Bell Helicopter TEXTRON

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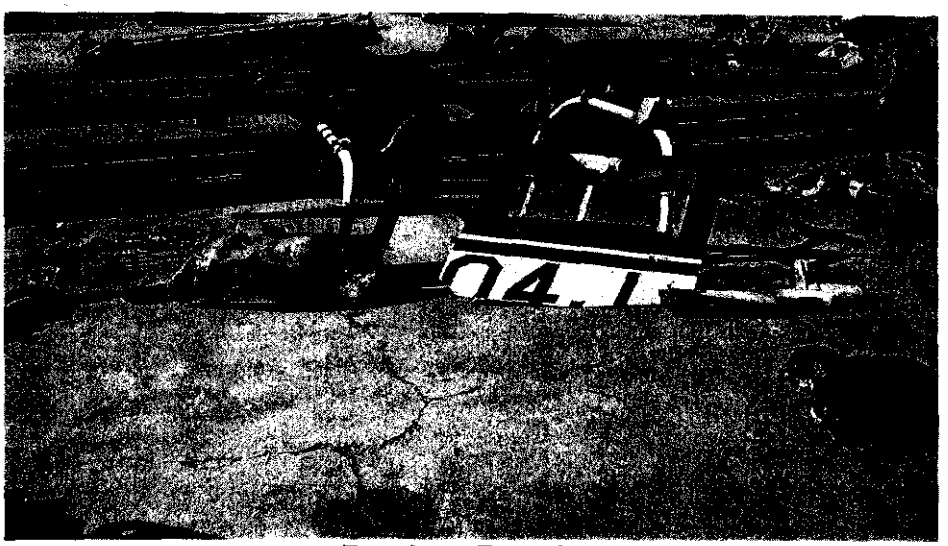
Factual Observation Field Notes
Saber Air Cargo 206B S/N 501 N8104J
North Wilkesboro, North Carolina
10-22-01

I. Introduction:

On October 22, 2001 at approximately 18:30 local a Bell Helicopter model 206B, s/n 501 registration N8104J, owned and operated by Saber Executive Helicopters Inc., was involved in an aircraft mishap. The aircraft had accumulated approximately 16,446 airframe hours, up to the date of the accident. The aircraft impacted the terrain and was consumed by post-impact fire. The two individuals on-board sustained fatal injuries. On October 24, 2001, this writer traveled to Griffin, GA to provide technical assistance during the reconstruction phase of the investigation.

The reconstruction took place at Atlanta Air Salvage in Griffin, GA.. This writer did not witness the on-scene portion of the investigation nor the recovery effort.

