UCADA officials at Kedarnath that the passengers are ready at the helipad, the helicopter took off from Sersi with one ground staff for Kedarnath at

around 1330 hrs. Some essential stores were also carried on the helicopter for the company to be dropped at Kedarnath.

Once the helicopter landed at Kedarnath the pilot signaled the passengers with hand to wait, as the ground staff was required to offload the essential stores first. Out of the 04 passengers who were dropped at Kedarnath earlier, 01 official was supposed to stay at Kedarnath and other 03 passengers (UCADA officials) were supposed to board the helicopter to fly back. The ground staff onboard got down the helicopter and signaled the passengers to hold and then he started to offload the items carried on board.

As per the statement of the eyewitnesses, the UCADA officials were escorted by their own personnel. They approached the helicopter from the front right side. Once the pilot asked them to hold, they stopped and were waiting for the signal from crew to board the helicopter. The aircraft was not switched off. The pilot was then busy scanning the cockpit, when he suddenly heard a thud noise, and on looking around he saw the other passengers staring at the rear of the helicopter with their hands on their head. The ground staff who was on board that time was on the left side of the helicopter and was closing the left side door after offloading the items from that side. One of the passengers (UCADA official) who were waiting to get onboard ran towards the rear of the helicopter and was hit by the tail rotor. On realizing something has happened, the pilot immediately switched off the aircraft with normal procedures. The passenger who came in contact of the tail rotor received fatal injuries and died on spot. The local authorities were informed about the accident and they cordoned off the accident area.



Figure 1: Accident Site

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	Nil	01 (On ground)	Nil
Serious	Nil	Nil	Nil
Minor	Nil	Nil	Nil
None	01	--	--

1.3 Damage to aircraft

The helicopter received minor damage. There was a small dent on one of the tail rotor blades.



Figure 2: Small dent on tail rotor blade

1.4 Other damage

There was no other damage.

1.5 Personnel Information

1.5.1 Pilot in Command

Age	39 Years
Date of Issue	08-May-2013
Valid up to	07-May-2028
Category	CPL (H)
Class	Helicopter
Date of Class I Med. Exam.	21-Jun-2022
Class I Medical Valid up to	28-Jun-2023
Date of issue FRTOL License	29-Nov-2012
FRTOL License Valid up to	Upto Validity of RTR
Endorsements as PIC	A119, Bell 407, R44
Total flying experience	2268:00
Total flying experience on type (AW 119)	2091:00
Last Flown on type	A119
Total flying experience during last 1 year	475:05 Hrs
Total flying experience during last 6 Months	196:40 Hrs
Total flying experience during last 90 Days	90:00 Hrs
Total flying experience during last 30 days	36:00 Hrs
Total flying experience during last 07 Days	12:15 Hrs
Total flying experience during last 24 Hours	3:30 Hrs
Rest period before first flight of the day	14:45 Hrs

Whether involved in Accident/Incident earlier	No
Date of latest Flight Checks and Ground Classes	Hill Check-22-Apr-23, SGT & CRM-06-Feb-23

