



Aviation Investigation Final Report

Location:	GRAND CANYON, Arizona	Accident Number:	LAX00FA160
Date & Time:	April 18, 2000, 09:05 Local	Registration:	N2267N
Aircraft:	Bell 206L-3	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	6 Serious, 1 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Sightseeing		

Analysis

The helicopter was departing on a 14 CFR Part 135 sightseeing flight over the Grand Canyon when it experienced a loss of engine power during the takeoff initial climb. The helicopter then collided with the ground as the pilot tried to avoid wires during the autorotative descent. The pilot said that the start, warm-up, and takeoff were normal. As the helicopter climbed through 200 feet, he heard a bang and sensed a total loss of power; he then entered an autorotation to a clear ramp area of the airport. The pilot said that during the descent he had "to pull some pitch to miss some electric wires," and then the helicopter hit hard on the ramp. Several witnesses with helicopter experience said the helicopter was about 75-100 feet in the air when the engine lost power. One witness saw a white puff of smoke emanate from the exhaust nozzle and then heard silence. An experienced helicopter pilot saw the accident pilot stretch his autorotative glide to miss wires that were right in his path and then hit hard and flat at the end of the autorotation. The pilot who flew the accident helicopter the day before the mishap parked the helicopter in front of the terminal building, facing west-northwest at the end of the day, and did not install the engine inlet or exhaust covers. This was the first flight of the day for the accident helicopter. Another company pilot had been awake from 0500 and saw snow falling until about 0700. He and the accident pilot used brooms, squeegees, and brushes to clean the snow off the helicopters during their preflights. He said that about 75 percent of his preflight time was spent in removing the accumulated snow and ice off his helicopter, principally from the upper deck, roof, and doghouse. He noted that about 1/8-inch of snow had accumulated on the upper surfaces of his aircraft. The witness stated that he found and removed "less than a handful of snow from the engine intakes." He watched the accident pilot on a step ladder brushing snow off the top of his helicopter. He said that neither his nor the accident pilot's helicopters had the intake or exhaust covers installed while they were parked overnight on the ramp. Official weather records from the National Weather Service show that blowing snow conditions occurred periodically during the late night of April 17 and early morning hours of April 18, with 0.24 inches of snowfall recorded. The winds were generally from the west-southwest during this period at velocities up to 16 knots. The engine was not

equipped with an auto reignition system. The helicopter's airframe engine inlet area was not equipped with a particle separator or snow baffles. According to Rolls Royce Allison, testing performed in 1968 showed that as little as 30 grams of snow/slush (25 percent water) ingested in the engine inlet can induce a flameout in the Allison 250 series commercial engines. The first impact point was found 56 feet from a 50-foot-high power line strung between light poles, which bordered the crash site. During extensive examinations of the wreckage, no preimpact mechanical malfunctions or failures were found to any control system, or to any component related to the ability of the engine to produce power and deliver it to the rotors. Clear fuel was found in the fuel lines and filters, and, all fuel and pneumatic line B-nut fittings and connections were tight. When electrical power was connected, both boost pumps operated and pumped fuel. Following examination of the engine in the wreckage, it was removed from the helicopter and installed in a test cell for a run in an as removed condition. The engine exceeded new engine minimum horsepower limits for a 250-C30P at all test points, except for takeoff power. At the takeoff power test point, the engine was 0.6-percent (4 horsepower) below the minimum limit. In his written statement, which was composed 29 days after the accident, the accident pilot said that during his preflight he "checked the inlets very thoroughly for any snow" and found none. The pilot observed that following removal of the snow and ice from the airframe, the helicopter sat "in the sun warming for a good 30 minutes before flight." NWS records show that the temperature at the time of the accident was 3 degrees C.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A snow ingestion caused loss of engine power due to the pilot's inadequate preflight inspection and failure to remove the accumulated snow from the engine inlet area. Also causal was the pilot's failure to maintain main rotor rpm while maneuvering to avoid power lines directly in his path during the autorotation necessitated by the loss of power. While the failure to maintain proper rotor rpm is listed as causal, the Safety Board acknowledges that the

pilot's successful avoidance of the power lines, which required expenditure of rotor energy, likely precluded a more severe accident.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. WEATHER CONDITION - SNOW
 2. (C) ENGINE INLET ASSEMBLY - FOREIGN MATERIAL/SUBSTANCE
 3. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
-