II. Examination:



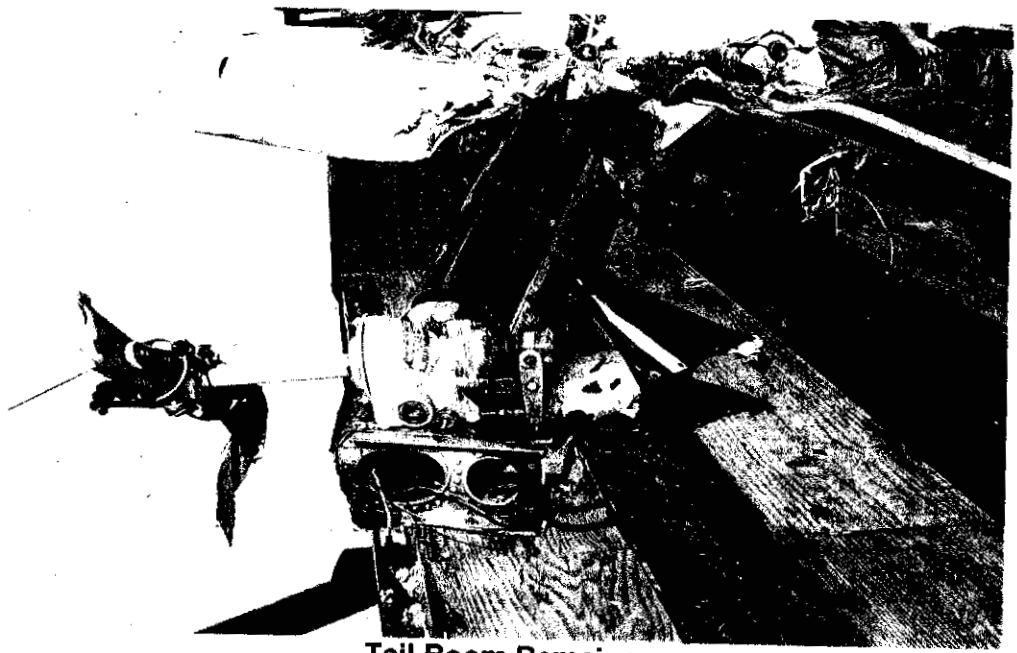
Fuselage Remains

1. The aircraft fuselage predominately consumed by the post-impact fire. Only minimal portions of the roof deck, engine firewalls, a left aft door and miscellaneous small pieces were not consumed in the fire. The instrument panel was not observed. Instruments from the panel were observed in the wreckage debris with extensive post-impact fire damage. The landing skids were observed extensively broken up. The cross tubes were observed predominately intact and appeared to have been separated during the impact sequence. The right side fore and aft crosstubes appeared to have been deformed inward.

   No pre-impact abnormalities were observed with the fuselage remains.

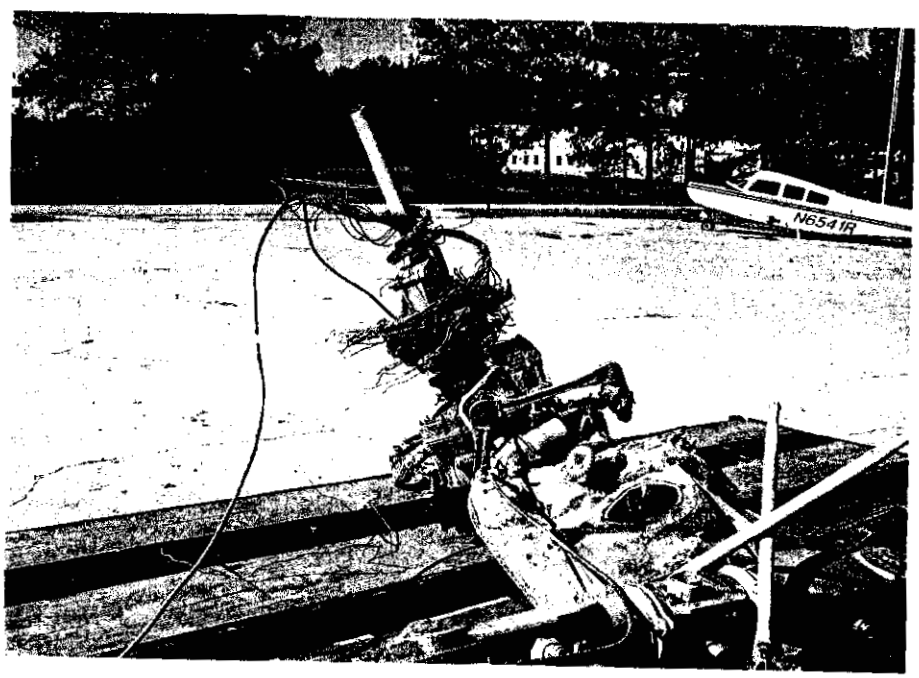
2. The tail boom was observed separated from the main wreckage. Evidence appears to indicate the tail boom was securely attached to it's fuselage attach points during the impact sequence. Measurements indicate that approximately 27 inches of the forward portion of the tail boom had been consumed by the post impact fire. The tail boom forward of the horizontal stabilizer had been predominately consumed by the post-impact fire. The horizontal stabilizers exhibited evidence of significant deformation with the predominate damage occurring to the right side. The remaining portion of the tail boom was intact. The vertical fin had separated from the tail rotor gearbox mount during the impact sequence. The tail rotor gearbox had been separated from the mount.

