



NATIONAL TRANSPORTATION SAFETY BOARD

**Office of Aviation Safety
Western Pacific Region**

ON-SCENE EXAMINATION INFORMATION (Rev B)

**NTSB Accident: WPR18LA221
Accident Date: August 8, 2018**

Examination Date: August 31, 2018

This document contains 8 embedded images

A. ACCIDENT:

Location:	Honolulu, HI
Date:	8.8.2018
Aircraft:	MDHI 369D / N369MH

B. EXAM LOCATION & PARTICIPANTS:

Hawaii Aviation Services
Honolulu International Airport
Honolulu, HI

NTSB Van McKenny Aerospace Engineer (Helicopters) Washington, DC	MD Helicopters Joan Gregoire Chief Air Safety Investigator Mesa, AZ
FAA Flight Standards District Office Edwin Kalilikane Inspector Honolulu, HI	Boeing John Hobby Air Safety Investigator Mesa, AZ
Hawaii Aviation Services Travis Shilling Director of Maintenance Honolulu, HI	Schuman Aviation Richard Schuman President Honolulu, HI

C. ACCIDENT SUMMARY:

On August 8, 2018, about 0920 Hawaii-Aleutian standard time, a Hughes 369D helicopter, N369MH, experienced a significant inflight vibration event, which resulted in the pilot executing an emergency landing to a school field in Honolulu, Hawaii. The commercial pilot and his 3 passengers were not injured. The helicopter was substantially damaged. The helicopter was registered to Schuman Carriage Company Ltd, and operated as a Title 14 *Code of Federal Regulations* Part 136 air tour flight, doing business as Magnum Helicopters. Visual meteorological conditions prevailed for the flight. The flight originated from the operator's facility at Honolulu International Airport (HNL), Honolulu, Hawaii about 0909.

D. DETAILS OF THE EXAMINATION

The helicopter was located in the Hawaii Aviation Services hangar. The tail boom, the tail rotor gear box, vertical fin, and horizontal stabilizer had been removed by the operator prior to the arrival of the investigation personnel.



Figure 1 - Helicopter as Configured by Operator for Exam



Figure 2 - Helicopter as Configured by Operator for Exam

AIRFRAME

- Airframe was intact and landing gear in place
- Tail boom had been removed by the operator at the tail boom-fuselage attach point prior to the arrival of the investigation personnel .
- Right skid tube was fractured slightly forward of the aft foot.
- One of the four mounting lugs on the vertical stabilizer had fracture-separated from the stabilizer.
- No additional damage to the airframe was identified.
- Two Hobbs meters: Right side 3868.7, left side 8566.9

TAIL BOOM

- Tail boom tail rotor gear box (TRGB) mounting fixture had TRGB mounting bolt fragment in the left upper and lower mounting bores. The right upper and lower mounting bores were unobstructed, and the mounting bolts/nuts had been retained within their tail boom mounting bores.
- The TRGB fixture bolt hole pads had been cleaned by the operator.



