

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ANC24LA077

COMPONENT EXAM

September 2, 2024

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A. ACCIDENT

Location: Honolulu, Hawaii
Date: August 18, 2024
Time: 4:00
23:00
Helicopter: Robinson R44

B. COMPONENT EXAM

IIC	Stacia Joyce NTSB Anchorage, AK
Party Member	Ben De Peralta FAA Honolulu, HI

C. SUMMARY

The Robinson R44 Raven II helicopter was overhauled in May 2024. TSMOH at the time of the accident was about 338 hours.

The pilot stated she started the engine and engaged the clutch prior to boarding the passengers. As the main rotor system began to engage, she felt and saw the left pedal deflect full forward without any control input. The pilot immediately shut down the engine, stopped the rotors and exited the helicopter to inspect the tail rotor assembly. The tail rotor push pull tube was found bent and severed aft of the tail rotor gear box near the bell crank assembly.

D. DETAILS OF THE EXAMINATION

1.0 Tail Rotor Flex Coupling Assembly

The FAA was present when the tail rotor gear box, drive shaft and push pull tube were removed from the Robinson R44. One of the NAS6604-4 bolts connecting the Flex Plate to the Yoke Flange of the tail rotor gear box was observed to be

missing (Figure 1). The bolt and associated NAS 1149F0432P washers were located at the bottom of the tail boom below the flex coupling assembly (Figure 2).

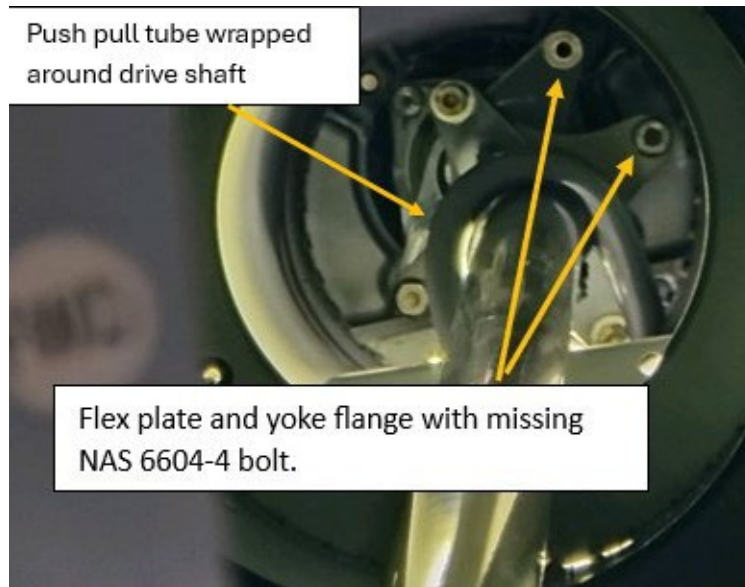


Figure 1 Flex plate and yoke flange with missing bolt.