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings

4. (F) OBJECT - WIRE, TRANSMISSION
 5. (F) MANEUVER TO AVOID OBSTRUCTIONS - ATTEMPTED - PILOT IN COMMAND
 6. (C) ROTOR RPM - NOT MAINTAINED - PILOT IN COMMAND
-

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

7. TERRAIN CONDITION - OPEN FIELD

Factual Information

HISTORY OF FLIGHT

On April 18, 2000, at 0905 hours mountain standard time, a Bell Helicopter 206L-3, N2267N, experienced a loss of engine power during the takeoff initial climb from the Grand Canyon, Arizona, airport. The helicopter then collided with the ground in an open area on airport property as the pilot maneuvered to avoid wires during the subsequent autorotative descent. The on-demand air taxi flight was operated by Kenai Helicopters under the provisions of 14 CFR Part 135 as a local area sightseeing flight over the Grand Canyon. The helicopter was destroyed during the impact sequence. The certificated commercial pilot and five passengers suffered serious injuries; one passenger sustained minor injuries. A company VFR flight plan was filed and visual meteorological conditions prevailed.

The company director of operations noted that the duty pilots, including the accident pilot, reported for duty about 0730 and checked the weather, which had been obtained from the Prescott Automated Flight Service Station (AFSS) and posted on the weather board in the pilot break room. The pilots were assigned to aircraft and they began preflighting their helicopters about 0800. This was the first flight of the day for the accident helicopter.

Another company pilot reported that he had been awake from 0500 and had observed snow falling until about 0700. He and the accident pilot retrieved brooms, squeegees, and brushes to clean the snow off the helicopters during their preflights. He said that about 75 percent of his preflight time was spent in removing the accumulated snow and ice off his helicopter, principally from the upper deck, roof, and doghouse. The witness estimated that about 1/8-inch of snow had accumulated on the upper surfaces of his aircraft. He observed the accident pilot on a step ladder brushing snow off the top of his helicopter. The witness stated that he found and removed "less than a handful of snow from the engine intakes." He noted that neither his nor the accident pilot's helicopter's had the intake or exhaust covers installed while they were parked overnight on the ramp.

In his written statement, which was composed 29 days after the accident, the accident pilot said that during his preflight he "checked the inlets very thoroughly for any snow" and found none. The pilot observed that following removal of the snow and ice from the airframe, the helicopter sat "in the sun warming for a good 30 minutes before flight."

The pilot said that the start, warm-up, and takeoff were normal. As the helicopter climbed through 200 feet, the local controller cleared the flight to cross over the north end of the runway. Just as the heading was changed and the collective was reduced slightly, the pilot heard a bang and sensed a total loss of power; he then entered an autorotation to a clear ramp area of the airport. The pilot reported that during the descent he had "to pull some pitch to

miss some electric wires," and then the helicopter hit hard on the ramp.

The accident sequence was observed by several witnesses with helicopter experience; either as pilots for other tour operators on the airport or ground service workers for those companies. The witnesses said the helicopter was about 75-100 feet in the air when the engine lost power. One witness reported that he saw a white puff of smoke emanate from the exhaust nozzle and then heard silence. An experienced helicopter pilot with a competitor said that he watched the accident pilot stretch his autorotative glide to miss wires that were right in his path and then hit hard and flat at the end of the autorotation.

