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3 April 2024

Ms. Tealeye Cornejo
National Transportation Safety Board

MEMO: MPS-24-019

SUBJECT: Teardown Inspection of Propellers from:
Cessna 337, N143JB,
File #:(MPS: 2023-03 NTSB: WPR22FA160)

Subject propellers were installed on a Cessna 337, which crashed on 20 April 2022 in Sylmar, California. McCauley was requested to assist in the examination of the propellers and with the interpretation of the damage indications.

The propellers were inspected at McCauley Propeller Systems Engineering Lab, Wichita, Kansas, on 2 April 2024, with the following in attendance:

Bobbie Kroetch	In-person and Present	FAA
Ernest Hall	In-person and Present	Textron Aviation Air Safety
PJ Beavers	In-person and Present	Textron Aviation Air Safety
Travis Martin	In-person and Present	Textron Aviation-McCauley Engineering Lab
Brian Cozine	In-person and Present	Textron Aviation-McCauley Propeller Engineering
Neal Russell	In-person and Present	Textron Aviation-McCauley Propeller Engineering
Scott Thompson	In-person and Present	Textron Aviation-McCauley Engineering Lab

The propellers arrived in a single wooden crate. Inside the crate, there were two propeller assemblies with propeller spinners attached.



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The model number and serial numbers of the propellers are as follows: *(Dates of manufacture for the serialized components are shown parenthetically in italics){obscured or damaged serial and model numbers are shown in brackets}*

	Front Propeller	Rear Propeller
<u>Model:</u>	D2AF34C306	D2AF34C61-NO
<u>Serial (S/N):</u>	805445 <i>(1980 manufacture)</i>	753582 <i>(1975 manufacture)</i>
<u>Blade 1 (S/N):</u>	K8242{X} <i>(1990 manufacture)</i>	D8208YS <i>(1983 manufacture)</i>
<u>Blade 2 (S/N):</u>	K82392 <i>(1990 manufacture)</i>	D4168YS <i>(1983 manufacture)</i>

Examination of the front propeller resulted in the following observations and conclusions:

1. The front propeller was largely intact following the impact sequence, but the crankshaft flange had sheared from the plane. The front propeller's spinner had formed around the counterweights while the propeller was at a feathered blade angle. Very little scratching or bending was observed on the propeller blades. These observations are consistent with little or no rotational energy during the impact sequence.
2. The investigation found no evidence of any type of fatigue failure. There were no indications of any type of propeller failure or malfunction prior to the impact sequence. All components of the start latch system were found intact.
3. A thin coat of engine oil was found inside of the grease-filled hub, on the outside of the hub, and on the blades. Since the hub was not filled with oil, the leak would not preclude normal pitch control operations.

Examination of the rear propeller resulted in the following observations and conclusions:

1. The rear propeller was largely intact following the impact sequence, but the crankshaft flange had sheared from the plane. The rear propeller's spinner had formed around the counterweights while the propeller was at a high blade angle. When the conformed spinner was removed, the blades returned to a feathered position. Blade 1 had a circular indent in



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- the leading edge causing a tear and S-Bending. Blade 2 had cord wise scratching and leading edge gouges. These observations are consistent with significant rotational energy during the impact sequence. Engine power levels were not determined.
2. The investigation found no evidence of any type of fatigue failure. There were no indications of any type of propeller failure or malfunction prior to the impact sequence. All components of the start latch system were found intact.
 3. The actuating link for blade 2 had an elongated hole on the hub side and had bent the actuating pin. This bend did not interfere with the actuation and feathering capabilities of the blade.

Following the investigation, the components of the propellers were returned to the shipping crate. Upon request from NTSB, the propellers will be return shipped to: Southwest Aircraft Transportation & Recovery Inc., Chino, California.

Respectfully,

Neal Russell
Textron Aviation-McCauley Propeller Engineering