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Annual Review of Aircraft Accident Data

U.S. Air Carrier Operations Calendar Year 1999

National Transportation Safety Board
Washington, D.C.

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Contents

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INTRODUCTION

PURPOSE OF THE ANNUAL REVIEW

The *1999 Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* presents a statistical compilation and review of accidents that occurred in 1999 involving aircraft operated by U.S. air carriers. In addition to providing accident statistics for 1999, the review also includes general economic and aviation indicators that may have influenced aircraft activity for 1999 as well as contextual accident data from several years preceding the reporting period.

WHICH AIRCRAFT ARE INCLUDED IN THIS REVIEW?

This review covers accidents involving aircraft operated by U.S. air carriers under Title 14, Parts 121 and 135, of the *Code of Federal Regulations* (CFR). Air carriers are generally defined as operators that fly aircraft in revenue service. Title 14, also known as the *Federal Aviation Regulations* (FARs), describes operating requirements in Part 121 and Part 135. Briefly stated, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft while Part 135 applies to commercial air carriers commonly referred to as commuter airlines (i.e., scheduled Part 135) and air taxis (i.e., nonscheduled Part 135).

In March 1997, the definition of Part 121 operations changed. Prior to the change, scheduled aircraft with 30 or more seats were operated under Part 121 and those with less than 30 seats were operated under Part 135. After the change, scheduled aircraft with 10 or more seats were classified as Part 121 operations; therefore, since 1997, most carriers that once were popularly known as "commuters" now operate under Part 121.

In this review, the presentation of data for scheduled and nonscheduled Part 135 operations is separated due to the distinct operating characteristics of these groups. According to 14 CFR 119.3, a *scheduled operation* refers to, "any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the certificate holder or its representative offers in advance the departure location, departure time, and arrival location."

By contrast, a *nonscheduled operation* refers to, "any operation for compensation or hire that is one of the following:

(1) Passenger-carrying operations conducted as a public charter under Part 380 of this title or any operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative that are any of the following types of operations:

> (i) Common carriage operations conducted with airplanes, including turbo-jet-powered airplanes, having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, except that operations using a specific airplane that is also used in domestic or flag operations and that is so listed in the operations specifications as required by Sec. 119.49(a)(4) for those operations are considered supplemental operations;
> (ii) Noncommon or private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats, excluding

each crewmember seat, and a payload capacity of less than 6,000 pounds; or
(iii) Any rotorcraft operation.

(2) Scheduled passenger-carrying operations conducted with one of the following types of aircraft with a frequency of operations of less than five round trips per week on at least one route between two or more points according to the published flight schedules:
(i) Airplanes, other than turbojet powered airplanes, having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or
(ii) Rotorcraft.

(3) All-cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less, or with rotorcraft."

In addition to the regulatory differences between scheduled and nonscheduled Part 135 operations, there are other general characteristics that distinguish these two groups. Carriers operating under scheduled Part 135 typically fly aircraft with single/twin turbine engines or single/twin reciprocating engines. They are more likely to fly short routes and a majority of operators are based in Alaska. By contrast, nonscheduled Part 135 operators are more evenly distributed throughout the United States and represent a diverse group, ranging from operators with one small aircraft to those with multiple large corporate jets.

While there are many differences in the operating rules for scheduled and nonscheduled Part 135 operations, there are fewer factors that differentiate the operating rules for scheduled and nonscheduled Part 121 operators. In addition, while activity data for scheduled and nonscheduled Part 135 operators are collected using different methods, all Part 121 operations are required to report activity data on a regular basis. Therefore, data for scheduled and nonscheduled Part 121 operations have been combined for analysis.

Which Aircraft Are Not Included in this Review?

- General aviation aircraft (A separate review, published annually by the NTSB, summarizes accident statistics for these aircraft);
- Military aircraft;
- Foreign-operated aircraft;
- Certain public use aircraft as defined in 49 CFR 830.5;
- Ultralight vehicles;
- Experimental aircraft; and
- Commercial space launches.

Organization of the Annual Review

The 1999 Annual Review is organized into three parts:

1. The first part presents an overview of the state of the economy and the aviation industry in 1999 as well as contextual statistics from previous years. It also includes a historical overview of both the number of accidents and accident rates between the years 1990 and 1999.

2. The second part investigates trends over the past 10 years in terms of various factors such as the types of flight, levels of aircraft damage, and level of human injury. This part is divided into separate sections for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft accidents.

3. The last part focuses on accidents that occurred during the 1999 calendar year and their circumstances. This part is divided into subsections for Part 121 and Part 135. Part 135 is divided further to address scheduled and nonscheduled Part 135 operations.

Much of the information in the Annual Review is presented in graphical form. For readers who wish to view the data in a tabular form or to manipulate the data used in the report, the data set is available online at <http://www.ntsb.gov/aviation/Stats.htm>.

The NTSB Investigative Process

The NTSB investigates every civil aviation accident that occurs in the United States. It also provides investigators to serve as U.S. Accredited Representatives as specified in international treaties for aviation accidents overseas involving U.S.-registered aircraft, or involving aircraft or major components of U.S. manufacture.[1] Investigations are conducted from NTSB Headquarters in Washington, D.C., or from one of the ten regional offices in the United States (see Appendix A).

Note that there is a distinction between the population of accidents investigated by the NTSB and those that are included in the Annual Review. While the NTSB investigates all civil aviation accidents that occur on U.S. soil (including domestic and foreign operators), the Annual Review describes accidents that occurred among U.S.-operated aircraft in all parts of the world.

