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|  | | NTSB ID: LAX95LA332 | | Aircraft Registration Number: N5689T | |
| | | Occurrence Date: 09/10/1995 | | Most Critical Injury: Fatal | |
| | | Occurrence Type: Accident | | Investigated By: NTSB | |
| Location/Time | | | | | |
| Nearest City/Place LIVERMORE | State CA | Zip Code 94550 | Local Time 1123 | Time Zone PDT | |
| Airport Proximity: Off Airport/Airstrip | | Distance From Landing Facility: | | | |
| Aircraft Information Summary | | | | | |
| Aircraft Manufacturer ENSTROM | | Model/Series F-28C /F-28C | | Type of Aircraft Helicopter | |
| Revenue Sightseeing Flight: Yes | | | Air Medical Transport Flight: No | | |
| Narrative | | | | | |
| <p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On September 10, 1995, at 1123 hours Pacific daylight time, an Enstrom F-28C helicopter, N5689T, collided with the ground following a loss of power about 2.5 miles northeast of the Livermore, California, airport. The helicopter was operated by Calaveras Aviation of San Andreas, California, and was engaged in providing 5-minute-for-hire sightseeing rides to patrons attending an airshow at the airport. Visual meteorological conditions prevailed at the time and no flight plan was filed for the operation. The helicopter was destroyed in the collision sequence. The certificated commercial pilot and one passenger sustained serious injuries; however, the second passenger onboard expired at the hospital as a result of his injuries. The flight originated at 1120 for a 5-minute flight around the airport environment.</p> <p>In a verbal statement to FAA inspectors, the pilot reported that he had no memory of the accident flight. The operator declined three written and one verbal requests to complete a written aircraft accident report.</p> <p>Airborne pilots in other helicopters participating in the ride program, and ground witnesses, reported hearing the pilot transmit over the local control frequency that he had a power failure and was going down. The pilot of one helicopter said he immediately looked toward the position of the accident aircraft when he heard the transmission. The witness observed the helicopter about 300 feet above ground level in a nose-high attitude and yawing to the right as it descended vertically. The witness said the helicopter's yaw continued during the descent until it was slightly nose low at ground impact.</p> <p>A Livermore Fire Department battalion chief in charge of fire units responding to the accident site was interviewed. He reported that the helicopter was initially examined for evidence of fuel leakage or spillage as emergency medical technician personnel were attending to the occupants trapped in the wreckage. No fuel was observed leaking from the helicopter, and the ground under the fuel tanks was dry. No fuel smell was detected by the fire personnel.</p> <p>The helicopter was examined by Federal Aviation Administration airworthiness inspectors from the Flight Standards District Office, Oakland, California, immediately after the accident, and again after recovery from the site. The examining inspector reported that the fuel system was intact with no evidence of tank or line rupture. The right fuel tank was found to have a crack in the outer fiberglass shell; however, the internal rubber bladder was found intact following removal of the outer shell. About 1 pint of fuel was drained from each of the fuel tanks during recovery of the helicopter.</p> <p>The aircraft owner/operator was interviewed by telephone. He reported that for the sightseeing rides during the airshow on Friday and Saturday, a computed tabulation system was used to keep track of the fuel onboard the helicopter. On a sheet of paper estimated fuel usage was subtracted from the amount believed onboard, and fuel put into the tanks during the day was added to the</p> | | | | | |
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Narrative (Continued)

total. No calibrated dipstick was used to definitively determine the amount of fuel in the tanks. The tabulation sheet is attached to this report.

After recovery of the helicopter from the accident site, it was examined by an FAA airworthiness inspector with technical assistance provided by Enstrom Helicopter Corporation.

Control system and drive train continuity was established throughout the helicopter. All three main rotor blades were found coned upwards. The tail rotor blades were not damaged.

According to Enstrom, the fuel system consists of two 20-gallon bladder fuel tanks encapsulated in fiberglass shells. The unusable fuel quantity is 1 gallon per tank. The fuel quantity indicating system consists of one gage calibrated in pounds which presents the cumulative amount in both tanks. The Enstrom technical representative stated that the helicopter was designed and certificated under CAR 6 regulations and the fuel gage is only required to read accurately at zero.

