# Aviation Investigation Final Report

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| **Location:** | HAYWARD, California | **Accident Number:** | LAX95LA121 |
| **Date & Time:** | February 26, 1995, 15:22 Local | **Registration:** | N28SQ |
| **Aircraft:** | Thunder and Colt GA42 | **Aircraft Damage:** | None |
| **Defining Event:** | | **Injuries:** | 1 Fatal, 1 None |
| **Flight Conducted Under:** | Part 91: General aviation | | |

## Analysis

THE BLIMP HAD A HISTORY OF UNRESOLVED ELECTRICAL SYSTEM CHARGING PROBLEMS. THE GROUND CREW WERE GIVEN RIDES AFTER THE LAST REVENUE FLIGHT. AS ONE OF THE GROUND CREW GOT IN FOR HIS RIDE, HE ACCIDENTLY MOVED THE MIXTURE AND KILLED THE ENGINE. THE PILOT RESTARTED THE ENGINE THEN SAID HE HAD A LOW-BATTERY WARNING LIGHT, BUT THOUGHT HE HAD ENOUGH OF A CHARGE TO MAKE ONE MORE CIRCUIT. THE PASSENGER SAID THE LOW-BATTERY LIGHT REMAINED ON FOR THE ENTIRE FLIGHT. ON APPROACH, THE PILOT WENT AROUND DUE TO A WIND GUST. ON THE SECOND DOWNWIND, THE VOLTAGE DROPPED TO 4 AND THE PILOT TURNED DIRECTLY TOWARD THE LANDING AREA. AT THAT POINT, THE ELECTRICAL SERVOS WHICH MOVE THE CONTROL SURFACES STOPPED WORKING DUE TO THE LOW VOLTAGE. THE BLIMP HIT THE GRASS SHORT OF THE LANDING ZONE AND BOUNCED ALONG THE GROUND UNTIL IT STOPPED NEAR THE TOP OF A BERM. THE PILOT TOLD THE PASSENGER TO GET OUT AND HOLD THE BLIMP DOWN. THE PASSENGER TRIPPED AS HE GOT OUT AND ROLLED DOWN THE HILL. WHEN HE GOT BACK ON HIS FEET, THE BLIMP WAS RISING WITH THE PILOT HOLDING ON TO A HOLD DOWN RAIL. THE PILOT LOST HIS GRIP AND FELL FROM 200 FEET. POSTACCIDENT TESTS OF THE ELECTRICAL SYSTEM REVEALED THAT A SHORT IN THE STARTER SWITCH WAS CONSTANTLY DRAINING THE BATTERY. THE SWITCH WIRING WAS NOT INSTALLED IN ACCORDANCE WITH FACTORY STANDARDS OR THE MAINTENANCE MANUAL.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's decision to operate the blimp with a known and unresolved deficiency in the electrical system, which led to a loss of the flight controls and the pilot's improper remedial

actions after the blimp came to rest on the ground.

## Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (C) ELECTRICAL SYSTEM,ELECTRIC WIRING - SHORTED
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. ELECTRICAL SYSTEM - OUTPUT LOW
4. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - ATTEMPTED - PILOT IN COMMAND
5. BLIMP/AIRSHIP,GAS/AIR PRESSURE/FLIGHT CONTROL SYS - INOPERATIVE
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Occurrence #2: MISCELLANEOUS/OTHER
Phase of Operation: LANDING

Findings
6. (C) REMEDIAL ACTION - IMPROPER - PILOT IN COMMAND

## Factual Information

On February 26, 1995, at 1522 Pacific standard time, the pilot of a Thunder & Colt GA42 blimp, N28SQ, fell from the aircraft during an attempted landing at the Hayward, California, airport. The airship was owned and operated by Sky Quest, Inc., of San Jose, California, and was conducting local traffic pattern operations at the airport. Visual meteorological conditions prevailed at the time and included calm wind conditions. The airship was not damaged in the accident sequence; however, the certificated commercial pilot incurred fatal injuries. The flight originated at the Hayward airport on the day of the accident at 1514 hours.

Information provided by the blimp's ground crew revealed that the pilot was giving familiarization rides to ground crew members during the flight sequence.

According to statements from the Federal Aviation Administration (FAA) Air Traffic Control Tower (ATCT) personnel on duty in the tower cab, the airship was performing closed traffic pattern stop-and-go operations in an area adjacent to runway 28L. The accident occurred during the third stop-and-go landing of the flight. While on downwind, the blimp was cleared for a stop-and-go option by the local controller.

The passenger onboard the airship was interviewed by FAA inspectors. According to his written and oral statements, the pilot had given a paying passenger a sightseeing ride earlier in the day and the second individual scheduled for the day did not show up. The pilot then decided to give his ground crew familiarization rides. A circuit of the pattern was flown with another ground crew member. The witness then got in the gondola, and, in the process, accidently moved the mixture control and killed the engine. The pilot restarted the engine then motioned for the chief ground crew member and told him that he had a low-battery warning light, but thought he had enough remaining battery capacity to make one more circuit of the pattern.

The witness said that during the traffic pattern flight, the low-battery light remained illuminated. During the approach, the pilot had to go-around due to an unfavorable wind gust. On downwind for the second landing attempt, the voltage dropped to about 4 and the pilot became very concerned. The pilot shut off all unnecessary electrical systems and turned directly toward the landing area. At that point, the electrical servo motors which move the control surfaces stopped working due to the low voltage. The blimp hit the grass short of the landing zone and bounced along the ground until it eventually stopped near the top of a noise abatement berm. The witness said the pilot told him to get out and hold the blimp by the ground handling rail. The witness said he tripped as he got out and rolled down the hill. By the time he got back on his feet, the blimp was rising past 20 feet agl with the pilot holding on to the railing. The pilot fell at about 200 feet.