The NTSB Aviation Accident/Incident Database

The NTSB is responsible for maintaining the government's database on civil aviation accidents. The NTSB Accident/Incident Database is the official repository of aviation accident data and causal factors. The database was established in 1962 (by the NTSB's predecessor agency, the Civil Aeronautics Board) and approximately 2,000 new event records are added each year. For each record, there are over 650 fields of data concerning the aircraft, environment, engines, injuries, sequence of accident events and other topics. The NTSB Accident/Incident Database is available to the public at <ftp://www.ntsb.gov/avdata/>. Alternately, there is a Database Query tool at <http://www.ntsb.gov/ntsb/query.asp#query_start> that allows users to search for sets of accidents using commonly known information such as date, location, and category of aircraft.

[1] For more detailed information about the criteria for NTSB investigation of an aviation accident or incident, see Title 49 *Code of Federal Regulations* 831.2.

The NTSB database is primarily composed of aircraft accidents. An "accident" is defined in 49 CFR 830.2 as, "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death[1] or serious injury,[2] or in which the aircraft receives substantial damage."[3] The database also contains several aviation "incidents," defined in 49 CFR 830.2 as, "occurrences other than accidents that are associated with the operation of an aircraft and that affect or could affect the safety of operations."

Accident investigators use the NTSB's Accident Data Management System (ADMS) software to enter data into the Accident/Incident Database. Within about a week of the event, a Preliminary Report, containing limited information such as date, location, aircraft operator, and type of aircraft, becomes available. A Factual Report with additional information concerning the occurrence is available within a few months. See Appendix B for documents showing the information available in Preliminary and Factual Reports. A Final Report, which includes a statement of the probable cause and other contributing factors, is issued after the investigation has been completed. Five presidential appointees serving as Members of the Safety Board, or their delegates, must approve official statements dealing with the probable cause of an accident. Complete records are made available to the public only after this approval has been granted.

In determining the probable cause(s) of an accident, all facts, conditions and circumstances are considered. Within each accident occurence, any information that contributes to the explanation of that event is identified as a "finding" and may be further designated as either a "cause" or "factor." The term "factor" is used to describe situations or circumstances that contributed to the accident cause. The details of probable cause are coded as the combination of all causes, factors, and findings associated with the accident. Just as accidents often include a series of occurrences, the reasons why these occurrences lead to an accident may be the combination of multiple causes and factors. For this reason, a single accident record may include multiple causes and factors.

[2] "Fatal injury" means any injury that results in death within 30 days of the accident.

[3] "Serious injury" means any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

[4] "Substantial damage" means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

OVERVIEW OF THE STATE OF THE COMMERCIAL AVIATION ENVIRONMENT IN 1999

GENERAL UNITED STATES SOCIAL, ECONOMIC, AND AVIATION INDICATORS

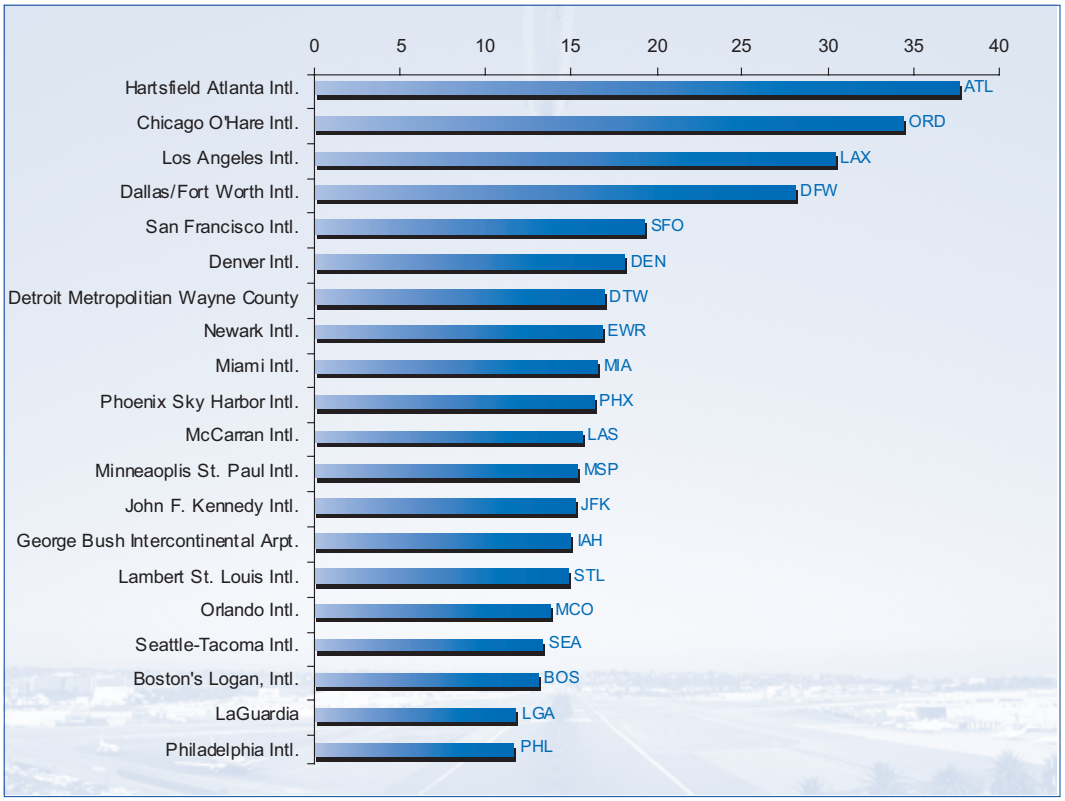
Since 1980, there have been increases in both general economic indicators as well as the number of air carriers and person-miles traveled. Between 1990 and 1999, the U.S. resident population increased by 9.4% and the gross domestic product rose by 32.0%. While the number of major air carriers decreased slightly (down 7.1%) during this time, the number of other carriers (including national, large regional, and medium regional) increased by 44.6%. The number of aircraft and the number of air carrier passenger miles traveled grew at a similar pace with increases of 35.3% and 41.2% respectively. In 1999, the median household income was $42,187 with an average transportation expenditure of $7,208.[5]