1.6 Aircraft Information

1.6.1 AW119 MK-II General Description

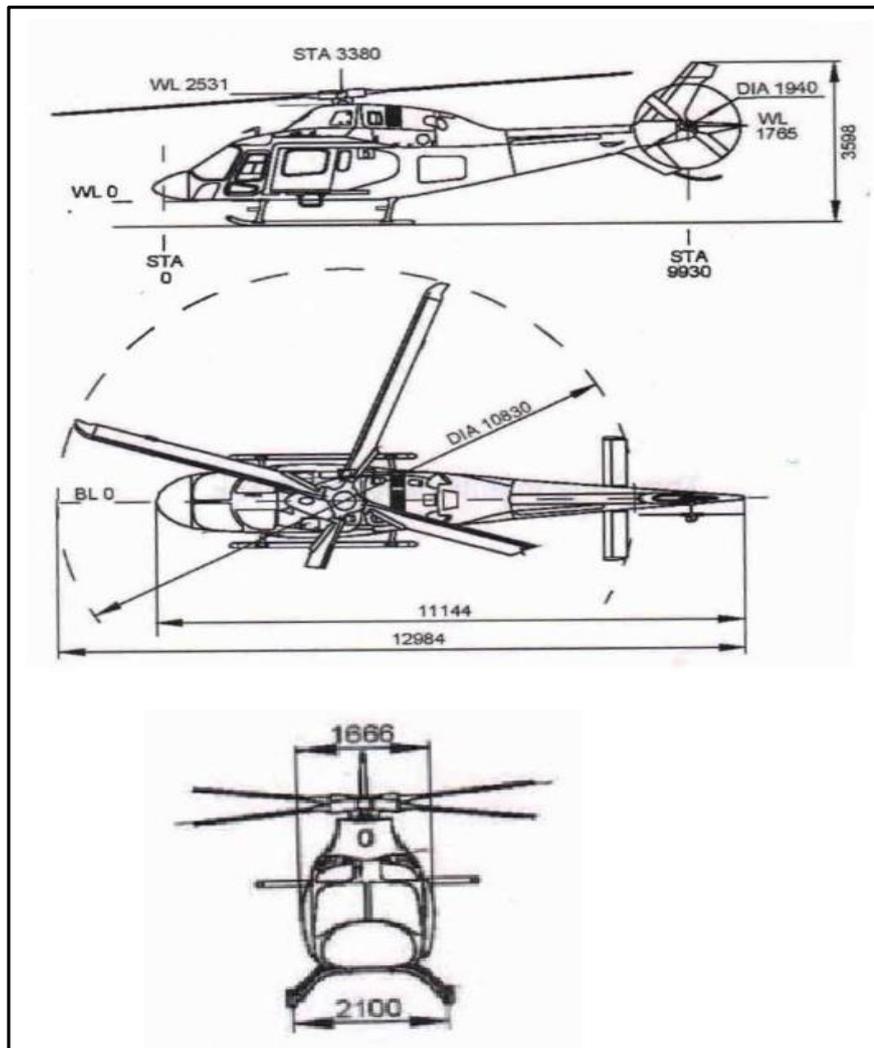


Figure 3: Main Dimensions of Agusta AW119 MK-II helicopter

Agusta AW 119 MK-II helicopter is a single engine helicopter certified in transport category with sub category Passenger, for day operation under VFR. The maximum operating altitude is 15000 feet density altitude and maximum take-off weight is 2850 Kgs. The cabin includes the crew compartment (cockpit) and the passenger compartment. Seating is provided for the pilot (right side) and a passenger (or co-pilot) in the cockpit, and up to six passengers in the rear compartment. The main dimensions of the helicopter are given in Fig 3.

1.6.3 VT-RNK Specific Information

Helicopter Model	AW119MKII
Helicopter Sr. No.	14841
Year of Manufacturer	2015
Name of Owner	Kestrel Aviation Pvt. Ltd.
C of R	4642, Dated 22/02/2016
C of A	6752, Dated 01/03/2016
Category	Normal (Passenger)
C of A Validity	Lifetime
A R C issued on	06/02/2023
ARC valid up to	08/02/2024
Helicopter Empty Weight	1833.50 Kgs
Maximum Take-off weight	2850 Kgs
Date of Helicopter Weighing	03/08/2020
Max Usable Fuel	476 Kgs
Max Payload with full fuel	459.50 Kgs
Empty Weight C. G	3.621 Meters aft of Datum
Next Weighing due on	31/07/2025
Total Helicopter Hours	2363:08 Hrs
Last Major inspection	200 Hrs Schedule Inspection
Engine Type	TURBOSHAFT
Engine Sl. No.	PCE-PU0255
Last Major inspection	800 Hrs Engine Inspection
Repairs carried out after last major inspection till date of accident	NIL
Total Engine Hours Since New	2318:28 Hrs
Aero mobile License	A-055/003/WRLO-16

1.7 Meteorological Information

There is no MET facility at Kedarnath Helipad. However, the weather has no bearing in this accident.

1.8 Aids to Navigation

There is no navigational aids available at Kedarnath Helipad.

1.9 Communications

The Kedarnath Helipad is an Uncontrolled Helipad and hence there is no ATC. The traffic is regulated as per the joint SOP wherein the helicopter pilots communicate on common frequency.

The helicopter was on ground at Kedarnath helipad and was not in contact with any ground stations or ATC at the time of accident.

1.10 Aerodrome Information

The Kedarnath Helipad information as provided in the SOP is given below:

HELIPAD	LAT/ LONG	DIMENSION	PURPOSE
Kedarnath (Old Location)	30° 43' 53"N, 079° 04' 00" E	30 m x 45 m	All commercial operations
General	<ul style="list-style-type: none"> • Ground Level Helipad • Foam and CO2 cylinders as per ICAO guidelines. • First aid box available; Crash box with Rescue equipment available; Cooling pit is available. 		
Helipad Strength	The helipad is designed for load bearing strength of 15 tons (approximately).		
Wind Direction Indicator	One wind direction indicator is situated on Eastern side of Helipad.		
Slope	The surface has a slope of 02" on either side to ensure adequate drainage of water or fuel spillage		
Fire Fighting Equipment	1. M/FOAM = 50 L X 16 2. CO2 = (22.5 kgs X 2)+01 x 6 kgs) 3. DCP = (6 kgs x 4)		
Touch Down and Lift Off Area (TLOF)	30 m x 30 m with 'H' marked in the centre.		
Final Approach Take Off Area (FATO)	40 m X 45 m		
Safe Area	Adequate area available on each side FATO.		
Approach and Take Off	Clear of obstacles on two directions viz North & South.		
Main Criteria	VFR operations only. HOGE and HIGE performance level possible.		
Communication	Two way communications are available		
Facilitation	Adequate infrastructure for handling of arrival / departure. Security and frisking of passengers is available.		