The fuel gage and indicating system calibration was tested. One tank sending unit was disabled and the system rigged so that only one tank was being read by the gage for the test. Water was used in place of fuel. One gallon of water, comprising the unusable fuel quantity for the tank, was added.

The gage read zero. One gallon increments were then added to the tank to a total of five, and the resultant gage readings noted. The following table presents the as-tested gage readings compared to the computed values:


| USABLE TANK QUANTITY | GAGE READING | SHOULD READ |
|----------------------|--------------|-------------|
| 1 Gallon | 10 | 12 |
| 24 2 Gallons | 60 | 36 |
| 48 3 Gallons | 115 | 60 |
| 4 Gallons | | 80 |
| 5 Gallons | | |


The engine driven fuel pump was removed and installed in a calibrated test bench where it flowed to specifications. The engine was shipped to the Textron Lycoming factory for examination under the supervision of an FAA inspector. The inspector's report is attached to this report. The engine was installed in a production test cell where it was operated through a normal test protocol. Normal engine operation and performance was observed.

Fuel system annunciator light assemblies for low fuel pressure (red) and normal fuel pressure (green) were removed from the instrument panel and sent to the Safety Board's metallurgical laboratory for analysis.

The filament from the red assembly was intact and showed no sign of elongation.

A major portion of the filament from the green assembly was separated and lying loose inside the bulb glass. No stretching was observed. Examination of the filament pieces which remained attached to the post and the separated segment revealed a blocky appearance typical of an aged filament. Small amounts of molten and resolidified filament material was found adjacent to the separated ends.

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| | | Occurrence Date: 09/10/1995 | | | |
| | | Occurrence Type: Accident | | | |
| Landing Facility/Approach Information | | | | | |
| Airport Name | Airport ID: | Airport Elevation Ft. MSL | Runway Used 0 | Runway Length | Runway Width |
| Runway Surface Type: | | | | | |
| Runway Surface Condition: | | | | | |
| Approach/Arrival Flown: NONE | | | | | |
| VFR Approach/Landing: Forced Landing | | | | | |
| Aircraft Information | | | | | |
| Aircraft Manufacturer ENSTROM | | Model/Series F-28C /F-28C | | Serial Number 474-2 | |
| Airworthiness Certificate(s): Normal | | | | | |
| Landing Gear Type: Skid | | | | | |
| Amateur Built Acft? No | Number of Seats: 3 | Certified Max Gross Wt. 2350 LBS | Number of Engines: 1 | | |
| Engine Type: Reciprocating | Engine Manufacturer: LYCOMING | Model/Series: HIO-360-E1AD | Rated Power: 205 HP | | |
| - Aircraft Inspection Information | | | | | |
| Type of Last Inspection Annual | Date of Last Inspection 07/1995 | Time Since Last Inspection 132 Hours | Airframe Total Time 1412 Hours | | |
| - Emergency Locator Transmitter (ELT) Information | | | | | |
| ELT Installed?/Type Yes / | ELT Operated? Yes | ELT Aided in Locating Accident Site? No | | | |
| Owner/Operator Information | | | | | |
| Registered Aircraft Owner RODGER L. AINSWORTH | | Street Address P.O. BOX 344 | | | |
| | | City SAN ANDREAS | State CA | Zip Code 95249 | |
| Operator of Aircraft CALAVERAS AVIATION | | Street Address P.O. BOX 1450 | | | |
| | | City SAN ANDREAS | State CA | Zip Code 95249 | |
| Operator Does Business As: | | | Operator Designator Code: | | |
| - Type of U.S. Certificate(s) Held: None | | | | | |
| Air Carrier Operating Certificate(s): | | | | | |
| Operating Certificate: | | | Operator Certificate: | | |
| Regulation Flight Conducted Under: Part 91: General Aviation | | | | | |
| Type of Flight Operation Conducted: Business | | | | | |

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|  <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p> | NTSB ID: LAX95LA332 |
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| | Occurrence Type: Accident |

First Pilot Information

| | | | | |
|-----------------|-----------------|------------------|--------------------------|-----------|
| Name On File | City On File | State On File | Date of Birth On File | Age 38 |
|-----------------|-----------------|------------------|--------------------------|-----------|

| | | | |
|--------|---------------------|-----------------------------|-----------------------------|
| Sex: M | Seat Occupied: Left | Occupational Pilot? Unknown | Certificate Number: On File |
|--------|---------------------|-----------------------------|-----------------------------|