	1980	1990	1999
Resident population (millions)[6]	227.3	248.8	272.2
Civilian labor force participation (percent)[7]	63.8	66.4	67.1
Gross domestic product (billions)[8]	$4,900.9	$6,707.9	$8,856.5
Median household income[9]	$35,238	$38,446	$42,187
Number of households (millions)[10]	80.8	93.3	103.9
Number of aircraft[11]	3,808	6,083	8,228
Number of major air carriers[12]	n/a	14	13
Number of other air carriers[12]	n/a	56	81
Air carrier passenger miles (millions)[13]	204,368	345,873	488,357

[5] U.S. Department of Labor, Bureau of Labor Statistics (BLS), <ftp://ftp.bls.gov/pub/special.requests/ce/share/1999/income.txt>.
[6] From Bureau of Transportation Statistics (BTS), 2002 National Transportation Statistics (BTS-02-08), Table A.
[7] BLS, <ftp://ftp.bls.gov/pub/special.requests/ep/labor.force/clra8000.txt>.
[8] In year 1996 dollars. BTS, 2002 National Transportation Statistics (BTS-02-08), Table A.
[9] From U.S. Census Bureau <http://www.census.gov/hhes/income/histinc/h07.html>, in year 2000 dollars, using the CPI-U-RS (Consumer Price Index Research Series Using Current Methods).
[10] BTS, 2001 National Transportation Statistics (BTS-02-06), Table A.
[11] Aircraft operating under 14 CFR 121 and 14 CFR 135. BTS, 2002 National Transportation Statistics (BTS-02-08), Table 4-8.
[12] Carrier groups are categorized based on their annual operating revenues as major, national, large regional, and medium regional. The thresholds were last adjusted July 1, 1999, and the threshold for major air carriers is currently $1 billion. The other air carrier category contains all national, large regional, and medium regional air carriers. Source: BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-2.
[13] Certificated, domestic, all services. Source: BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-34.

In 1999, there were 674.1 million passenger enplanements at U.S. airports. The following graph depicts the number of enplanements at the top 20 airports in the United States in 1999.[14] With 37.6 million, Hartsfield Atlanta International Airport had the largest number of enplanements.

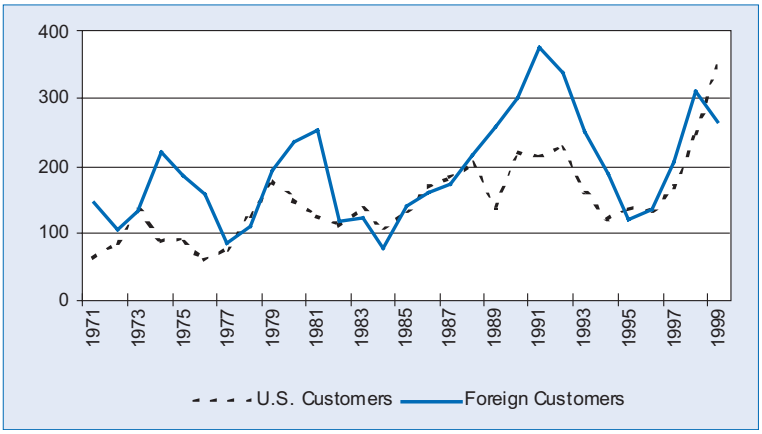
1999 Enplanements *(millions)*



Since 1971, the annual number of new U.S. jet transport aircraft deliveries has increased for both U.S. and foreign customers. Shipments showed peaks in the mid 1970s, early 1980s, and early 1990s with more dramatic increases for foreign customers.[15] After a dramatic increase for both U.S. and foreign customers between 1996 and 1998, there was a drop to 264 deliveries to foreign customers in 1999, while deliveries for U.S. customers climbed to 356 shipments. The total number of U.S. air carrier aircraft in operation between 1990 and 1999 shows fairly steady growth punctuated by a sharper increase between 1991 and 1992.

[14] Federal Aviation Administration. Terminal Area Forecast – Fiscal years 2000-2015, (FAA-APO-00-7).
[15] Includes 707, 737, 747, 757, 767, 777, MD-11, MD-80, MD-90, MD-95, DC-8, DC-9, DC-10, and L-1011. From Aerospace Industries Association <http://www.aia-aerospace.org/stats/aero_stats/stat21.pdf>.

Number of Jet Transport Aircraft Deliveries, 1971-1999



Total Aircraft Reported in Operation by Air Carriers by Type of Aircraft for 1990-1999[16]