Helipad had CCTV cameras installed, but CCTV footage was not made available to Investigation Team as it was reportedly unserviceable.

1.11 Flight Recorders

The helicopter was not required to be equipped with any Flight Recorders as per the prevailing regulations. The helicopter did not have any CVR or DFDR fitted on board.

1.12 Wreckage and Impact Information

Not relevant as the helicopter did not sustain any damages apart from small dent on the tail rotor blade.

1.13 Medical and Pathological Information

Pre-flight breath-analyzer test of the Pilot was carried out as per requirement in the morning of 23 April 2023 at Sahastradhara before operating the first flight of the day. The pilot was subjected to post flight breath analyzer test at Sersi after the accident on 23 April 2023 which was also negative.

1.14 Fire

There was no Fire.

1.15 Survival Aspects

The accident was not survivable. The passenger on ground came in contact of the running tail rotor and died on spot.

1.16 Tests and Research

No further Information.

1.17 Organizational and Management Information

1.17.1 Kestrel Aviation Pvt. Ltd.

The operator is having a Non- Scheduled Operating Permit (NSOP) No. 14/2008 which was initially issued on 09.05.2008 and last re-issued on 05.11.2019. The permit is valid up to 08.05.2024. As

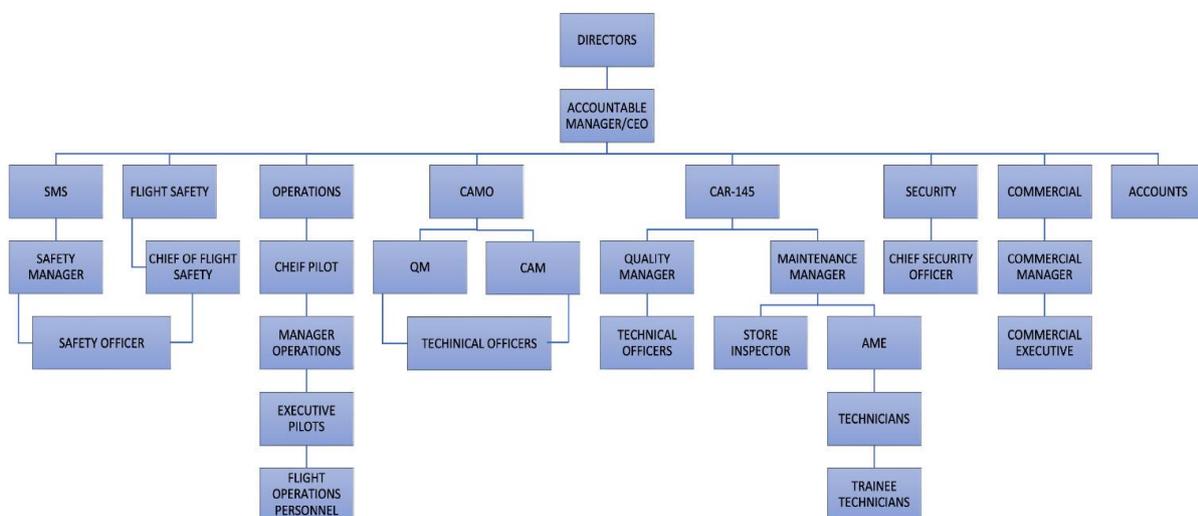


Figure 4: Organisation Chart

on date of accident the operator had a fleet of 03 helicopters mainly Agusta AW119 variants. The operator was awarded tender by UCADA on 16.03.2023 to operate the shuttle flights from Phata and Sersi to Kedarnath Shrine for three years i.e., 2023-2025. For Kedarnath shuttle service the operator has base helipad at Sersi from where they operate shuttle flights to Kedarnath Shrine. The main base of the operator is at Mumbai. The operator also operates helicopter services for Char Dham in Uttrakhand for conveyance of pilgrims to Badrinathji, Kedarnathji and other areas. These operations are carried out as and when the requirement arises. The Standard Operating Procedure for carrying out these operations is approved by DGCA. The operator has in-house CAR 145 maintenance approval. The organisation chart of the operator is given in Figure 4.