Statements were obtained from ground witnesses, including ATCT controllers in the tower cab and the pilot of an aircraft holding short of runway 28L for departure. The blimp appeared to turn directly toward the runway on a perpendicular path near the approach end on a short base leg, overshoot the runway, then turn back toward its normal landing area. During this time, there were no confirmed radio transmissions from the blimp; however, the airship ground crew members responded to the ATCT inquiry that the blimp was in trouble and that the pilot had lost control. The blimp touched down and bounced along the ground several times before it began drifting backwards across runway 28L at the displaced threshold. The blimp continued to bounce along the ground a few times before appearing to settle near a noise abatement berm with the engine running. The blimp came to rest about 100 yards from the ground crew.

The passenger and pilot were observed to exit the gondola, then the blimp began to rise with the pilot hanging onto a ground handling rail near the bottom of the gondola. The witnesses stated that the pilot apparently lost his grip as the blimp rose and subsequently fell to the runway pavement from a height estimated at 200 feet.

The blimp continued to rise and disappeared into the overcast. With the help of a fixed-wing aircraft, the unmanned airship was tracked as it ascended to an altitude of about 10,000 feet and drifted slowly northeast over the eastern San Francisco Bay area.

After several hours, the blimp gradually descended. Trailing police and California Highway Patrol (CHP) helicopters hovered over the blimp and forced it to the ground in Orinda, California, where it became entangled in trees. Responding CHP and Orinda Police Department ground units reported that when they arrived at the airship, the engine was still running and was turned off by one of the officers. The battery master and alternator switch were found in the off position.

FAA inspectors from the Oakland, California, Flight Standards District Office examined the airship with the assistance of a factory-trained airframe and powerplant mechanic. The blimp control system is powered by electrical servo motors. The examining inspector reported that the battery was weak and produced only 7 volts. All electrical system mode switches in the cockpit were found in the normal position and not in the emergency mode. The systems were powered up using the battery as found. All control system servo motors functioned normally. The alternator and voltage regulator would not charge the battery when tested in the gondola.

The alternator and voltage regulator were removed from the engine and taken to an FAA-certified repair station for bench functional testing. Both units were found to function normally when tested as separate units.

The FAA inspectors reported that they then contacted the present holder of the airship's type certificate, American Blimp Corporation of Hillsboro, Oregon. The company's owner provided a written statement. The pilot had contacted the company and said he had been having electrical problems, specifically, keeping the battery sufficiently charged. The pilot had a second battery and would put a freshly-charged one in the blimp prior to flight while the one

removed was put on a charger.

American Blimp Corporation provided a factory mechanic to assist the FAA inspectors in another examination of the electrical system on March 10, 1995. During the examination, a battery system short was detected at the battery wires which was traced to a short in the starter switch. When the panel was removed to get to the starter switch, the hot lead slipped off the switch post. As the area was examined, the inspectors noted that other wires were marked with duct tape pieces and attached to the switch with push-on style connectors. The installation was not in accordance with factory procedures or with those noted in the maintenance manual. The original factory-installed switch uses screw connectors.

The pilot sustained fatal injuries in the accident and an autopsy was conducted by the Alameda County Coroner with specimens retained for toxicological examination. The results of the toxicological tests were negative for alcohol and all screened drug substances.

## Pilot Information

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| **Certificate:** | Commercial | **Age:** | 37,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Unknown |
| **Other Aircraft Rating(s):** | Airship | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 2 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | December 27, 1993 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 690 hours (Total, all aircraft), 290 hours (Total, this make and model), 15 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Thunder and Colt | **Registration:** | N28SQ |
| **Model/Series:** | GA42 GA42 | **Aircraft Category:** | Blimp |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 1140 |
| **Landing Gear Type:** | | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | January 27, 1995 Annual | **Certified Max Gross Wt.:** | 2423 lbs |
| **Time Since Last Inspection:** | 15 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 1047 Hrs | **Engine Manufacturer:** | CONTINENTAL |
| **ELT:** | Not installed | **Engine Model/Series:** | O-200B |
| **Registered Owner:** | KEITH A. HIRSCH | **Rated Power:** | 100 Horsepower |
| **Operator:** | | **Operating Certificate(s) Held:** | None |
| **Operator Does Business As:** | SKY QUEST, INC. | **Operator Designator Code:** | |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | HWD ,47 ft msl | **Distance from Accident Site:** | |
| **Observation Time:** | 15:25 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | | **Visibility** | 3 miles |
| **Lowest Ceiling:** | Overcast / 2000 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 0° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30 inches Hg | **Temperature/Dew Point:** | 15°C / 9°C |
| **Precipitation and Obscuration:** | N/A - None - Haze | | |
| **Departure Point:** | (HWD ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | | **Type of Clearance:** | VFR |
| **Departure Time:** | 15:14 Local | **Type of Airspace:** | Class D |

## Airport Information

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| **Airport:** | HAYWARD AIR TERMINAL HWD | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 47 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 28L | **IFR Approach:** | None |
| **Runway Length/Width:** | 5024 ft / 150 ft | **VFR Approach/Landing:** | Full stop;Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | None |
| **Passenger Injuries:** | 1 None | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Fatal, 1 None | **Latitude, Longitude:** | 37.670818,-122.079025(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Rich, Jeff |
| **Additional Participating Persons:** | JULES J STOPPONI; OAKLAND , CA |
| **Original Publish Date:** | September 24, 1995 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=29044 |