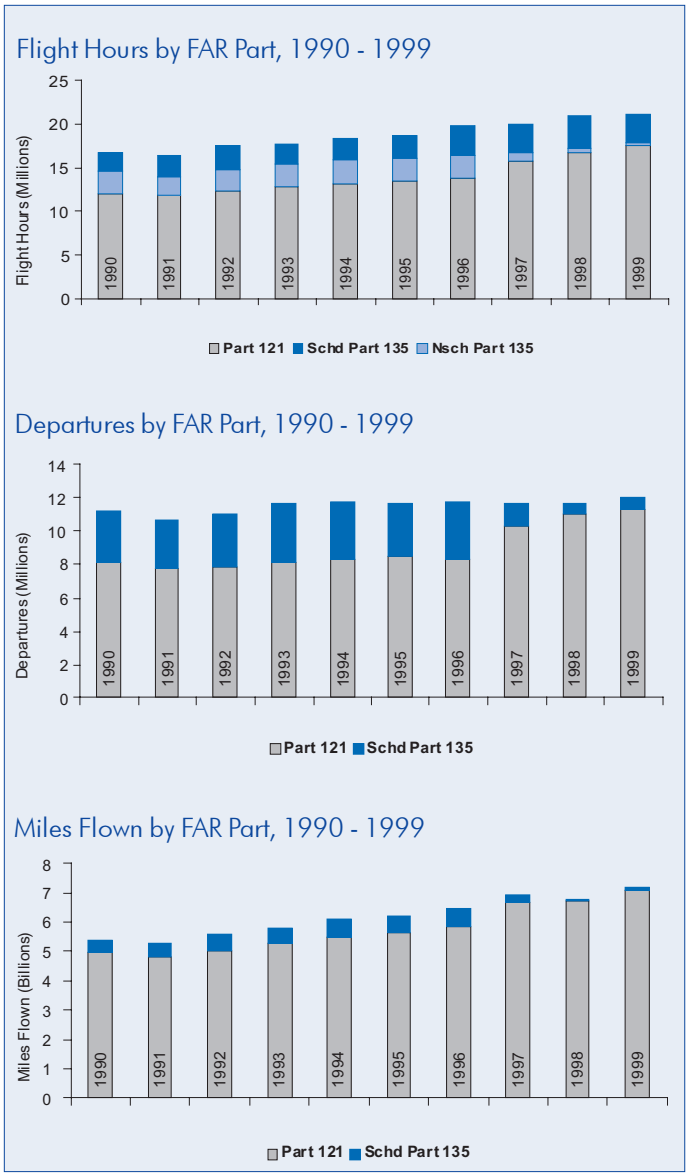
Year	Total	Fixed Wing Turbojet	Fixed Wing Turboprop	Fixed Wing Piston	Helicopters
1990	6,083	4,148	1,595	329	11
1991	6,054	4,167	1,598	283	6
1992	7,320	4,446	1,894	847	133
1993	7,297	4,584	1,868	721	124
1994	7,370	4,636	1,782	824	128
1995	7,411	4,832	1,713	748	118
1996	7,478	4,922	1,696	739	121
1997	7,616	5,108	1,646	728	134
1998	8,111	5,411	1,832	751	117
1999	8,228	5,630	1,788	688	122

Aircraft Activity

The following charts depict aircraft activity for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft between 1990 and 1999. Aircraft activity can be measured in several ways: flight hours, departures, and miles flown are often used for commercial operations. All Part 121 air carriers and scheduled Part 135 carriers are required to report revenue flight activity[17] to the Department of Transportation's (DOT) Research and Special Programs Administration (RSPA).[18] This information is maintained by the Bureau of Transportation Statistics (BTS) and is aggregated by the Federal Aviation Administration Systems Process Audit staff (AFS-40) to produce annual reports of flight activity.

By contrast, nonscheduled Part 135 operators are not required to report activity data for their revenue flights. Instead, activity for this group of aircraft is estimated using the annual General Aviation and Air Taxi Activity (GAATA) Survey. The GAATA Survey was established in 1978 to gather information, such as flight hours, avionics, base location, and use, from owners of general aviation and nonscheduled Part 135 aircraft. Since

[16] Includes 14 CFR Part 121 and scheduled 14 CFR Part 135. The number of aircraft is the monthly average reported in use for the last 3 months of the year. BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-11.
[17] Activity data include revenue aircraft hours, revenue aircraft departures, revenue aircraft miles flown, and several others.
[18] Part 121 operators report activity on a monthly basis, and scheduled Part 135 operators report quarterly.



the GAATA Survey is voluntary and directed to aircraft owners rather than operators, activity data for nonscheduled Part 135 revenue flights are generally considered less reliable than those from other segments of commercial aviation.

Prior to the 1998 Annual Review, activity rates were presented using units of hundred thousands of flight hours, hundred thousands of departures, and millions of miles flown. Because of an increase in activity and a decrease in accident numbers, and to facilitate interpretation of rate data, the Annual Review now presents aircraft activity data in units of millions of flight hours, millions of departures, and billions of miles flown, with accident rates calculated using flight hours and departures only.

For all of the Part 121 aviation activity indicators, there was an increase over the 10-year period. The notable increases observed beginning in 1997 are most likely attributable to the 1997 change in the FARs that reclassified many scheduled Part 135 operations as Part 121 operations. Correspondingly, for scheduled Part 135 aircraft, there was a substantial decrease in all activity indicators between 1996 and 1998. However, the differences between 1998 and 1999 activity measures were relatively small for both Part 121 and scheduled Part 135, suggesting that activity leveled off after the 1997 reclassification.

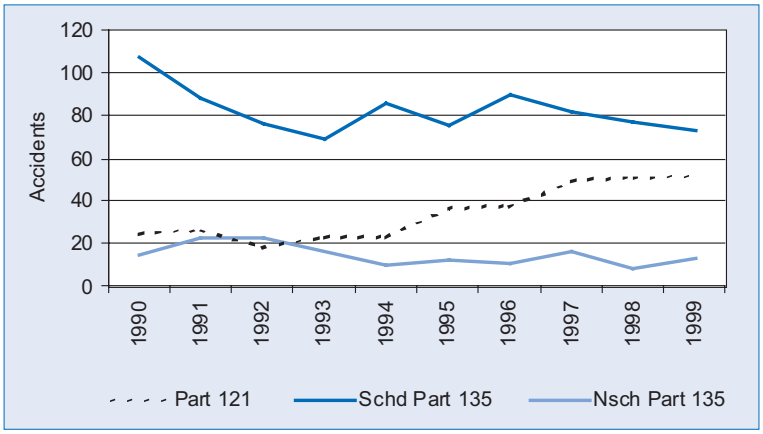
As previously mentioned, the FAA uses data gathered through the GAATA Survey to make annual estimates of flight hours flown by nonscheduled Part 135 operators. In 2002, the FAA changed the method it uses to make this estimate and revised the flight hour estimates for the years of 1992-2000. This modification led to substantial increases in the flight hour estimates for this group. For example, prior to the change, the flight hour estimate for 1999 was 2,260,000 and after the change, it was 3,297,957, an increase of 45.9%. The flight hour data depicted in the 1999 Annual Review represent the revised estimates and suggest a small and steady increase in nonscheduled Part 135 activity over the 10-year period, 1990-1999.