Certificate(s): Commercial

Airplane Rating(s): None

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): None

Instructor Rating(s): None

Current Biennial Flight Review?

| | | |
|------------------------|------------------------------------------------------|------------------------------------|
| Medical Cert.: Class 2 | Medical Cert. Status: Valid Medical--no waivers/lim. | Date of Last Medical Exam: 06/1995 |
|------------------------|------------------------------------------------------|------------------------------------|

| - Flight Time Matrix | All A/C | This Make and Model | Airplane Single Engine | Airplane Multi-Engine | Night | Instrument | | Rotorcraft | Glider | Lighter Than Air |
|-----------------------|---------|---------------------|------------------------|-----------------------|-------|------------|-----------|------------|--------|------------------|
| | | | | | | Actual | Simulated | | | |
| Total Time | 270 | 40 | | | 26 | | | 270 | | |
| Pilot In Command(PIC) | 150 | | | | 10 | | | 150 | | |
| Instructor | | | | | | | | | | |
| Instruction Received | | | | | | | | | | |
| Last 90 Days | 12 | 12 | | | | | | 12 | | |
| Last 30 Days | 4 | 4 | | | | | | 4 | | |
| Last 24 Hours | | | | | | | | | | |

| | | | |
|--------------------|----------------------------|--------------------------|------------------|
| Seatbelt Used? Yes | Shoulder Harness Used? Yes | Toxicology Performed? No | Second Pilot? No |
|--------------------|----------------------------|--------------------------|------------------|

Flight Plan/Itinerary

Type of Flight Plan Filed: None

| | | | | |
|-------------------------------------------------------|-------|---------------------------|------------------------|------------------|
| Departure Point Same as Accident/Incident Location | State | Airport Identifier LVK | Departure Time 1120 | Time Zone PDT |
|-------------------------------------------------------|-------|---------------------------|------------------------|------------------|


| | | | |
|-----------------------------|-------|--------------------|--|
| Destination Local Flight | State | Airport Identifier | |
|-----------------------------|-------|--------------------|--|

Type of Clearance: VFR

Type of Airspace: Class D

Weather Information

Source of Wx Information:

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
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| | Occurrence Type: Accident |

Weather Information

| WOF ID | Observation Time | Time Zone | WOF Elevation | WOF Distance From Accident Site | Direction From Accident Site |
|--------|------------------|-----------|---------------|---------------------------------|------------------------------|
| LVK | 1125 | PDT | 397 Ft. MSL | 2 NM | 10 Deg. Mag. |

Sky/Lowest Cloud Condition: Clear 0 Ft. AGL Condition of Light: Day

Lowest Ceiling: None 0 Ft. AGL Visibility: 20 SM Altimeter: 30.00 "Hg

Temperature: °C Dew Point: °C Weather Conditions at Accident Site: Visual Conditions

Wind Direction: 260 Wind Speed: 10 Wind Gusts:

Visibility (RVR): 0 Ft. Visibility (RVV) 0 SM

Precip and/or Obscuration:

Accident Information

Aircraft Damage: Destroyed Aircraft Fire: None Aircraft Explosion: None

| - Injury Summary Matrix | Fatal | Serious | Minor | None | TOTAL |
|-------------------------|-------|---------|-------|------|-------|
| First Pilot | | 1 | | | 1 |
| Second Pilot | | | | | |
| Student Pilot | | | | | |
| Flight Instructor | | | | | |
| Check Pilot | | | | | |
| Flight Engineer | | | | | |
| Cabin Attendants | | | | | |
| Other Crew | | | | | |
| Passengers | 1 | 1 | | | 2 |
| - TOTAL ABOARD - | 1 | 2 | | | 3 |
| Other Ground | 0 | 0 | 0 | | 0 |
| - GRAND TOTAL - | 1 | 2 | 0 | | 3 |

National Transportation Safety Board

FACTUAL REPORT

AVIATION



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Occurrence Date: 09/10/1995

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

JEFF RICH

Additional Persons Participating in This Accident/Incident Investigation:

KIM O DAVIES
OAKLAND, CA

WILLIAM TAYLOR
MENOMINEE, MI