

Hartzell Propeller Air Safety Investigator Field Report

June 28, 2022

Occurrence Date: June 8, 2022
Location: Evansville, IN
Aircraft: Beechcraft Baron 58
Aircraft Registration: N78KL
Aircraft Hobbs: 2969.6
Propeller TSN/TSO: 2353.5 / 1199.6

Propeller Examination

Location: Aircraft Specialists Inc.
[REDACTED]
Sellersburg, IN 47172
Exam Date: June 27, 2022
Participants: Les Doud – Hartzell Propeller Air Safety Investigator
Chris White – Aircraft Specialists Shop Manager

Propeller Description

Propeller Model and S/N
Model: HC-C4YF-2E/FC7063Q
Assembly S/N: GL195
Date of Manufacture: 10/9/2000
Blade S/N Examined: J51843 (new with original build in 2000)

The propeller is a 74.25” diameter, 4-blade, single-acting, hydraulically operated constant speed model with feathering capability. Oil pressure from the propeller governor is used to move the blades to the low pitch (blade angle) direction. A force from a feathering spring and centrifugal twisting moments from the blade counterweights are used to move the blades to the high pitch/feather direction in the absence of governor oil pressure. The propeller utilizes aluminum blades and aluminum hub. Rotation is clockwise as viewed from the rear.

Installation Data: Reference Hartzell Installation Data Sheet No. 236 and STC SA1762SO for additional installation data.

Summary and Findings

While enroute from Paragould, AR (KPGR) to Dayton, OH (KDAY) at 9000 ft., a portion of one blade from the left propeller separated from the aircraft. They pilot diverted to Evansville, IN and landed safely. Photo #1 shows the propeller after landing.

Photo #1 – Left propeller with one blade fractured



The propeller was removed from the engine/aircraft by Tri-State Aero in Evansville, IN on June 23, 2022 and taken to Aircraft Specialists Inc. in Sellersburg, IN for examination.

The propeller arrived at Aircraft Specialists on the start locks (not feathered). There was no measureable aircharge pressure. The start lock sleeve was removed and the propeller feathered normally. The propeller was disassembled to retrieve the fractured blade for further analysis.

The fractured blade Design No. is FC7063Q, S/N is J51843 manufactured on September 6, 2000. The blade is a “Q-tip” design normally measuring 34.81” from blade butt-to-tip. The subject blade fractured approximately 16.5” from the blade butt. There was a small impact crater measuring approximately 0.25” long and 0.15” wide at approximately 45% chord on the face side of the fracture surface. There was also a tear/gouge in the de-ice boot inboard of the fracture and at approximately 30% chord (Photo #2). Photo #3 shows the damage crater from the face side with a small lip protruding outboard of the fracture surface. The de-ice boot severed at the fracture and was partially de-bonded on both camber and face sides.