HISTORICAL AND CURRENT ACCIDENT DATA

UNITED STATES COMMERCIAL AIRCRAFT ACCIDENTS

There are consistently more Part 135 accidents per year compared to Part 121, as shown in the following graph. In 1999, there were 51 Part 121 accidents, 13 scheduled Part 135 accidents, and 73 nonscheduled Part 135 accidents.

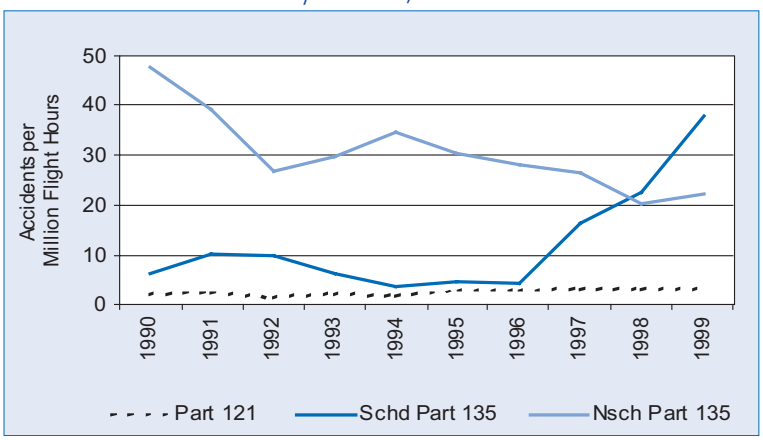
U.S. Air Carrier Accidents by FAR Part, 1990- 1999



Accident rates are also consistently higher for Part 135 aircraft operations compared to Part 121 operations. As shown in the following graph, the 1999 rate for Part 121 accidents (2.9 per million flight hours) is fairly consistent with the preceding 9-year period. However, rates for scheduled Part 135 increased substantially between 1996 and 1999, with a 1999 rate of 37.9 accidents per million flight hours. This is partly due to the 1997 reclassification of many aircraft from scheduled Part 135 to Part 121 operations. After the reclassification, the activity levels for scheduled Part 135 aircraft dropped dramatically. However, the fact that accident numbers did not show a similar decrease suggests that the operations that were reclassified to Part 121 were safer than those that remained in the scheduled Part 135 group.

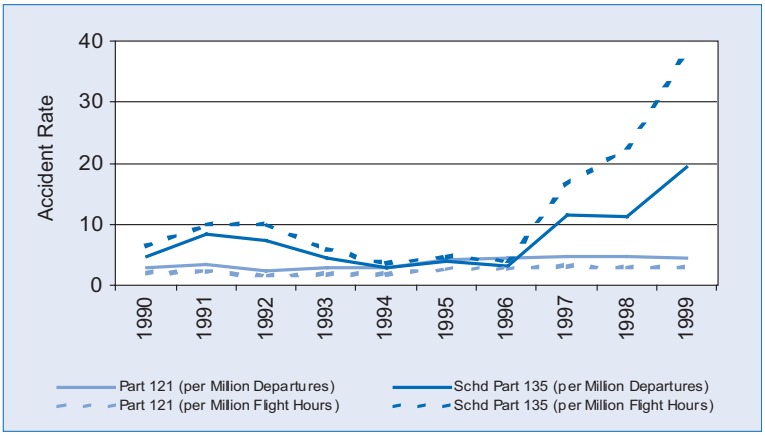
There was also a marked decrease in nonscheduled Part 135 accident rates during the 1990-1999 period, with a relatively low 1999 rate of 22.1 accidents per million flight hours. This trend is partly attributable to FAA's revised activity estimates that resulted in consistently higher flight hour estimates for the years 1992 through 1999.

Air Carrier Accident Rates by FAR Part, 1990 - 1999



The following graph demonstrates the effects of using different activity measures to calculate accident rates. Regardless of whether flight hours or departures are used to generate accident rates, the same general pattern emerges. Scheduled Part 135 accident rates are higher than Part 121 rates until 1994 when rates for the two groups converge. After 1996, and the reclassification of many Part 135 operations to Part 121, there is a notable divergence with increases in scheduled Part 135 rates. However, the divergence is more dramatic when using flight hours to calculate the rate. One explanation is that aircraft remaining in Part 135 after the reclassification fly shorter-duration trips than those that were reclassified to Part 121. Accident rates for the Part 121 group did not show a similar change after the reclassification. This suggests that the operations moved from scheduled Part 135 to Part 121 were similar to existing Part 121 operations in terms of safety and accident rates.

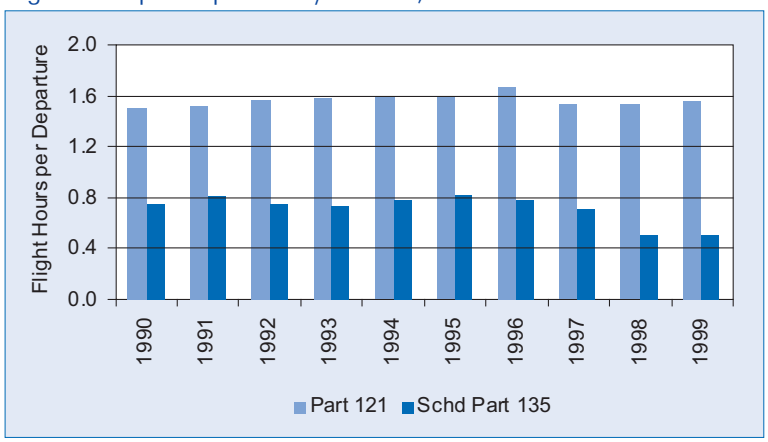
Comparison of Part 121 and Scheduled Part 135 Accident Rates Using Flight Hours and Departures to Calculate Rates



Note: Nonscheduled Part 135 departure data are not available.

