



RECORD OF EMAIL

Albert P. Nixon
Senior Aviation Accident Investigator
Western Pacific Region

Date: June 30, 2020
Person Contacted: David Hartson (FAA Aviation Safety Inspector)
NTSB Accident Number: WPR20LA191

Narrative:

On an email from David Hartson, the following is a summary of what he stated:

- The Kootenai County Sheriff's report on the helicopter crash on June 23, 2020, was attached:
- Deputy Cutler, Deputy Traw, and other deputies responded to the helicopter crash at Wyoming Avenue and Highway 41.
- Upon arrival, the helicopter was on fire in a field northwest of the intersection and surrounded by a charred area approximately 15 yards in circumference.
- Kootenai Fire was in the field dousing the flames.
- The front section of the fuselage was pointed northeast.
- The rear rotor of the helicopter was approximately 75 yards west of the wreckage.



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Western Pacific Region

Date: July 20, 2020
Person Contacted: David Hartson (FAA Aviation Safety Inspector)
NTSB Accident Number: WPR20LA191

Narrative:

On an email from David Hartson, the following is a summary of what he stated:

- My report as a result of the wreckage examination of N280MM, on July 14, 2020:
- Examination of the wreckage was undertaken at the Pullman, Idaho airport where the wreckage had been stored. The examination revealed little that could be positively confirmed about flight control continuity due to extensive fire damage. Flight control rod ends were all intact at the actuating ends; the rest were broken and/or burned. It was not possible to positively confirm that all flight controls were intact but the evidence available did not reveal any pre-crash failure either. Engine controls that were viewable were intact. The magneto was destroyed, so there was no way to check its function.

It was difficult to positively determine the status of fuel systems due to extensive fire damage and post-crash movement of the wreckage to the storage facility. Those that were viewable appeared intact as far as fittings being attached. The boost pump was relatively undamaged, but the shutoff valve was melted. It sits atop the engine above the fire blanket but suffered extreme heat damage, so its function was impossible to determine. Both fuel tanks were compromised and burned, but the caps were intact.

The engine was heat damaged, with the #1 cylinder (left hand rear, engine points “backwards”) having lost its valve cover. The cylinder head was partially melted away. We had no way to rotate the engine. Intake couplings were burned away and the turbocharger connector to the fuel control unit was burned away. All spark plugs were installed and had high tension wires connected but all were burned. The fuel distributor atop the engine was intact and lines were connected from it to the cylinders and fuel system. The starter was broken away from the engine

due to impact damage; the rest of it was burned in the crash as was the alternator. Some pushrod oil tubes were burned open, and all engine rubber mounts were burned. The engine cooling fan blades showed no tip damage, although the shear rivets on some blades were sheared. Some blades were moved in the direction opposite of rotation, so evaluation of the damage here was inconclusive. They may have been moved during wreckage transit. The blade hub was melted away, so the fan was not attached to anything. The starter ring gear was also separated from its drive hub due to heat damage to the hub. The engine oil cooler was partially melted, and the end of the oil pan quick drain was missing. The end of the engine fuel pump was cracked open which appears to be post-crash damage. The engine is being sent for a teardown examination.

Seat belt attachments were only verifiable as intact in that the retention cables that pass through the passenger bulkhead to mounting structure behind were intact. Seat belts were consumed by the fire and since both occupants were able to exit the aircraft after landing, they appear to have worked properly. Not all attach hardware was found, and no buckles were found.

Engine drive systems were extensively fire damaged. The output pulley was partially melted, and the drive belt was completely burned away. The tensioner pulley was also melted away from its mounting but did spin freely. The tail rotor driveshaft was missing from the wreckage; both output and input drive linkages were broken. The tail rotor blades showed rotational damage that was consistent with what appeared to not be high speed damage, as they were not broken, just bent. Tail rotor control cables were pulled apart at the aft end of both cable; damage was post-crash. Main rotor blades showed tip impact on #2 and #1 which appeared to come from impact on the tail boom. The blades were intact except #3 which suffered the most fire damage. Spars were all intact. Pitch change links were intact except the #2 blade link mount was sheared away from the blade. The tail rotor blades could still be moved to feather, and the gearbox rotated. The main gearbox suffered heat damage, but the body was intact, and the visible part of the ring gear, viewed from the oil vent hole, revealed no damage. The main rotor flight control rods pass through the gearbox driveshaft, and at the top ends all ends were disconnected from the hub. This disconnect appeared to be consistent from crash damage as the rivets were all pulled vertically (in shear) past the end of the connecting rods. I recommended to the NTSB that they send the gearbox to the manufacturer for a teardown.

The tail boom was separated from the fuselage, and the horizontal stabilizer was separated from the tail boom from main rotor blade damage. We suspect the #2 blade struck first, followed by the #1 blade which suffered more damage, but the #3 blade did not appear to impact the tail boom. This, along with main rotor blade condition, leads one to believe rotor speed was low at the time of impact. It was not possible to determine if this happened prior to landing but the parts were found close to the final landing spot which tends to support that the damage occurred after ground impact.

Landing gear was broken in several places and had separated from the aircraft. Since the aircraft bounced on landing and spun 180 degrees from its initial impact, and consistent with rotational energy that caused most of the damage to the landing gear. Both skids had ground handling wheels installed in the stowed position; the rubber tires on both were also burned away. In conclusion, we are not able to positively determine whether the aircraft suffered a mechanical failure prior to the accident. Based on observable evidence, however, there is also nothing

showing there was a failure. The engine teardown is slated to be performed at a later date, which may shed more light on whether it was able to develop power.



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Date: August 19, 2020
Person Contacted: David Hartson (FAA Aviation Safety Inspector)
NTSB Accident Number: WPR20LA191

Narrative:

On an email from David Hartson, the following is a summary of what he stated:

- He was able to speak to the surviving pilot Jay Schranck.
- He stated just prior to the crash, engine rpm skyrocketed and then died, backfiring.
- He stated that the rotor low rpm light came on just before they hit the ground.
- He stated they had just topped off the fuel prior to departing the COE airport.
- It was an instructional flight, and he was at the controls.



RECORD OF EMAIL

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Western Pacific Region

Date: October 28, 2020
Person Contacted: Jesse Vos (Engineering Enstrom Helicopter Corp.)
NTSB Accident Number: WPR20LA191

Narrative:

On an email from Jesse Vos, the following is a summary of what he stated:

- He was responding to a question about the potential of a slipping drive belt and the condition of the output pulley.
- He mentioned that belt slippage in the piston is controlled by the idler pulley system and that he has never heard of a belt slipping on a piston.
- He mentioned that they see it occasionally in the turbine with the fixed pulleys with no idler if the belt tension is not set properly. It is a minor annoyance that shows up during the first hover and normally goes away quickly as the belt and pulleys heat up.
- He mentioned one alleged belt slippage case in the 1970's, that they did a test where they cut strips off the belt to make it narrower. The belt is 6 inches wide. They quit the test when they got to a 1.5 inches belt, with no slippage. There is a lot of excess margin.
- The highest power required in a helicopter is in hover and takeoff, especially from a confined area. Power required (torque) drops off quite a bit in cruise flight. If there were belt slippage issues, they would have shown up in hover and takeoff, and they would have gone away (or at least gotten better) in cruise.
- He mentioned that pilots are usually very quick to report a needle split, and usually very confused if the engine is ABOVE the rotor. This is the opposite of the "normal" emergency. I was not deeply involved in this investigation, but I do not remember hearing the pilot (instructor) mentioning this.