Figure 3 - Tailboom Tail Rotor Gearbox Mounting Fixture

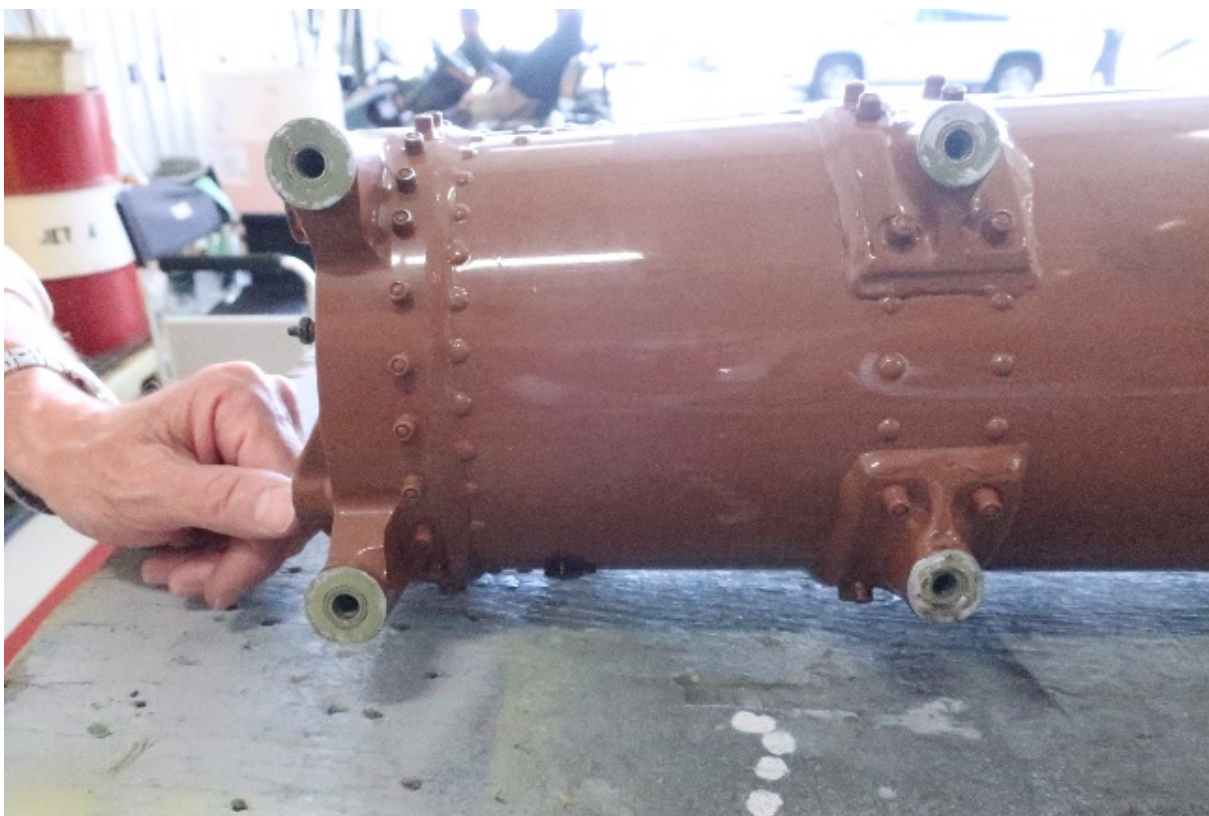


Figure 4 - Tail Boom Vertical Fin Mounts

TAIL ROTOR GEAR BOX

- The TRGB had been removed from the tail boom by the operator prior to the arrival of the investigation personnel
- Tail rotor drive shaft was still attached to the TRGB by the KA Flex coupling. The tail rotor drive shaft appeared undamaged. The KA Flex coupling appeared undamaged with all attachment hardware present and connected.
- The right upper and lower mounting lugs had fracture-separated from the TRGB.
- The left upper and lower mounting lug bolt holes exhibited some deformation
- The TRGB rotating components were able to be rotated freely by hand.
- The swashplate moved freely on the rotor shaft and rotated freely on the tail rotor shaft.
- The pitch links for both the inner and outer tail rotor hubs had been removed by the operator prior to the arrival of the investigation personnel.
- One outboard pitch link appeared bent.



Figure 5 - Tail Rotor Gear Box



Figure 6 - Tail Rotor Fork

TAIL ROTOR HUB

- Both tail rotor hubs had been removed from their respective forks by the operator prior to the arrival of the investigation personnel.
- The inner fork retained the elastomeric bearings.
- Outer fork: one elastomeric bearing had separated from the fork and was retained. It had a shallow dent on one side. The other bearing was absent and not recovered. No adhesive or scrim cloth was observed on the mating faces of the bearing or the fork.
- The inner rotor hub had retained its strap pack and rotor blades. One blade had been removed by the operator prior to the arrival of the investigation personnel, and the other blade was removed during the examination. The hinge bolt nut had been removed prior to the arrival of the investigation personnel, and was retained by the investigation.
- The outer rotor hub had retained its strap pack and rotor blades. The blades had been removed by the operator prior to the arrival of the investigation personnel.
- The hinge bolt had fractured inside the rotor hub. The bolt head half of the hinge bolt was absent and had not been recovered.



Figure 7 - Outer Tail Rotor Hub



Figure 8 - Outer Tail Rotor Hinge Bolt (exhibiting fracture face)

MAINTENANCE RECORD REVIEW (Tail Rotor Items only)

8.8.2018	Aircraft Total Time: 14,418.8 hrs
6.19.2018	R&R one tail rotor blade from the outer hub due to blade tip weight issue. Blade SN: C613 replaced.
4.26.2018	T/R Boot change (requires disassembly of the tail rotor hub)
4.10.2018	T/R pitch control assembly inspection (AD 94-24-04)
3.21.2018	Repacked T/R swashplate (2 year requirement but the operator does it annually.)
11.8.2017	R&R tail rotor drive shaft dampener
7.20.2017	Aerometals horizontal stabilizer installed
2.10.2017	Outer tail rotor strap pack R&R at 12,079.9 hrs
9.22.2016	Replaced tail rotor hardware due to tail rotor hinge bolt fracture. Work order: 4674, Heli-Tec work order 15303

PARTS RETAINED FOR EXAMINATION

1. Tail boom
2. Tail rotor gear box (TRGB)
3. Pitch control
4. Tail rotor coupling
5. TR fork (with 2 installed inboard elastomeric bearings)
6. Long TR pitch link with bolts & nuts (x2)
7. TRGB mounting bolts (x2)
8. Soft stop
9. Outboard hard stop cushion
10. Outboard elastomeric bearing
11. Outboard TR hub (with fractured hinge bolt remnants)
12. Inboard TR hub (with intact bolt)