As per the operations manual of the organisation, Accountable Manager/CEO will be responsible for overall supervision of Flight Operations. He will be assisted by various other heads of each department.

1.17.2 Standard Operating Procedures for Kedarnath Flights

1.17.2.1 SOP for Kedarnath Shuttle flights

The organisation has formulated separate Standard Operating Procedure (SOP) for Shuttle Services for Sersi – Kedarnath – Sersi. This SOP is a part of Operations Manual of the Organisation which is approved by DGCA. The SOP was amended recently in the month of February 2023 and submitted to DGCA for approval.

The SOP also contains contingency plan to be activated in the event of any serious incident/accident to the operator's helicopter. All these operations are to be carried out in Performance Class III category and HIGE conditions from Sersi helipad.

As per the SOP, passenger embarking and disembarking is carried out by operator's ground staff, with rotors running. The relevant portion of the procedure to be followed for boarding and de-boarding of passengers at Shri Kedarnath ji is as follows:

- After the helicopter lands, the deputed ground staff of the Operator will disembark the passengers with rotors running.
- Thereafter, returning passengers will be boarded.
- Ground staff will ensure that they are properly seated and strapped.
- No passengers will be allowed to go to the rear of the helicopter.

The SOP also reiterates that the deputed staff shall be responsible for boarding and disembarking passengers and are to approach the helicopter in full view of pilot, after getting positive clearance from the PIC.

1.17.2.2 SOP for Char Dham flights

The organisation has also formulated separate Standard Operating Procedure (SOP) for Char Dham Operations. This SOP is also part of Operations Manual of the Organisation which is approved by DGCA. The SOP was also amended recently in the month of February 2023 and submitted to DGCA for approval.

One of the procedures mentioned in the SOP states that

“To facilitate reduced down timings, the embarkation and disembarkation of passengers may have to be resorted to with the rotors running. However, proper briefing of the passengers will be carried out POSITIVELY by ground staff prior to boarding the helicopter. All safety aspects will be adhered to including proper escorting of passengers to and from the helicopter. At the time of embarkation, manifest shall be handed over to the pilot prior to the flight detailing the total payload. All the passengers shall be escorted to and from the helicopter. It shall be ensured that the seat belt of each passenger is secured before doors are closed.

Following shall be ensured:

- *Being the rotors running operations Ground staff will ensure to disembark arriving passenger first to vacate the helicopter from front side only with staff holding hand and thereafter embark the departing Passengers to approach from front side only with staff escort holding hand.*
- *Passengers will be briefed meticulously on Restriction to go Rear side (backside due to tail rotor danger area) while embarkation and debarkation.*
- *.....*
- *.....*
- *Passenger to not wait for their baggage collection at/near the helicopter, our ground staff will give at safety area outside helipad.*
- *The safety briefing cards shall be available in the helicopter at all times.*
- *Personnel responsible for emplaning & deplaning of passengers, are to approach the helicopter in full view of pilot, after getting positive clearance from the captain of helicopter.*
- *.....*
- *.....”*

1.17.2.3 DGCA CAR Section-8, Series-O, Part-IV

Paragraph 2.2.11.5 of the said CAR requires that *“The operator shall ensure that passengers embark and disembark the helicopter only when engines are shut down. In exceptional circumstances, e.g. for special type of operations, where such feasibility does not exist, special briefing and necessary safety precautions are to be followed, to avoid any incidence of the passengers fouling with the helicopter rotor system.”*

1.17.2.4 DGCA Operations Circular 02 of 2023

Para 6.8 of the said circular provides guidelines for escorting and emplaning & deplaning of passengers is given below:

*“At the time of embarkation, manifest shall be handed over to the pilot prior to the flight detailing the total payload. **All the passengers shall be escorted to and from the helicopter.** It shall be ensured that the seat belt of each passenger is secured before doors are closed. Following shall be ensured:*

- a) Children shall not be seated next to any exits / doors.*
- b) Passengers under influence of alcohol or drugs are not permitted to board the helicopter.*
- c) The safety briefing cards shall be available in the helicopter at all times.*
- d) Personnel responsible for emplaning & deplaning of passengers, are to approach the helicopter in full view of pilot, after getting positive clearance from the captain of helicopter.*
- e) Passengers with reduced mobility and children shall be accommodated so as ensure that quick evacuation is not hampered.”*

In the present case, the flight operated for UCADA officials was not a shuttle service, and was operated as Non-Scheduled flight under the agreement with UCADA. The helicopter was not switched off after it landed at Kedarnath Helipad and the embarkation was supposed to be carried out with running rotors.