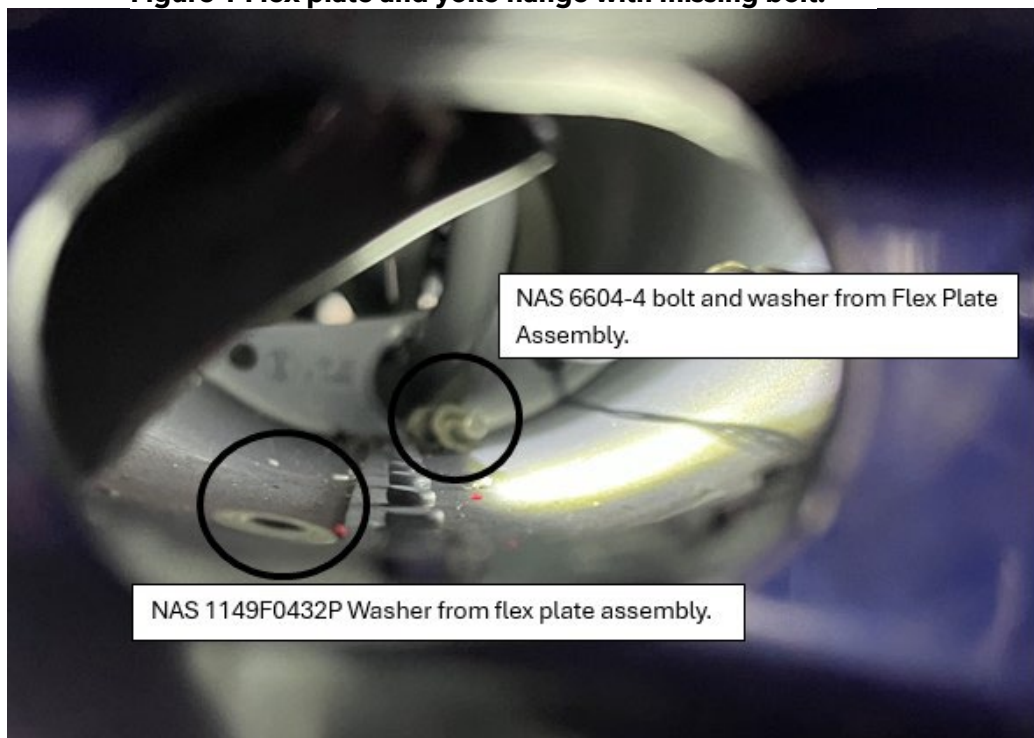


Figure 2 Missing bolt and washer located on bottom of tail boom.

The tail rotor push pull tube had a witness signature of a bolt which had embedded itself into the tube, which resulted in the push pull tube wrapping around the drive shaft and fracturing below the tail rotor drive shaft (Figure 1, 3). The NAS6604-4 bolt matched the witness marks on the tail rotor push pull tube.



Figure 3 Tail rotor push pull tube with witness signature from bolt.



Figure 4 NAS 6604-4 bolts with circumferential wear

The 2 NAS 6604-4 bolts displayed significant circumferential wear (Figure 4). The flex plate and yoke flange displayed significant wear and the B330-13 palnut associated with the missing bolt was significantly deformed (Figure 5).

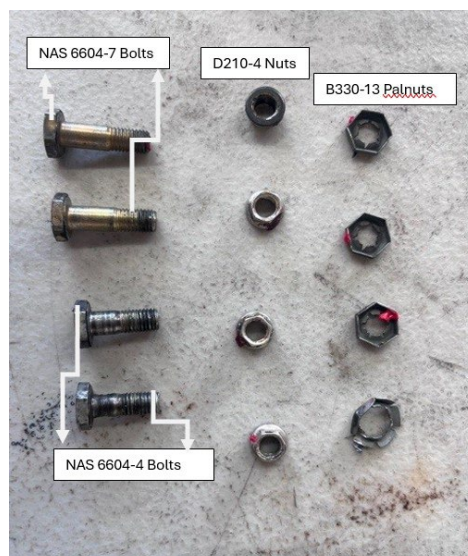


Figure 5 Nuts, bolts and washers from flex plate assembly

The 2 NAS6604-4 bolts and associated washers from the flex coupling assembly were found to have significant wear signatures (Figure 5). The 2 NAS6604-7 bolts from the flex coupling assembly showed no wear. The yoke flange and flex plate showed deformation where both NAS 6604-4 bolts were attached (Figure 6, 7, 8).



Figure 6 Aft Flex Plate

One of the bonded washers from the flex plate was observed to be unglued when the bolt was removed.



Figure 7 Ear of aft flex plate with wear signature

Tail rotor gear box yoke flange attachment point with wear marks from NAS 6604-4 bolt which was found missing from the assembly.



Figure 8 Tail rotor drive shaft yoke flange

Submitted by:

Stacia Joyce
IIC