



## OFFICE OF THE CHIEF COMMISSIONER

AIC Head Office,  
Level 1, NAQIA Haus, Pofion 81, Morea Toba Rd, 6 Mile  
PO Box 1709, Boroko 121  
National Capital District  
Papua New Guinea

Telephone : (675) 327 9000  
Facsimile : (675) 323 2139  
Email : [mwal@aic.gov.pg](mailto:mwal@aic.gov.pg)

**Safety recommendation: AIC 24-R02/23-1003**

**Addressed to: Heli Solutions Limited**

**Date issued: 30 May 2024**

**Date re-issued: 22 August 2024**

**Investigation link: AIC 23-1003**

**Action status: Closed**

### Introduction

On 18 February 2023, at about 11:40 local time (01:40 UTC ), a Bell 407 helicopter, registered P2-HSM, owned and operated by Heli Solutions Limited (Ltd), was conducting a single pilot VFR passenger charter flight from Epopi village to Wapenamanda Airport in Enga Province, when the helicopter experienced a complete loss of tail rotor thrust inflight, resulting in an emergency landing about 3.5 NM Northwest of Wapenamanda Airport.

There were six persons on board the helicopter: one pilot, the loadmaster and four passengers.

The AIC was notified by the operator via a phone call on the day of the accident. The AIC immediately commenced an investigation and deployed a team of investigators to the accident site on 19 February 2024.

### Safety deficiency description

The complete loss of the helicopter's tail rotor thrust during the descent phase was attributed to the snapping of the four mounting studs. This was caused by the failure of the mounting stud assembly. The damage sustained on the studs and bores indicate that they sustained cyclic stress and vibrations above normal levels. The investigation concluded that there were several factors that contributed to the accelerated wear and tear of the component, including the helicopter vibrations that were reported numerous times over the year. Maintenance records showed that these reported issues were partially resolved. The AIC also noted that certain defects are written into the Technical Log by the pilots, or only reported verbally to the maintenance engineers who record the defects on behalf of the pilots.

The Manufacturer, Bell Helicopters, issued an information letter requiring the use of vibration analysis equipment. The Manufacturer's Maintenance Manual itself also specifically requires vibration analysis equipment following pilot defect report or adjusts. The operator's maintenance records indicated that although maintenance was carried out following reported issues relating to vibrations, a vibration analyser was not used to conduct maintenance on 2 and 3 January 2023.

Helicopter vibration analysers are quite accurate and can assist in diagnosis and identification of vibration sources and magnitude. Conducting maintenance activities relating to excessive vibration reports without the use of vibration analysers pose a significant risk of misdiagnosis and continued manifestation of issues leading to such failures experienced during the accident flight.

A significant risk, which would not likely be the case if an analyser is used, remained that underlying sources of vibration may not have been completely resolved or that a level of imbalance persists. It cannot be determined for certain that the helicopter vibrations are within the specified parameters without the use of vibration analyser. The sources of any excessive vibration, single or multiple, are also difficult to identify without an analyser.

**Recommendation number AIC 24-R02/23-1003 to Heli Solutions Ltd.**

The AIC recommends that Heli Solutions Ltd should ensure that standardized systems and protocols are established and implemented for defect reporting, maintenance practice, and compliance with requirements in the Manufacturer's Maintenance Manual relating to unscheduled maintenance.

**Action requested.**

The AIC requests that Heli Solutions Ltd note recommendation AIC 24-R02/23-1003 and provide a response to the AIC within 90 days, but no later than 28 August 2024, and explain including with evidence, how Heli Solutions Ltd has addressed the safety deficiency identified in Safety Recommendation AIC 24-R02/23-1003.



**Maryanne J. Wal**  
*Chief Commissioner*

21 August 2024

## Heli Solutions Limited Preventive Action

On 16 October 2024, Heli Solutions Limited informed the PNG Accident Investigation Commission of the preventive actions taken to address the safety deficiencies identified in *Safety Recommendation AIC 24- R02/23-1003*. Heli Solutions Limited also provided documentary evidence of the preventive action taken.

### **PNG Accident Investigation Commission (AIC) assessment of Heli Solutions Limited response**

The comments provided by Heli Solutions Limited on the Draft Final Report were assessed by the AIC and relevant sections of the Final Report amended accordingly. Therefore, the *Safety Deficiency Description* in this standalone safety recommendation was also amended to reflect the safety deficiencies identified in the Final Report.

The AIC reviewed the Heli Solutions Limited documents providing evidence to the AIC of the preventive action taken. The AIC is satisfied that the evidence satisfactorily addresses the safety deficiencies identified in the AIC *Safety Recommendation AIC 24-R02/23-1003*.

The AIC has assigned the Heli Solutions Limited response a *fully satisfactory rating* and records the **Status of the AIC Recommendation: Closed Response Accepted.**



**Maryanne J. Wal**

*Chief Commissioner*

*04 November 2024*