The next graph further clarifies the difference between Part 121 and scheduled Part 135 aircraft in terms of the average number of flight hours per departure. The number of flight hours per departure has remained fairly stable for Part 121; however, the flight hours per departure for scheduled Part 135 flights has decreased markedly since 1997.

Flight Hours per Departure by FAR Part, 1990 - 1999



Throughout the Annual Review, rates are calculated using both flight hours and departures as activity measures. Flight hours provide the only activity measure available for Part 121, scheduled Part 135, and nonscheduled Part 135 operations. However, because Part 121 and scheduled Part 135 do not have similar flight hours-per-departure rates, departures are also used to calculate accident rates for these groups. Finally, as previously mentioned, the Annual Review presents accident rates using units of accidents-per-million flight hours or departures. Any comparisons with NTSB data published prior to the 1998 Annual Review, when rates were presented using hundred thousand flight hours or departures, should take this into account.

PART 121 OPERATIONS: 10-YEAR SUMMARY

NTSB SEVERITY CLASSIFICATION

Historically, the NTSB has defined a "fatal accident" as one in which there was at least one fatality. However, some accidents involving ground crew fatalities pose no threat to the aircraft or its occupants. While the Safety Board has found no single index that perfectly indicates the state of airline safety, it developed a new classification system for Part 121 accidents in response to a congressional mandate issued October 9, 1996.[19] The following definitions were developed to gauge accident severity for Part 121 accidents. Part 135 severity classifications continue to use the traditional definitions.

DEFINITIONS OF NTSB SEVERITY CLASSIFICATIONS FOR PART 121 ACCIDENTS

Major - an accident in which any of three conditions is met:
A Part 121 aircraft was destroyed, or
There were multiple fatalities, or
There was one fatality and a Part 121 aircraft was substantially damaged.

Serious - an accident in which at least one of two conditions is met:
There was one fatality without substantial damage to a Part 121 aircraft, or
There was at least one serious injury and a Part 121 aircraft was substantially damaged.

Injury - a nonfatal accident with at least one serious injury and without substantial damage to a Part 121 aircraft.

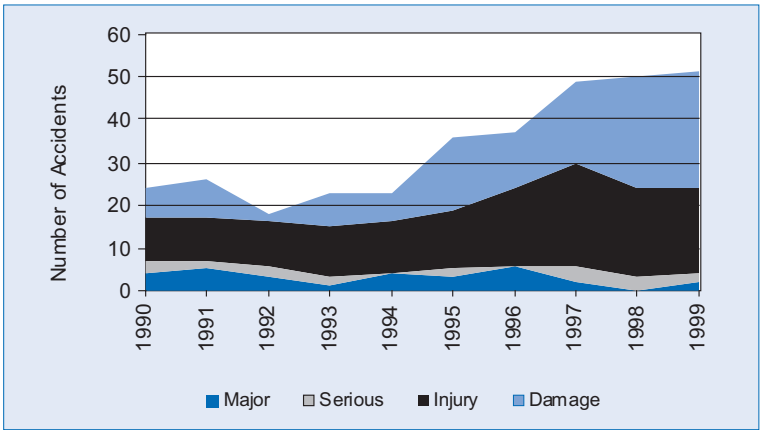
Damage - an accident in which no person was killed or seriously injured, but in which any aircraft was substantially damaged.

The following graphs depict both the number and rate of Part 121 accidents and the severity of the accidents. In 1999, there were 52 aircraft involved in 51 Part 121 accidents.[20] Both the number and rate of Part 121 accidents has increased over the past 10 years. While the number of accidents has approximately doubled, the rates have increased by approximately 50%. This change is almost exclusively due to increases in lower-severity (i.e., injury- and damage-level) accidents.

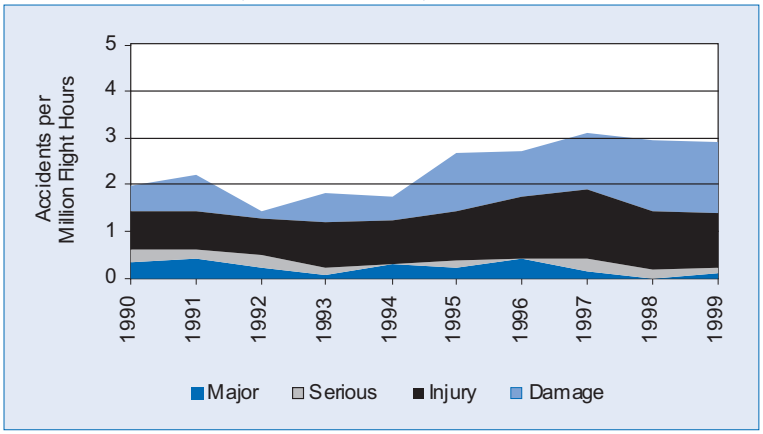
[19] Title 49, Subtitle II, Chapter 11, Subchapter II, Section 1119, "Accident and Safety Data Classification and Publication," was enacted on October 9, 1996, to be applicable to fiscal years beginning after September 30, 1996.

[20] A collision between aircraft is counted as one accident for the purpose of this publication. In 1999, there was one accident in which two Part 121 aircraft collided.