A written statement was obtained from the Kenai Helicopters pilot who flew the accident helicopter the day before the mishap. He reported that at the end of the day on April 17 he parked the helicopter on pad three in front of the Kenai terminal building, facing west-northwest. The pilot said he did not install the engine inlet or exhaust covers.

Review of weather records and hourly METAR reports from the National Weather Service disclosed that blowing snow conditions occurred periodically during the late night of April 17 and early morning hours of April 18. The winds were generally from the west-northwest during this period. See the METEOROLOGICAL INFORMATION section of this report for additional details.

PERSONNEL INFORMATION

According to the Federal Aviation Administration (FAA) Airman and Medical Certification Branch Records, the pilot holds a commercial pilot certificate with airplane ratings for single engine land, multiengine land and instruments, and, in addition holds rotorcraft ratings for helicopters and instruments. The most recent first-class medical certificate was issued on February 14, 2000, with the limitation that he wear correcting lenses.

The pilot was hired by Kenai Helicopters on March 7, 2000. According to application forms filed out by the pilot and accepted by the company, he obtained his initial rotary wing flight training and experience in the US Army. His total flight experience consisted of 11,022 hours, of which 8,435 were accrued in helicopters, with about 2,200 flown in the Bell 206 series helicopters.

Company records note that the pilot entered the 14 CFR Part 135 training program on his date of hire, and completed the ground and flight portions of the program on March 16, 2000. The pilot's check rides required by 14 CFR 135.293 and 135.299 were completed on March 15 and 16, respectively. Following this, the pilot was assigned to pilot-in-command duties for revenue flights in the Bell models 206B and 206L.

The investigation examined the following company records concerning the pilot's training: 1) Record of Training, Kenai forms TR-1 TR-2 and TR-3; 2) company issued certificates of training; 3) FAA Forms 8410-3 (135.293 and 135.299 check rides); 4) company flight and duty time log

sheets; and 5) the training program requirements in the FAA approved Part 135 operations manual. These records and documents are appended to this report. The records were compared to one another. According to the flight and duty time log sheets for March, the pilot was on duty for 70 total hours between March 7 and March 16. Flight training and check rides (actual flight time) totaled 6.2 of those total duty hours; however, the time spent in oral examinations was not documented. The training program requires a minimum of 41 ground training hours and 3 flight hours (exclusive of check rides). Flights are listed on March 14, 15 and 16, for 1.2, 2.0 and 3.0 hours, respectively. The FAA form 8410-3 documenting the 135.293 check ride was dated March 15, 2000, and encompassed a flight of 0.8 hours. The FAA form 8410-3 documenting the 135.299 check ride was dated March 16, 2000, with a flight time of 1.1 hours listed. The company TR-1 form showed the pilots completion of the required SFAR 50-2 (covering operations in/over the Grand Canyon National Park) flight training and check ride on March 16, 2000. With the exception of the two FAA forms 8410-3 where the name is illegible from the signature, the only signatures appearing on the training records under the heading of "Instructor" or "Check Airman" certifying completion of the training are those of the pilot.

Following the pilot's assignment to revenue flight pilot duties, he flew one revenue trip on March 23, and other revenue trips on April 2 to 4, and April 11 and 12. The duty and flight time record stops on April 13.

AIRCRAFT INFORMATION

In reviewing the history of the helicopter, the investigation examined many sources of information, including but not limited to: the maintenance records presented by the operator; records and data maintained by the FAA; historical manufacturing records of both primary airframe/engine manufactures and secondary component manufacturers; and overhaul and contract maintenance facilities.

The Bell Helicopter model 206L-3 airframe, serial number 51021, was manufactured in May 1982. The records presented by the operator reflected that it had accrued a total time in service of 14,559 hours as of the accident. The last annual inspection was accomplished in July 1999, and, a combined 100/300-hour airframe inspection was accomplished March 11, 2000, 47 hours prior to the accident. The operator's records reflected that all life-limited components were within their respective overhaul or retirement limits.

