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Asia and Pacific Office

ICAO

Eleventh Meeting of the Asia Pacific Accident Investigation Group (APAC-AIG/11)

(Singapore, 16 – 17 August 2023)

Agenda Item 4: Enhancing Accident Investigation Capabilities

TECHNIQUES TO DETERMINE THE RELATIONSHIP OF A BIRDSTRIKE IN AN IN-FLIGHT BREAK-UP ACCIDENT

(Presented by the Australian Transport Safety Bureau)

SUMMARY

This discussion will work through an investigation to highlight re-visiting all available evidence as working hypotheses are developed, and to share lessons learnt in the determination of the precursors of an in-flight break-up.

1. INTRODUCTION

1.1 On the morning of 9 July 2022, a Bell 206 L-1 'LongRanger' helicopter, registered VH-ZMF departed a private helipad at Cattai, New South Wales, for a private flight. About 9 minutes later, the helicopter impacted terrain about 10 km to the north of the departure point. The helicopter was destroyed, and the pilot, who was the sole occupant, was fatally injured.

1.2 Physical evidence, data, recorded transmissions, environmental conditions, and witness statements were examined and analysed to determine the events that led to an in-flight break-up.

2. DISCUSSION

2.1 Initial on-site examination of the accident site was carried out to determine the nature of the collision with terrain. Most of the accident site was in relatively accessible terrain, however there was an ongoing threat of flooding due to a recent weather event in the region. The ATSB RPAS (DJI Phantom 4 Pro) was of great assistance with aerial mapping and wreckage identification. This initial examination provided strong evidence of an in-flight break-up.

2.2 First responders confirmed the presence of bird remains. Specimens were sent to the *Australian Museum – Airstrike Section*, and confirmed the samples to be from a 'Wedge-tailed Eagle', Australia's largest bird of prey with a wingspan of up to 2.3 m, with females growing up to 5.3 kg. Several local witnesses described the long-term presence of an indigenous pair of wedgetail eagles known to inhabit the area.

2.3 The investigation sought to confirm if the in-flight break-up was a result of the bird incapacitating the pilot, or damaging the aircraft to an extent that would result in the helicopter breaking apart. The nature of the wreckage indicated that the main rotor severed the tail boom, leading to the in-flight break-up progression.

2.4 Minor biological matter from the bird was identified on various parts of the helicopter which were found in the wreckage trail. The main airframe had been consumed by a post-impact fire, rendering any further examination for birdstrike unavailable, and therefore unable to determine if the bird entered the cockpit, incapacitating the pilot. A media helicopter which was in the area, were the first responders. The camera operator captured the wreckage on video in the early stages. The investigation sought the footage, and were able to confirm the main impact on the airframe from the bird, was on the nose of the helicopter. This confirmed that the birdstrike did not directly affect the helicopter's flight control system.

2.5 Pilot distraction was taken into consideration to see if this may have reduced the pilot's capacity to identify an approaching large bird. Potential distractions were identified that would have occurred around the time of the birdstrike. Data from the pilot's electronic flight bag, radio transmissions made at the boundary of controlled airspace potentially provided a distraction. Sun position was also calculated to be at a position that would have obscured to approaching bird, that is, the pilot's forward visibility would have been reduced due to flying towards the sun.

2.6 The investigation team were then able to conclude that the pilot was likely startled by the approaching wedge-tailed eagle, and overcontrolled the helicopter in an attempt to avoid an impact with the bird, resulting in the main rotor severing the tail boom, and subsequent in-flight break-up.

2.7 The investigation highlighted the importance of reviewing all available evidence, and then re-reviewing it in the light of the team's working hypotheses at each stage of the investigation.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to note and encourage the sharing of investigation techniques for future investigation support amongst the member States.

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