



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Anchorage Office
April 18, 2022

Wreckage Examination

ANC22FA030

This document contains 18 embedded photos

**Wreckage
Examination
N7516G**



Photo of accident helicopter at accident site looking west (NTSB photo)

On-scene documentation with the NTSB, FAA, and Robinson Helicopter: 04/16/2022, the accident site was located at the Gila Bend Municipal Airport (E63), Gila Bend, AZ.

The helicopter came to rest about 181 ft from the edge of runway 22 at approximate coordinates (32.964290; -112.665226). The location elevation was about 790' MSL. Part of the initial impact mark was observed about 212 ft from the edge of runway 22 and was indicated by a displaced tail rotor and ground scars. The ground scars indicated the helicopter impacted on about a 180° heading. The Wreckage Examination

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helicopter was about 52 ft left of runway center line. The helicopter continued on about a 210° heading and came to rest on its right side facing about 096°.

The debris field consisted of multiple pieces of windshield, landing gear, carburetor, and instrument panel pieces. All major components of the helicopter were found at the scene.

- Master switch: ON
- Ignition switch: BOTH
- Landing light: OFF
- Nav: ON
- Strobe: ON
- Clutch switch was down and engaged
- All circuit breakers were in
- Mixture was full rich: was not able to be moved
- Governor switch: ON
- Cyclic trim: appeared off (partially pulled)
- Carburetor heat partially pulled (about 1.8 inches & unlocked)
- Collective friction: OFF
- Collective center hardware & stop: almost full up (about .85 inch from the top of the collective slider)
- Collective slider: bent
- GPS was displaced
- Both doors installed:
 - copilot door: over front of cockpit
 - pilot door: under main mast
- Engine fan: crush mark at about 6 O'clock position
- Fan retaining nut: index mark with safety wire aligns
- Fan shroud: does not appear to have rotational marks
- Ring gear: small rotational marks from cooling baffles
- Exhaust stacks: damaged/collapsed
- Slight impact mark on back of the actuator
- Actuator bent and fractured
- Upper sheave to frame (right side): dent with minimal rotation signatures
- Upper sheave to frame (left side): no sign of rotation
- AFT face of upper sheave: no sign of rotation
- Forward flex coupling:
 - Contact with horizontal firewall
 - Part of the flex pack where clutch shaft attaches to the flex coupling is fractured (one of the flex coupling arms)
 - Connected to the clutch shaft yoke (hardware still installed on yoke)
 - Rotational marks on the arm of the forward flex coupling
 - Scrape marks from the upper frames
- Drive belts: displaced from grooves, no abnormal wear able to be seen
- Both gas caps: on
 - Main gas tank: blue fuel in tank (fuel level above tank cap while helicopter on right side)

- Aux gas tank: not opened due to location
- Intermediate flex coupling: bent
- One connector: disconnected:
 - Connector to clutch actuator assembly. Heat shrink around it broken
- Tail rotor driveshaft: appears bowed
 - Forward side of bay 2; stringer has contacted driveshaft
- Tail rotor driveshaft has damage
- Tail rotor control tube: indications of wear
- Rear rotor: no oil visible in sight glass
- Tail rotor flight controls: still connected: pitch change separated and damaged: Pitch change assembly rotates freely, but will not slide due to bend in TRGB output shaft
- Rear tail rotor blades:
 - Broken rear blade
 - Part # A029-2
 - Rev S
 - S/N: 8270
 - Non-Broken
 - Part # A029-2
 - Rev S
 - S/N: 8275
- Upper vertical stabilizer: not damaged
- Horizontal stabilizer: bent down
- Lower vertical stabilizer: bent to the left
- Tail skid: fractured at the empennage
- Tail boom has white transfer marks laterally across the top of the tail cone
- Tail rotor guard: bent left
- Mixture cable:
 - end of the clamp to the end of the sheath: measurement about .5 inch
 - end of the cable for the mixture from the clamp: measurement about 3.3 inches
- Carburetor heat: slider measured about 60% open for carburetor heat
- Throttle control rod not located
- Gascolator: all lines appear intact, has impact hole on bottom
- Carburetor: displaced from helicopter, throttle valve partially opened, idle screw to the throttle arm measurement about .2 inch, throttle valve actuates
- Throttle position measurement (picture from Robinson)
- Throttle twist grip on collective stuck in place
- The removable flight controls were not installed
- Cyclic: bent AFT at the boot, minor movement, friction OFF
- Collective: minor movement: movement about 1 inch up, but would not move down
- Heater blower: OFF
- Cabin heater: OFF
- Hour meter on hobbs: 4347.2
- Left control pedal positioned forward of the right control pedal by about 3.2 inches

- Tail rotor pedals are jammed in place
- Tail rotor pedal control rods: attached at the bottom pedal control
- Right seat buckle: broken
- Left seat buckle: secure
- Under left seat
 - Fuel sample jar
 - Roll of blue rags
 - The removable flight controls
- Main rotor head: control rods all intact
- Main rotor blades:
 - Blue blade
 - Part # A016-6
 - REV AT
 - S/N 3363
 - Has slight crush mark on the teeter stop
 - Sitting on teeter stop
 - Bent upward at about 99 inches on the span
 - Chordwise scoring and scratching on the tip
 - Puncture on the skin about 11 inches inboard from the tip (on bottom)
 - Tip cap slightly displaced
 - Flaky paint on spindle but no marks between rotor head and blade boot
 - Red blade
 - Part # A016-6
 - REV AS
 - S/N 3107
 - Bowed downward about 58 inches at the span
 - Dent about 21 inches inboard from the tip cap (on bottom)
 - Tip cap displaced
 - Erosion present
 - Teeter stop: crushed
 - Line of cracked paint between rotor head and blade boot on spindle
 - Droop stops pushed up contacting rotor hub
- Windshield bow separated at top
- Helicopter came to rest on the right side
 - Blue rotor blade: AFT
 - Red rotor blade: Forward
- Severe crushing on underside of fuselage and engine
- Right skid (pilot)
 - Toe attached in place
 - Heal displaced and separated
- Left skid (copilot)
 - Front strut attach in place
 - Rest of skid displaced
- Windshield: shattered



Photo of accident helicopter looking east (NTSB Photo)



Photo of underside and engine of accident helicopter (NTSB Photo)



Photo of main rotor drive shaft (NTSB Photo)



Photo of main wreckage looking north (NTSB Photo)



Photo of main wreckage with tail boom in foreground, looking south (NTSB Photo)



Photo of tail rotor gearbox, tail rotor hub, and blades (NTSB Photo)



Photo of tail rotor gearbox, tail rotor hub linkages, looking south (NTSB Photo)



Photo of tail rotor gearbox and aft portion of tail boom, looking west (NTSB Photo)



Photo of cockpit and cabin area looking west (NTSB Photo)