Review of the FAA approved Type Certificate Data Sheet (H2SW) disclosed that the only allowable engine installation for the model 206L-3 is an Allison 250-C30P.

The engine data plate and the maintenance records disclosed that the engine was a Rolls Royce Allison 250-C30S, serial number CAE890093, and had accumulated a total time in service of 6,342 hours. The most recent 150-hour inspection was accomplished on March 11, 2000, 47-hours prior to the accident. The last turbine section overhaul was listed in the records as occurring on January 22, 1996, about 1,983 hours prior to the accident (the turbine

section overhaul time limit is 2,000 hours).

The recent maintenance activity on the engine was reviewed. The records note that a hot section inspection was performed on March 14, 2000, due to a hot start; the combustion liner was replaced during this inspection due to cracks. In response to pilot discrepancy reports of power fluctuations, both the fuel control and power turbine governor units were replaced on March 30, 2000, about 30 hours prior to the accident. No discrepancies were noted concerning power fluctuations following the replacement of both units.

According to the historical records of Rolls Royce Allison, the engine was produced in February 1979 as a model 250-C30S as part of a contract order for Sikorsky Helicopters. The engine logbook service records show that it was installed in a new production S76 by Sikorsky in January 1980, and spent the next 7 years in various S76 helicopters. On July 29, 1987, it was removed for overhaul. The next entry in the service record form is dated June 26, 1995, and documents the engine being installed by Kenai Helicopters into N3174P (a Bell 206L-1), where it remained until March 1998 when it was removed from that airframe and installed in the accident helicopter. Other portions of the maintenance records note that the compressor section was replaced in April 1998, with no other major work documented for March of that year. The engine component maintenance records were examined for entries between July 1987 and June 1995; no record entries were noted for the compressor or gearbox, while the turbine section had entries for those years.

Technical representatives of Rolls Royce Allison reported that the models C30S and C30P are physically identical engines. According to the Allison 250 series Type Certificate Data Sheet, the principal differences between the dash numbers concern the shaft horsepower output (650 for the C30S versus 600 for the C30P), and differing gas producer rotational speeds and operating temperatures. Other minor differences concern the compressor bleed valve and accumulator configurations. The C30S can be modified to a C30P by changing the fuel control unit settings and performing minor modifications to the bleed valve and accumulator. Allison certified overhaul shops can change the data plate to reflect a dash number change when the engines are modified to a different dash number. Review of the records disclosed no entry documenting the change from a C30S to a C30P. The data plate showed the engine as a 250-C30S.

During the investigation, the engine was disassembled for thorough internal examination, and all component part and serial numbers were recorded (see the TESTS AND RESEARCH section of this report for details). With the assistance of technical representatives of Rolls Royce Allison, the history of all the engine serial numbered components were traced. The manufacturing records disclosed that all components were shipped from the Rolls Royce factory as either a component on another engine, or as spare parts. All shipments were either to a helicopter manufacturer or a Rolls Royce approved maintenance center. Detailed review of the engine maintenance records found that all components listed as overhauled were supported by serviceable parts tags with return to service endorsements.

The load manifest for the flight showed a dispatch fuel load of 300 pounds of Jet A. Examination of the wreckage found about 267 pounds of fuel with an odor consistent with Jet A in the fuel tanks. During the wreckage examination, the forward cells were found intact, while the upper portion of the rear cell had been punctured by upper fuel quantity sensor. Kenai Helicopters utilizes its own 12,000-gallon above ground fuel storage and pump through nozzle dispensing system for its helicopter fleet. Contamination control systems utilize an operator viewable across-the-filter differential pressure gage, a go/no-go filter system and daily checks for water and other contaminants. The fuel distribution inspection record sheet reflected the accomplishment of the specified daily checks. Other fleet helicopters fueled before and after the accident helicopter completed their flights successfully.