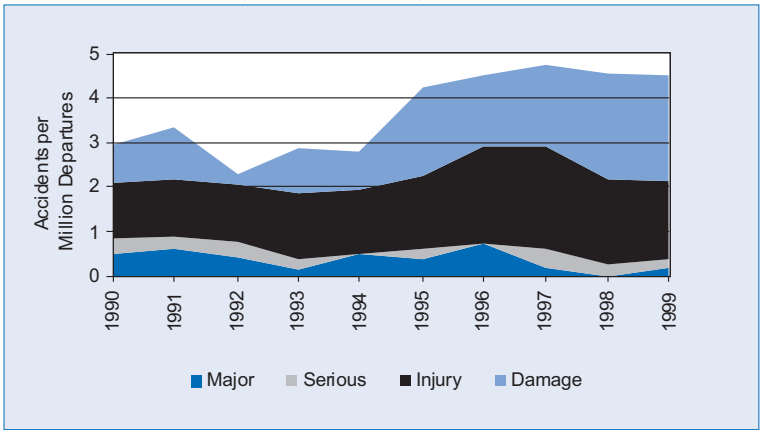
Part 121 Accidents by Accident Severity, 1990 - 1999



Part 121 Accident Rates (Using Flight Hours) by Accident Severity, 1990 - 1999

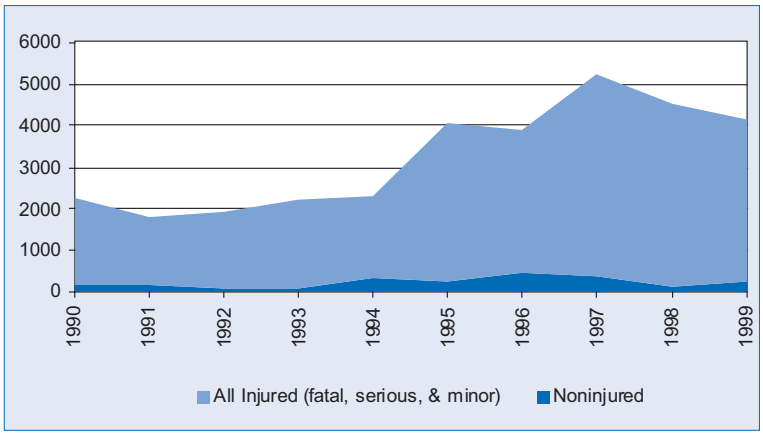


Part 121 Accident Rates (Using Departures) by Accident Severity, 1990 - 1999



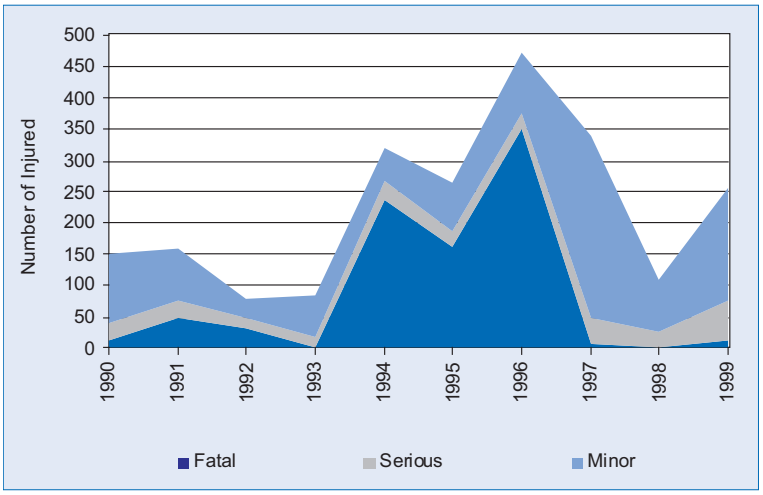
There is a consistent trend over time showing that a very small proportion of people aboard Part 121 flights involved in accidents sustain injuries. In 1999, over 674 million passengers were enplaned at United States airports. Of these, 3,853 passengers boarded Part 121 flights that were involved in accidents; 211 of these passengers sustained injuries.

Injured Compared to Noninjured Aboard Part 121 Accident Flights, 1990 - 1999



In 1999, there were 11 fatalities, 65 serious injuries, and 181 minor injuries among the passengers and crew who were aboard Part 121 flights involved in accidents. These figures represent an increase in the number of injuries compared to 1998; however, the number is still relatively low compared to preceding years. In general, it is difficult to define a trend in the number of people injured since one or two major accidents can lead to a dramatic increase in the number of injuries in a given year.

Number Injured by Level of Injury, Part 121, 1990 - 1999



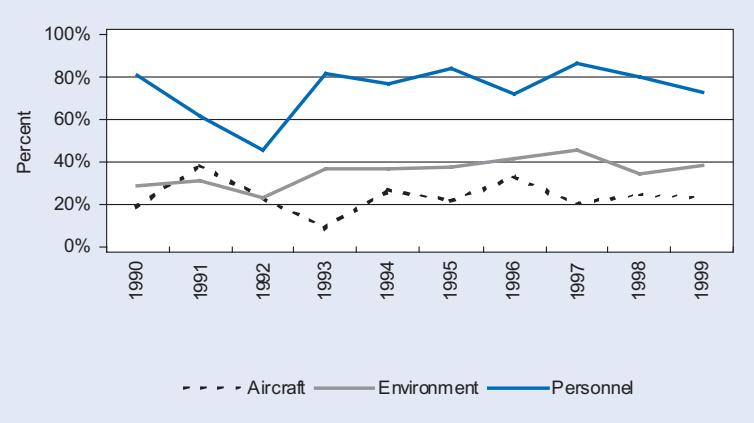
Probable Causes, Factors, and the Broad Cause/Factor Classification

As described in the Introduction, within each accident occurrence, any information that contributes to the explanation of that event is identified as a "finding," and may be further designated as either a "cause" or "factor." The term "factor" is used to describe situations or circumstances that contributed to the accident cause. Just as accidents often include a series of events, many factors may combine to cause an accident. For this reason, a single accident record can include multiple cause and factor codes.