After the helicopter landed at Kedarnath helipad the 03 passengers (UCADA Officials) who were supposed to board the helicopter approached the helicopter for boarding from the right side. The pilot stopped the passengers from approaching the helicopter by raising hand as the items which were carried on board were supposed to be offloaded first. The passengers responded and stopped approaching the helicopter and were waiting for clearance from pilot. The passengers were escorted by the other 02 UCADA officials. The operator had only a ground staff who was on board to facilitate the embarkation of the passengers. At the time of accident, the ground staff was busy closing the left-hand side door after offloading the items carried on board when suddenly the deceased passenger ran towards the rear side of the helicopter in attempt to come to left side of helicopter and came in contact with the running tail rotor. The 02 UCADA officials tried to shout and stop the passenger from moving towards rear side but the passenger did not acknowledge any calls owing to the rotor noise. The pilot also did not notice the passenger running towards rear and got to know only after he heard a thud sound and subsequently informed by the other personnel.

1.17.2.5 SOP for briefing of passengers

One of the procedures defined in the SOP of the organisation regarding passenger briefing is stipulated below: -

“Pre-flight briefing of the passengers shall be carried out by the deputed staff prior to aircraft boarding. The staff is to brief the passengers on the flight safety aspects. Passengers under the influence of alcohol or drugs, who may impede the safety of the helicopter or its occupants are not to be permitted to board the helicopter.”

The passenger briefing was not carried out properly prior to boarding of the UCADA officials at Sahastradhara helipad and also at TBA helipad, Guptkashi before operating flight to Kedarnath. In general, the passenger briefing is carried out prior to boarding at Terminal building of Sahastradhara Helipad, however, both the passengers were escorted directly to the helicopter for boarding. The officials responsible for briefing the passengers could not do so as the flight was already getting late and they thought that the passengers being UCADA officials would be well versed with the procedures. However, the passenger briefing cards were available in the helicopter (Refer Fig 5). After the accident, it was informed by one of the UCADA officials that the flight from Sahastradhara to Guptkashi on 23 April 2023 i.e., the day of accident was the first time the deceased passenger flew in helicopter.