Using the manifested weights for the passengers and pilot, the dispatch fuel load and the listed empty weight and center of gravity for the helicopter, a weight and balance computation was performed for the accident takeoff. According to the calculations, the takeoff gross weight was 3,968 pounds (4,150 maximum authorized) and the center of gravity was 121.11-inches. According to the weight and balance limitations section of the Rotorcraft Flight Manual, the center of gravity envelope for 3,968 pounds is between 119.0 and 127.0-inches.

The pilot who flew the helicopter the day before the accident was interviewed and provided a written statement. He noted that he flew it for 3.7 hours on April 17th to include the day's concluding flight. He stated that there were no unresolved discrepancies and that the helicopter performed normally throughout the entire day. According to his statement, the only item of note was "that it started higher on TOT than normal, but within limits." At the end of the day the pilot parked the helicopter for the night on pad No. 3 in front of the Kenai terminal building facing in a north west direction. The pilot said he did not install the engine inlet or exhaust covers during the post flight securing operations.

The helicopter was not equipped with an auto reignition system. The helicopter airframe engine inlet area was not equipped with snow baffles.

According to Rolls Royce Allison, testing performed by the company in 1968 showed that as little as 30 grams of snow/slush (25 percent water) ingested in the engine inlet can induce a flameout in the Allison 250 series commercial engines.

The Kenai Helicopters, Inc., FAA approved Operations Manual discusses cold weather operations in Section 6. Specific preflight actions are required of pilots in cold weather operating conditions the manual defines as, "when weather conditions are at or below 32 degrees F and/or when operating in snow, slush or fog." The first item concerning snow removal states, "Should conditions warrant the removal of frost or snow accumulation, the aircraft will be placed in a covered area until such accumulation is removed." A specific preflight action item for the pilot is to "Insure (sic) that the aircraft's surfaces and components are clear of ice and snow, to include air intakes."

METEOROLOGICAL INFORMATION

National Weather Service records were obtained covering the aviation surface weather observations at the Grand Canyon Airport on April 17 and 18, 2000. Additional records were obtained from automatic observation equipment in place on the airport. From 0054 on April 18 to 0525, the winds were generally from the south or south-southwest. At 0554, the winds became westerly or southwesterly, varying from 250 to 210 degrees, and at velocities which ranged from 11 to 16 knots. Rain began at 0414 and ended at 0559. Snow began falling at 0559 and stopped at 0709, with 0.24 inches of snowfall recorded.

The 0854 surface weather observation was reporting in part: Scattered clouds at 2,300 feet; broken clouds at 3,000 feet; visibilities 10 miles; and winds from 230 degrees at 20 knots with higher gusts to 24 knots.

WRECKAGE AND IMPACT INFORMATION

The accident site was on a level asphalt aircraft parking ramp on the Grand Canyon Airport, about 1,200 feet from the approach end of runway 21, and on the runway's east side. According to GPS coordinate fixes, the site was 0.22 miles from the departure helipad on a magnetic bearing of 250 degrees.

A path of scrape marks, color transfers, and wreckage debris was noted extending 101 feet on a magnetic bearing of 260 degrees, and culminated in the helicopter fuselage wreckage. On the eastern end, the first such disturbance in the asphalt surface consisted of scrape marks and color transfers similar to the color and dimensional geometry of the tail rotor blades and the stinger. This set of markings was 56 feet from a power line strung between light poles, which bordered the eastern side of the parking ramp. The power line was estimated to be about 50 feet in height. The debris distributed between the first disturbance and the fuselage wreckage included; skid pieces (both left and right sides), window Plexiglas, engine access door, fuselage skin segments, a section of the tail rotor drive shaft (with shaft cover), and the tailboom aft of Boom Station 96 (BS96) to include the tail rotor gearbox and blades.

