



MEMORANDUM FOR RECORD

Todd Gunther
Air Safety Investigator
Eastern Region

Date: 08/04/2022
Subject: Wreckage and Impact Information
NTSB Case Number: ERA22FA344

On July 30, 2022, an examination was conducted at the accident site near Melrose, Florida. A follow-on examination was later conducted on August 1, 2022, at Florida Air Recovery, in Jacksonville, Florida.

The follow information was garnered during the examinations:

Accident Site

Examination of the accident site revealed that the gyroplane had impacted in a goat pasture in a nose low, left bank, and had come to rest on a magnetic heading of approximately 243 degrees. Light items such as a seat cushion, floatation cushion, wheel pant, and a stick grip had been thrown from the gyroplane during the impact sequence, but there was no wreckage path, and any components recovered on-scene were within close proximity to the main wreckage.

Airframe

Examination of the gyroplane revealed that the majority of the front and rear cockpits had been consumed by a postcrash fire. The left main landing gear was embedded in the ground, and the left outboard vertical stabilizer, and left horizontal stabilizer were crushed inboard. The center vertical stabilizer and rudder were twisted and wrinkled from the root to the tip, and the right horizontal stabilizer was twisted and wrinkled from the root to the tip.

Flight Controls

Flight control continuity was traced from the flight controls in the cockpit through breaks in the flight control system, and to the rudder and rotor head.

Rotor System

Examination of the rotor system revealed that one rotor blade was missing. Further examination revealed that the missing blade had separated about 2 inches outboard of the blade grip and its associated teeter stop (droop stop) was bent in a downward direction. The remaining blade's droop stop was slightly bent (as compared to the other droop stop), and the blade was bent in two places. It also displayed a black colored witness mark on the bottom of the blade about 4 feet outboard of the rotor hub, a blue colored paint transfer mark on the bottom of the blade about 3 feet inboard of the blade tip, and areas along the blade span which displayed damage from the impact sequence. The rotor head, and hub bar were intact, and the mechanism would rotate and teeter when manipulated by hand.

Pre-Rotator

Examination of the pre-rotator system revealed that it had been damaged during the impact sequence, but continuity was traced from the pre-rotator drive through breaks in the system to the pre-rotator, and when turned by hand, it would rotate.

Propeller and Reduction Unit

Examination of the three-blade pusher propeller revealed that the propeller hub had remained attached to the propeller speed reduction unit (PSRU). Two of the propeller blades were broken off about 8-inches outboard of the propeller hub. The one remaining blade was intact.

Examination of the PSRU revealed that it still contained oil, and it would rotate by hand. The centrifugal clutch was also intact and did not display any indication of damage.

Engine

Examination of the engine revealed that it had remained in its mounts, had received thermal and fire damage, and the drivetrain could not be rotated. The timing chain was intact, and both camshafts were intact and undamaged. All intake and exhaust valves were also intact, and no blockages in the exhaust system were discovered.

Oil was present in the engine and oil pump, and the oil pump was functional. The oil filter and internal pleated filter material had been thermally damaged. No metallic debris was found internally. The ignition system and fuel injection system (including the throttle bodies and their associated assemblies) were all fire damaged.

The water pump was intact, but internal examination revealed that the impeller had melted. The radiator was intact, and no blockages were discovered.

On August 3, 2022, the missing rotor blade was discovered in a wooded area about 312 feet east-northeast from the main wreckage.