   No pre-impact abnormalities were observed with the tail boom structure.



Tail Boom Remains

3. The rotating and non-rotating swashplates were intact and exhibited evidence of fire exposure. An approximate 1 inch high voltage power cable was observed wrapped several times around the mast and swashplate assemblies. The drive link was intact. The pitch links had been separated at the swashplate attach clevises. The swashplate support tube was intact. The collective lever was intact. The control linkage running to the non-rotating swashplate had been melted.



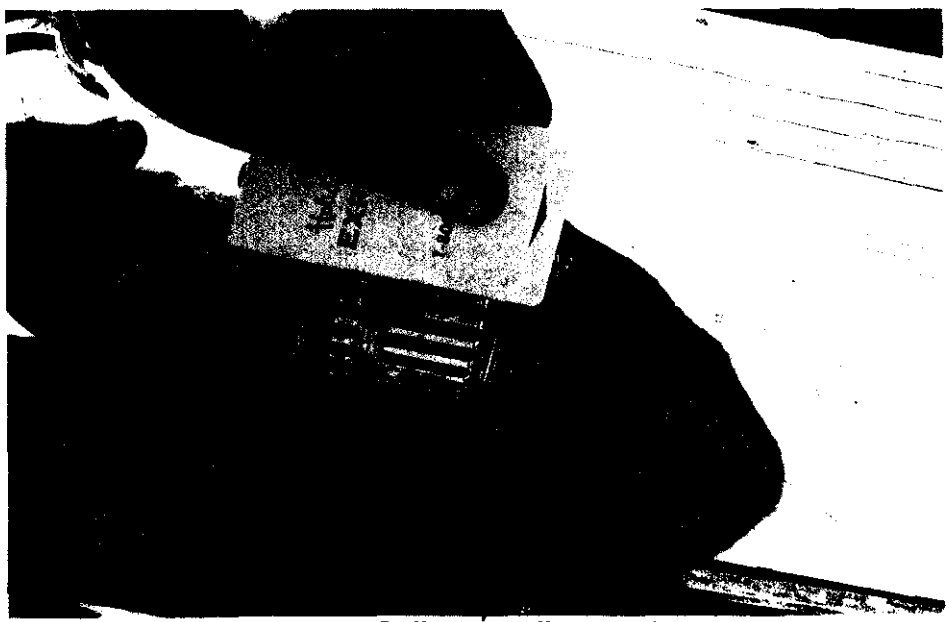
Cable Wrapped Around Mast and Pitch Link Separations.

4. The transmission could not be manually rotated. The transmission case exhibited extensive post-impact fire damage. The transmission remained mounted in the pylon supports. The pylon supports had only melted portions of the fuselage structure attached. The main input drive shaft was had observed with extensive post impact fire damage. The mast had been fractured below the static stops. The separation appears typical of an overload condition. The remaining portion of the mast was removed from the rotor hub and some spline mis-alignment was noted. The rotor hub assembly did not exhibit any indications of distress and the main rotor blades were securely attached to the hub assembly.

   No indications of pre-impact distress were noted.