The fuselage wreckage was found upright and oriented on a magnetic bearing of 177 degrees. Both skids were separated and segmented. The cross tubes were broken, with their legs spread, and the cross tubes were physically crushed upward into the fuselage structure about 7 inches. The bottom of the fuselage was crushed upward to a range of Water Line stations 27 to 32 (WL), depending on where along the fuselage length the measurement was taken. The more extensive crushing was noted toward the rear. Roof collapse was also noted (to a depth of 18 inches at FS146, with lesser amounts forward), with splits in the fuselage structure along WL71 at FS61, FS75, FS145, and FS192. The floor was crushed upward into the cabin area about 1 inch. The pilot and front passenger lower seat pan cover was crushed downward about 4 inches, and the FS73.04 bulkhead (forming the front seat backs) was bent, distorted, and torn. The seat frames for the middle passenger seats were collapsed. No shoulder harnesses were installed for the middle and rear passenger seats.

The tail boom was separated at BS60, with bending evident at the separation point. The aft tailboom separation at BS96 was characterized by a diagonal cut across the thickness of the boom; color transfer similar to the main rotor blades was evident in the cut.

The control system was traced from the cockpit cyclic and collective controls to the main rotor swash plate, and, from the anti-torque pedals to the tail rotor. Continuity was established to and from all separation points. The control tubes with separations (see detailed descriptions appended to this report) exhibited bend deformation and/or angular and grainy fracture faces. The longitudinal, lateral, and collective hydraulic boost cylinders remained attached to their mounting points; all three cylinders and their pilot valves moved freely, and the bypass indicators remained seated. The hydraulic lines were intact.

Both main rotor blades remained attached to the hub, with coning evident. The balance weights were present. Both blade grips had yielded upward. The rotating and non-rotating swash plate components were undamaged and moved throughout their range of motion. Both pitch change rods were bent and the rod ends pulled out of the rod bodies. Both yoke static stops were crushed. Both pitch change horns exhibited markings consistent with the shape and size of the pillow block attach bolts. The main rotor mast was bent about 5 degrees at a point 6 inches below the head assembly.

The main transmission remained attached to the fuselage and rotated without binding. The oil level was full, the oil filter clean, and the chip detectors clear. The engine to transmission drive shaft and the freewheeling unit were unremarkable, except for circumferential scoring at the firewall pass through hole.

The tail rotor gear box remained attached to the severed tail boom section. No damage or other unusual operating condition was found to the transmission, or pitch change mechanism. Both blades remained attached to the hub. One blade was bent about 30 degrees at a point 5 inches from the tip, with abrasions consistent with an asphalt pattern observed. The second blade was severed about 12 inches outboard of the yoke, with the severed portion found in the debris path.

Clear fuel was found in the fuel lines and filters. All fuel line B-nut fittings and connections were tight. When electrical power was applied to the system, both boost pumps operated and pumped fuel. The forward fuel cells were intact; however, the rear fuel cell had been punctured by the fuel quantity probe. Fuel was found in the cells.

Examination of the engine compartment and inlet areas disclosed that the inlet screen was not obstructed. Neither a particle separator or reverse flow snow baffles were installed. Both the gas producer and the power turbine rotated freely and smoothly, and the power turbine shaft was continuous to the gear box. All engine mounts were either distorted, bent, or broken. All pneumatic lines and B-nut fittings were intact and tight. A pneumatic leak check revealed a slight Py leak at the over speed solenoid, with no other leaks noted. The fuel control pointer was at 40 (ground idle) and the and the power turbine governor indices was at 30. The oil had

a golden color and normal aroma, and, the oil filter element exhibited minor non-metallic particulates. The lower magnetic chip detector was clean. The upper chip detector had trace debris present. The bleed valve and accumulator were found to be the 250-C30P configuration.

When electrical power was applied to the caution panel, all the caution lights for installed systems illuminated when the push-to-test feature was activated.

TESTS AND RESEARCH

Following examination of the engine in the wreckage, it was removed from the helicopter and installed in a test cell for a run in an as removed condition. According to the results of the test runs, the engine exceeded new engine minimum horsepower limits for a 250-C30P at all test points, except for takeoff power. At the takeoff power test point, the engine was 0.6-percent (4 horsepower) below the minimum limit. The complete test cell report is appended to this file.