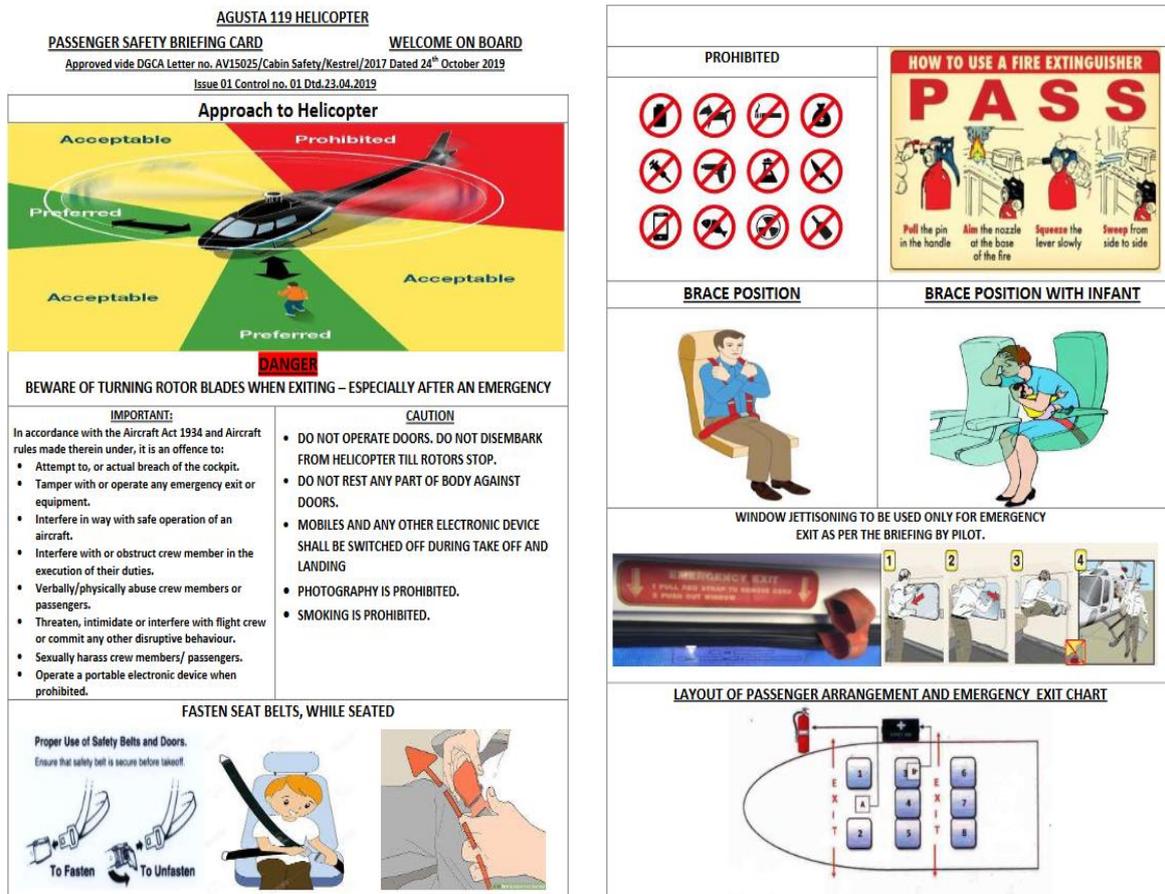


Figure 5: Passenger Briefing Card Available in Helicopter

1.17.3 Joint SOP for Kedarnath Shuttle Service

A joint SOP titled “*Joint SOP: VFR Helicopter Shuttle Operations to Kedarnath Shrine’, Revision 7, dated 01 Oct 2020*” has been formulated by DGCA. The relevant procedure of joint SOP is stipulated below:

The helipads at Kedarnath have been constructed by the Uttarakhand State authorities. The safety and firefighting facilities at Kedarnath helipad will be provided by the UCADA in coordination with helicopter operators. The operators are to coordinate availability of these services at Kedarnath helipad before commencement of operations. Each operator shall position a team at Kedarnath Helipad with a nominated helipad shift i/c for conduct of operations.

As per the joint SOP, the helipad at Kedarnath is provided by UCADA. Despite huge passenger traffic that the helipad handles, it is not a DGCA licensed helipad and responsibility of ensuring availability of personnel, safety/firefighting equipment, etc. lies with respective air operator.

1.18 Additional Information

No Further information

1.19 Useful or effective investigation techniques

No Further information

2. ANALYSIS

2.1 General

The helicopter was manufactured in the year 2015 and had a valid Indian Certificate of Registration (C of R) at the time of accident. It was holding a Certificate of Airworthiness (C of A) that was valid for lifetime subject to validity of Airworthiness Review Certificate which was also valid at the time of accident. The helicopter had logged approx. 2363 Airframe hours till the day of accident. There was no snag reported by the pilot before operating the accident flight. The serviceability of the helicopter had no bearing on the accident.

The weather at the time of accident was fine and had no bearing on the accident.

The operating pilot was qualified on type. The pilot had valid licenses as on date of accident. The PIC was a CPL(H) holder qualified on type and had a total flying experience of about 2268 hours including about 2091 hours on type (Agusta AW119). PIC held all the required training/medical requirements for operating the flight and were valid as on date of accident. The pilot had adequate rest before operating the flight.

2.2 DGCA approved Joint SOP for Kedarnath operations

As per the joint SOP, the helipad at Kedarnath is provided by UCADA. Despite huge passenger traffic that the helipad handles, it is not a DGCA licensed helipad and responsibility of ensuring

availability of personnel, safety/firefighting equipment etc. lies with respective air operator. Further, in the SOP it is given that the safety and firefighting facilities at Kedarnath helipad will be provided by the UCADA in coordination with helicopter operators. The operators are to coordinate availability of these services at Kedarnath helipad before commencement of operations. Each operator shall position a team at Kedarnath Helipad with a nominated helipad shift in-charge for conduct of operations. It is understood that the technical surveillance/inspection is being carried out by DGCA. It was informed by UCADA that they only carry out administrative inspections which includes facilities at helipads, facilities/arrangements for passengers, etc. However, whenever there is any kind of observation on operations/technical aspects they intimate it to DGCA for further necessary action. It was further informed that the operations in every season is started only after the inspection/surveillance of DGCA is carried out and UCADA ensures that the observations therein are actioned. They also carry out inspection in-between during the operations to check if the requirements are maintained. Most of the requirement has been made part of joint SOP.