Photo #2 – Overall damage to face side of fractured blade

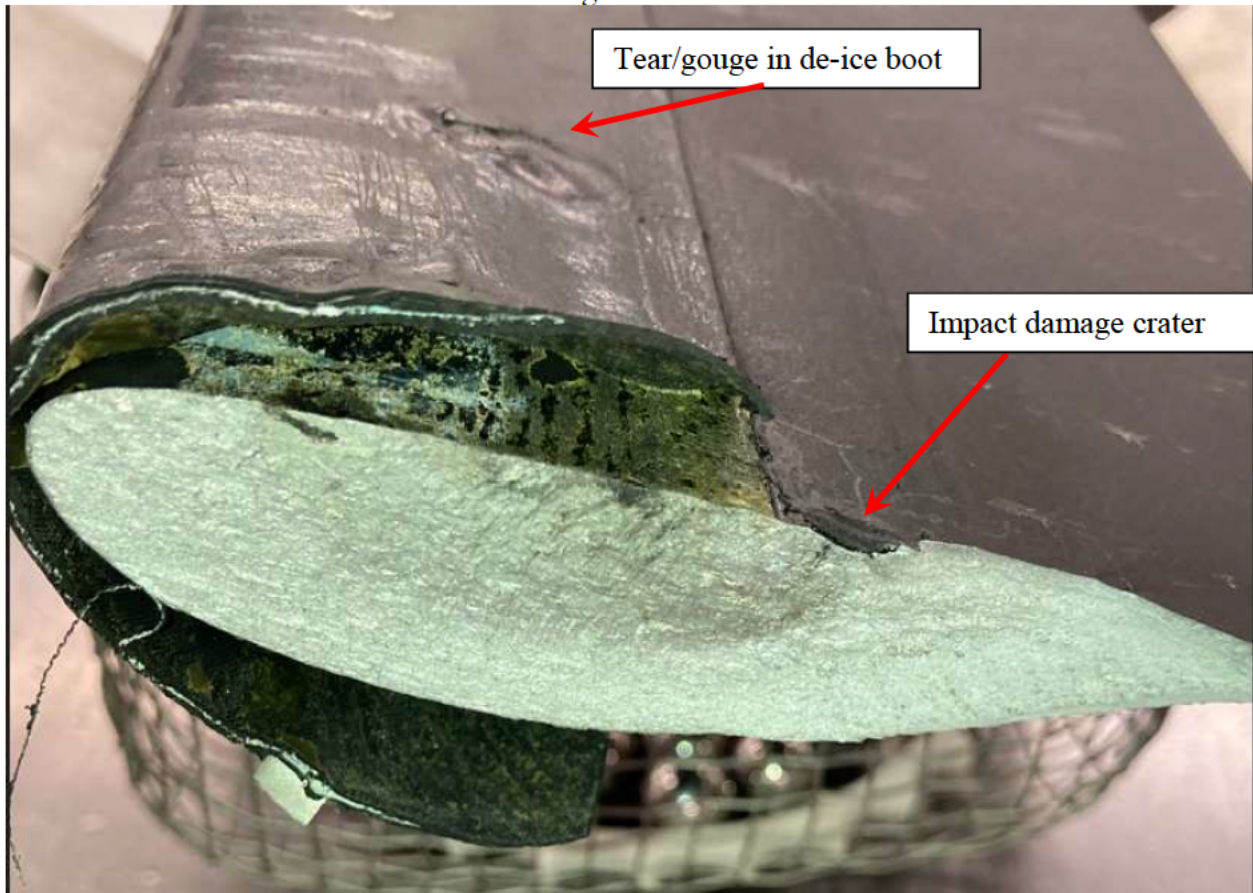
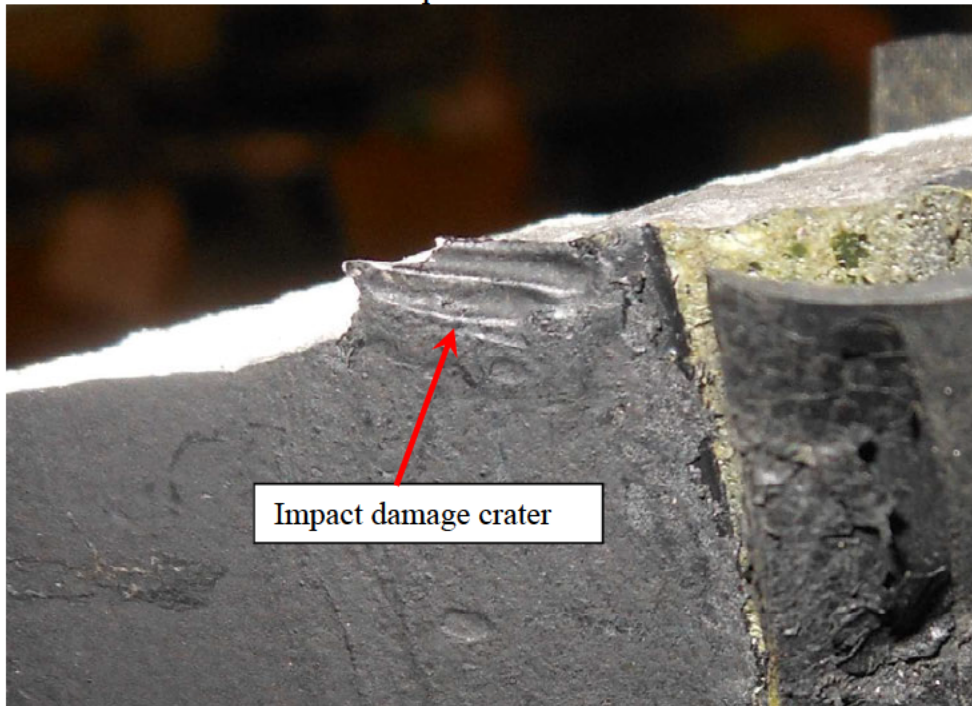
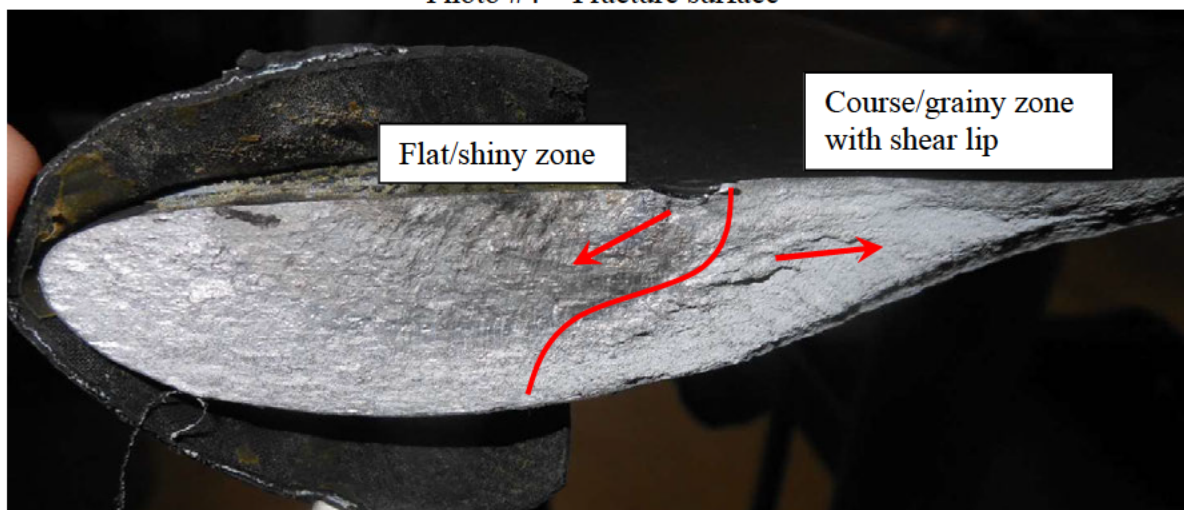


Photo #3 – Impact crater from face side



The fracture surface exhibited a shiny fatigue area with characteristic “beach marks” emanating from the impact crater at 45% chord and progressing mostly forward, toward the leading edge. The shiny fatigue surface covered approximately 50-60% of the section area. A course and grainy surface starting at approximately 50% chord and progressed to the trailing edge suggesting a rupture/overload zone (Photo #4). There also appeared to be either blade paint or primer over the impact crater, and some appeared to have penetrated into the blade fracture surface at various locations, but it could not be confirmed with the optical instruments available.

Photo #4 – Fracture surface



The fractured blade stub was wrapped in rags, taped and boxed for shipment to the NTSB materials lab. The box was shipped from Aircraft Specialists via UPS, Tracking No. [REDACTED].

There was no other remarkable damage to any other components of the propeller.

[REDACTED]
Les Doud
Air Safety Investigator
Hartzell Propeller Inc.

O: [REDACTED]
C: [REDACTED]