Transmission Case Damage

Mast Overload Separation



Drive Spline Misalignment

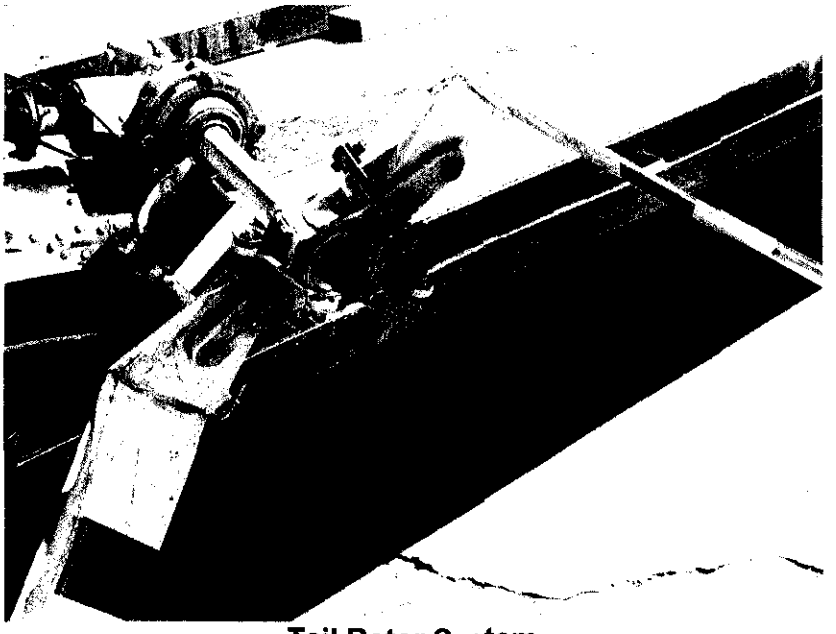
5. The main rotor blades sustained significant impact damage. The main rotor blade p/n 206-101-200-33 s/n TKK-5082 had been separated into four sections. The root end of the blade was observed securely attached to the rotor hub. The separations appear typical of an overload separation. The second blade s/n TAC-2479 had been separated into two sections the separations appear typical of an overload separation.

   The main rotor hub assembly did not exhibit any indication of distress.

   No pre-impact abnormalities were noted with the main rotor system.

6. The tail rotor blade damage appeared consistent between each blade. The blades were bent outward approximately 7 inches from the root end of each blade. Each blade appeared securely attached to the hub assembly. Pitch control to the tail rotor blade was established from the point of tail boom separation to the tail rotor blades. The tail rotor gearbox had separated from the gearbox mount. The separations appear typical of overload and appear impact related. The tail rotor gearbox was manually rotated verifying operation and continuity. The chip plug was observed free of debris.

   No indications of pre-impact abnormalities were noted with the tail rotor system.



Tail Rotor System

7. The number 2 short shaft was observed in a piece of molten metal; the splined portion of each end of the shaft did not exhibit evidence of distress. The tail rotor drive shaft was a single tail boom drive shaft design. The forward portion of the shaft approximately 24 inches that appeared to have been consumed by the post-impact fire.

   The tail rotor drive system did not exhibit any indications of pre-impact distress.

8. The majority of the flight control system had been consumed by the post impact fire and was not observed. The hydraulic boost actuators exhibited extensive post impact fire damage that prevented detailed analysis.

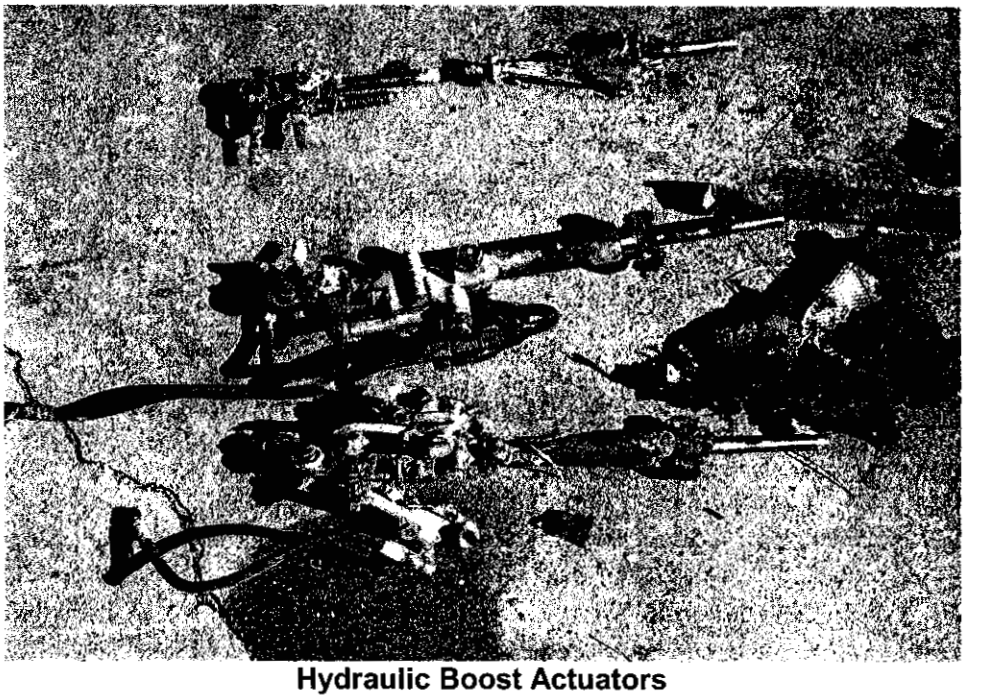
   The cockpit controls exhibited extensive post-impact fire damage. The pilot's damaged cyclic and collective were recovered. The cyclic had been fractured approximately ten inches from the grip. The pilot's collective had been fractured at the jack shaft attach point. The throttle appears to have been in the full "ON" position. The pilot's anti-torque pedals had been significantly deformed to the right.