From the above, it is clear that as per SOP, there is no single entity which is responsible for safety and security of operations in the Kedarnath valley. Even though the helipad at Kedarnath is owned by UCADA, the responsibility of ensuring safety and availability of firefighting facilities at helipad has been entrusted to the operators. Hence, each and every responsibility for safe conduct of flight in the region lies with the operators, which means that operators are allowed to conduct the flights at their own discretion without any clarity and supervision of operations. This provision is not conducive for safe operations from Kedarnath Helipad as each operator gives emphases to their own operations and there is lack of proper co-ordination between the operators to safely operate the shuttle flights for Kedarnath helipad. The provision of giving responsibility to individual operator may be effective for their own helipads from where they are operating shuttle services to Kedarnath Shrine, but it is not effective for Kedarnath helipad which is common for all operators. As per procedure each operator has positioned a team with a designated in-charge at Kedarnath Helipad, but it is not clear as to who is the overall in-charge of the operations being conducted from Kedarnath Helipad. As no responsibility has been designated to a particular organisation or to an individual, there is no clarity regarding who is responsible for safe conduct of flights from Kedarnath Helipad and what is the role and responsibility of individuals involved in conduct of these shuttle flights. This is further evident from the series of accidents which occurred in the Kedarnath helipad over the years including 02 recent accidents one just before the end of last season in October 2022 and the present case which occurred just before the start of operations in the new season.

There is a need for designating responsibility to a particular organisation for overall supervision and to ensure safe conduct of flights from Kedarnath helipad. This will also ensure that there is no ambiguity among operators regarding their roles and responsibilities.

2.3 Circumstances leading to the Accident

2.3.1 Embarkation/Disembarkation of passengers with running rotors

The embarkation/disembarkation of passengers at Kedarnath Helipad is carried out with running rotors during shuttles as there is continuous operation from the helipad during the season. Even for the operations other than shuttle the embarkation/disembarkation of passengers at Kedarnath Helipad is carried out with rotors running. This is because, the operations in that region are carried out as per the Joint SOP. In the absence of dedicated ATC, the traffic is regulated through the procedures defined in joint SOP wherein the pilots operating in the region gives callout on RT regarding their positions to ascertain smooth flow of traffic. However, in the absence of dedicated ATC, the pilot will be able to know the position of those helicopters only which are operating in the valley. Hence, it is not feasible for the pilots to switch off the helicopter for embarkation/disembarkation of passengers at Kedarnath Helipad. Further, if the engines are switched off at the helipad it will take considerable time to switch it ON again as the engines requires at least 15 minutes for cooling off before it is restarted. Also, there are other constraints like high elevation of the Kedarnath helipad because of which the atmospheric temperature in the region is generally low with low air density which may affect the engine restart. In that case the helipad will be occupied and any other flight planned for the helipad will not be able to operate there.

2.3.2 Briefing of Passengers

As per standard procedures, Pre-flight briefing of the passengers shall be carried out by the deputed staff prior to aircraft boarding. The staff is to brief the passengers on the flight safely aspects. However, the passenger briefing was not carried out properly prior to boarding of the passengers (UCADA officials) at Sahastradhara helipad and also at TBA helipad, Guptkashi where 02 more passengers boarded the helicopter for Kedarnath. At Sahastradhara both the passengers were escorted directly to the helicopter for boarding by UCADA officials and commercial staff of operator without taking them to the passenger briefing area. It was found that the safety briefing was not carried out at helicopter also after boarding of passengers. The investigating team tried to enquire about the reasons why safety briefing was not carried out and it was found that the operational staff responsible for briefing the passengers was busy co-ordinating for flight clearances as the flight was late. Further, they were under the perception that the passengers being UCADA officials would be well versed with the safety procedures. Even though the passengers were UCADA officials and they were not taken to the safety briefing area, the officials responsible for carrying out the safety briefing should have ensured that the same was carried out prior to start of flight.

It was informed by one of the UCADA officials that the flight from Sahastradhara to Guptkashi on 23 April 2023 was the first time the deceased passenger flew in helicopter. Hence, in all probability the deceased passenger was not aware that it is prohibited to move towards the rear side of the

helicopter with running rotors and the consequences associated with it. Also, the passenger may not have seen the passenger briefing cards available in the helicopter.

In view of the above, it is evident that lack of safety briefing prior to boarding of passengers was a major contributory factor to the accident.

2.3.3 Escorting of passengers for embarkment

The flight operated for UCADA officials was not a shuttle service, and was operated as Non-Scheduled flight under the agreement with UCADA. The helicopter was not switched off after it landed at Kedarnath Helipad due to various operational constraints and the embarkation was supposed to be carried out with running rotors.

The helicopter landed at Kedarnath helipad with pilot and a ground staff on board to pick the 03 passengers (UCADA Officials). The helicopter was carrying some items which were offloaded first.

As per procedure it was the duty of the operator to make sure that passengers are escorted by their personnel to the helicopter. However, the operator had only a ground staff available to facilitate the embarkation of the passengers who was busy in offloading the items. It is evident that the operator didn't have sufficient manpower available at helipad to ensure that the passengers are escorted safely for boarding the helicopter.