After the test cell runs, the engine was disassembled. The only discrepancy noted was heavy rotational compressor impellor to shroud scoring, which was attributed by Rolls Royce Allison to impact related displacement of the compressor assembly.

During examination of the wreckage, several components had data plates of an unusual appearance to the Bell Helicopter technical representative. In addition, several components exhibited external characteristics that, to the Bell technical representative, did not appear to match the design specifications. These components were removed for disassembly and complete documentation. In addition, several other airframe components were removed for functional testing and evaluation. Lists of these parts are appended to this report.

The parts identified for functional testing were shipped to the Bell Helicopter facility in Fort Worth, Texas, where the tests were supervised by FAA inspectors. The testing was to conformance with acceptance criteria for serviceable parts. The boost pumps and the three hydraulic control servos functioned within the allowable design specifications for serviceable components.

The power turbine governor and the fuel control units were functionally tested and then disassembled. No anomalies were found.

The main transmission, the 90-degree tail rotor gearbox, and the tail rotor hub were disassembled. No discrepancies were observed within either gearbox. The tail rotor hub components were determined to meet type certificate design criteria and Bell reported that they appeared to be legitimate parts. The authenticity of the main transmission case could not be established due to the inability to read a sufficient amount of the original engraved case serial number.

A records search was initiated by Bell to research the serial numbers of all parts identified as

suspect during the wreckage examination. In a letter to Safety Board investigators, Bell reported that they were unable to determine the manufacturing and service entry history of many of the parts in question due to the lack of computerized records for the purported manufacturing time frame, and thus could neither prove nor disprove the authenticity of the parts. A complete listing of parts and the historical information generated by Bell is appended to this report.

ADDITIONAL INFORMATION

The wreckage and all components removed for further examination were verbally released to representatives of the registered owner on September 6, 2000. Following this release, the Federal Bureau of Investigation (FBI) executed a seizure order for certain components as part of a separate Justice Department investigation. The representative of the owner acknowledged in writing the release of wreckage on October 23, 2000. The release of wreckage documents and a copy of the FBI property seizure receipt and inventory are appended to this file.

Pilot Information

Certificate:	Commercial	Age:	56, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	February 14, 2000
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 15, 2000
Flight Time:	11000 hours (Total, all aircraft), 2300 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N2267N
Model/Series:	206L-3 206L-3	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	51021
Landing Gear Type:	Skid	Seats:	7
Date/Type of Last Inspection:	100 hour	Certified Max Gross Wt.:	4150 lbs
Time Since Last Inspection:	46 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	14599 Hrs at time of accident	Engine Manufacturer:	Allison
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	250-C30P
Registered Owner:		Rated Power:	690 Horsepower
Operator:		Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	KENAI HELICOPTERS	Operator Designator Code:	DCBA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	GCN,6606 ft msl	Distance from Accident Site:	
Observation Time:	08:54 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 2300 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 3000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	20 knots / 24 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	3°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(GCN)	Type of Flight Plan Filed:	Company VFR
Destination:		Type of Clearance:	VFR
Departure Time:	09:05 Local	Type of Airspace:	Class D

Airport Information

Airport:	GRAND CANYON NATIONAL PARK GCN	Runway Surface Type:	Asphalt
Airport Elevation:	6606 ft msl	Runway Surface Condition:	Dry
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	5 Serious, 1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	6 Serious, 1 Minor	Latitude, Longitude:	33.963611,-112.142501

Administrative Information

Investigator In Charge (IIC):	Childress, Deborah
Additional Participating Persons:	RICHARD A WRIGHT; FAA, Las Vegas FSDO; Las Vegas, NV John J Swift; Rolls Royce Allison; Indianapolis, IN Dallas St John; Bell Helicopter Textron; Fort Worth, TX
Original Publish Date:	February 20, 2002
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=51198

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).