   No pre-impact abnormalities were noted with the flight control system.

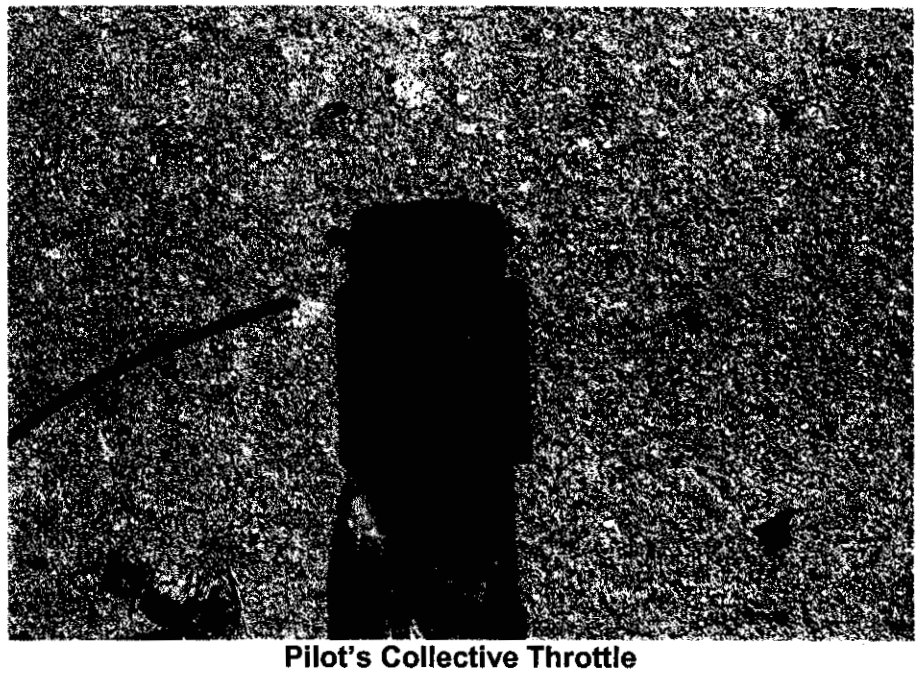
9. The pilot's seat frame had been significantly deformed aft and to the right side and exhibited some thermal damage. The left front seat frame exhibited extensive thermal damage. A single latched lap buckle was observed in the debris. The post-impact fire had consumed the majority of the restraint system.

No pre-impact abnormalities were observed with the remaining restraint system.

Pilot's Cockpit Controls



Hydraulic Boost Actuators



Pilot's Collective Throttle

Pilot's Seat and Unknown Lap Buckle

10. The engine exhibited extensive fire damage. The N1 and N2 sections could not be manually rotated, externally. The engine was partially disassembled for examination. There was evidence of FOD in the compressor section and the compressor blades had some FOD damage. The accessory gearbox had been predominately consumed by the post-impact fire. Some aluminum splatter was observed on the N2 turbine section.

    The fuel control arm had been separated from the aircraft linkage and was reading approximately flight idle when it was observed.

    Evidence indicates the engine was operating at the time of impact.