After helicopter landed at helipad, the Operator's personal was engaged in off-loading items from the helicopter. The passengers were being led to the helicopter by UCADA personnel. As pilot noticed, passengers approaching the helicopter, he signalled them to stop as the helicopter was not ready for boarding yet. The 03 passengers along with 02 UCADA officials who were approaching from the front right side of the helicopter stopped thereafter.

It is not clear whether any signal was given by the pilot or ground staff to the passengers to proceed for boarding, however, as per the statement given by the eyewitnesses the ground staff after offloading the items from left side door came to the right side and opened the right-side door for boarding of passengers. Thereafter the ground staff again went to the left side to close the left side door which remained open.

While operator's personnel was still in process of closing/opening the door to prepare helicopter for passenger boarding, the passengers along with other UCADA officials again started approaching the helicopter. During this time the deceased passenger suddenly moved towards the rear side of the helicopter. The exact reason behind it cannot be ascertained, however, there is a possibility that the passenger wanted to board the helicopter from left side by going around the rear side of helicopter.

The other UCADA officials tried to stop the passenger but could not do so. During this process the passenger came in contact of running tail rotor and received fatal injuries.

3. CONCLUSION

3.1 Findings

- 3.1.1** The Certificate of Airworthiness, Certificate of Registration and Airworthiness Review Certificate of the helicopter were valid on the day of accident. The Serviceability of helicopter had no bearing on the accident.
- 3.1.2** The pilot had valid license and ratings, and was qualified to operate the flight.
- 3.1.3** Safety briefing of passengers prior to boarding at Sahastradhara & Guptkashi was not carried out as per SOP.
- 3.1.4** In the absence of dedicated ATC, and various other operational constraints like cooling off period required for engines, high elevation of the Kedarnath helipad, etc. it was not feasible to switch off the engines to embark/disembark the passengers at Kedarnath Helipad.
- 3.1.5** The ground staff of the operator was the only staff designated for escorting passengers for boarding. However, the staff was not available on the right side of the helicopter from where the passengers were supposed to board the helicopter and was busy in closing the door on Left side after offloading the items from helicopter.
- 3.1.6** The passengers were escorted to the helicopter by the UCADA officials and not by the dedicated personal of operator as per SOP.
- 3.1.7** The Kedarnath helipad is not a DGCA licensed helipad and responsibility of ensuring availability of personnel, safety/firefighting equipment, etc. lies with respective air operator.
- 3.1.8** There are multiple operators operating to Kedarnath and are jointly responsible for safe conduct of operations at Kedarnath as per the Joint SOP. There is no single entity or organization that is responsible for overall supervision of flight operations at Kedarnath helipad to ensure safety and security of flight operations being carried out at Kedarnath helipad.

3.2 Probable Cause of the Accident

The accident occurred as the passenger while approaching for boarding from front right side suddenly moved towards the rear of the helicopter and came in contact with running tail rotors.

The following factors contributed to the accident: -

- Safety briefing of passengers was not carried out before boarding as per SOP.
- SOPs were not followed for escorting the passengers for embarkation.
- There is no single entity or organization that is responsible for overall supervision of flight operations at Kedarnath helipad to ensure safety and security of flight operations being carried out at Kedarnath helipad.

4. SAFETY RECOMMENDATIONS

It is recommended that:

- 4.1** DGCA should issue directions to all Helicopter operators to strictly adhere to the SOPs regarding safety briefing provided to the passengers prior to boarding. Further, they may ensure that all passengers irrespective of their post/background are briefed about the safety aspects at a designated place (briefing area) prior to commencement of flight from every helipad. The compliance of these SOPs by each operator may be ensured by DGCA during their Surveillance/Audit/Inspection.
- 4.2** DGCA should issue directions to all helicopter operators to ensure that sufficient manpower is available at operating helipads to safely escort the passengers for embarkation/disembarkation. Further, they should ensure that any staff who is designated for escorting the passenger does not indulge in any other activity during the process of embarkation/disembarkation.
- 4.3** DGCA should designate and authorize UCADA or any organisation deemed fit to supervise the flight operations being carried out at Kedarnath helipad. The organisation shall ensure proper co-ordination among operators for safe conduct of flights from Kedarnath helipad and shall be responsible for overall safety and security at the Helipad. The joint SOP may be amended accordingly.
- 4.4** DGCA should consider licensing the Kedarnath Helipad and analyse the feasibility of establishing Air Traffic Control tower at Kedarnath Helipad or its nearby places to regulate the heavy traffic it handles during season every year.

Date: 28 Oct 2023
Place: New Delhi