The broad cause/factor classification divides all accident causes and factors into three groups – aircraft, environment, and personnel – to provide an overview of fundamental accident origins. When there are two or more causes/factors for an accident, no attempt is made to identify one as the primary cause. Therefore, as depicted in the following figure, the percentages of causes/factors in a given set of accidents will generally sum to more than 100%.

For 1999 Part 121 accidents, cause/factor information was available in 44 of 51 cases.[21] Within this set, aircraft were cited as causes/factors in 22.7% of accidents, environmental causes/factors were present in 38.6% of accidents, and personnel-related causes/factors were present in 72.7% of accidents. This distribution is fairly consistent with the preceding 9-year period.

Broad Causes/Factors for Part 121 Accidents, 1990 - 1999



[21] The seven accidents where cause/factor information was not available all occurred outside of the United States. Because the NTSB does not lead foreign investigations, data on the causes/factors, occurrences, phases of flight, and sequence of events are not documented in these cases.

SCHEDULED PART 135 OPERATIONS: 10-YEAR SUMMARY

Part 135 regulations apply to commercial air carriers that fly small commuter aircraft, cargo planes, and air-taxis. Scheduled Part 135 operations refer to revenue-passenger operations for which the certificate holder or its representative offers departure/arrival locations and departure times in advance of the flights.

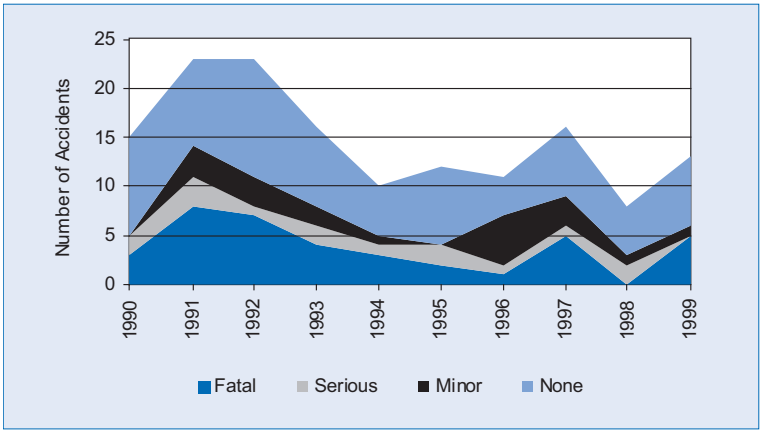
Unlike Part 121, all Part 135 accidents are classified by traditional definitions including highest level of injury (fatal, serious, minor, or none), and level of aircraft damage (destroyed, substantial, minor, or none).

DEFINITIONS OF HIGHEST LEVEL OF INJURY

Fatal - Any injury that results in death within 30 days of the accident.
Serious - Any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
Minor - Any injury that is neither fatal nor serious.
None - No injury.

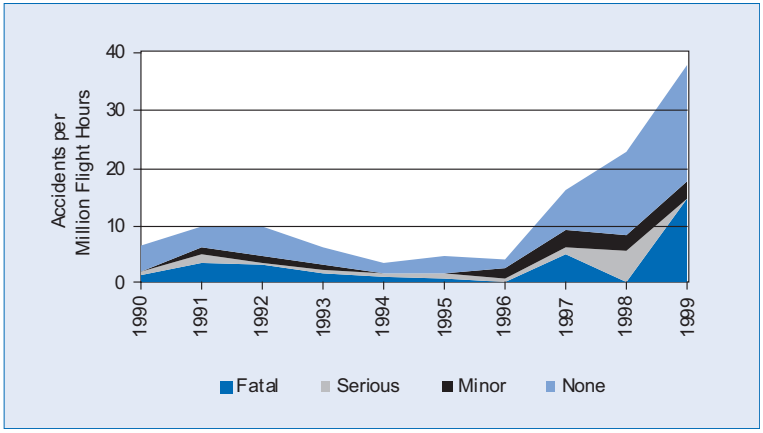
In 1999, there were 13 scheduled Part 135 aircraft involved in accidents. While 13 accidents may appear relatively low compared to the preceding years, it is important to note that the number of aircraft flying scheduled Part 135 flights decreased substantially in 1997 when many flights were reclassified to Part 121. The reduction in accidents between 1997 and 1999 is not consistent with the drop in activity among scheduled Part 135 operations. The following charts depicting accident rates further clarify this relationship.

Scheduled Part 135 Accidents by Highest Level of Injury, 1990 - 1999

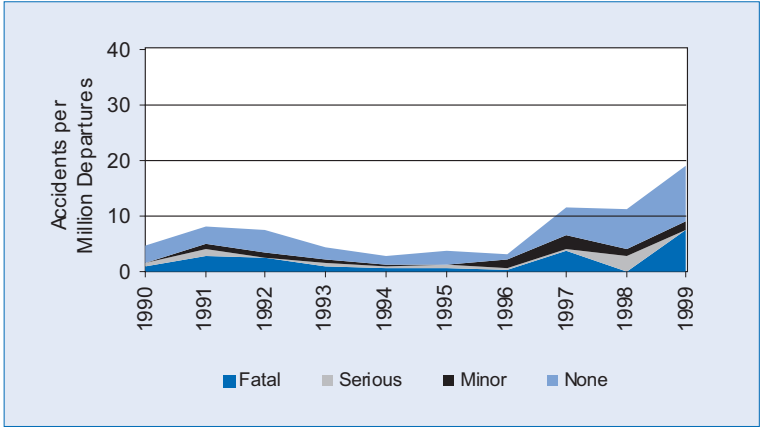


From 1996 through 1999, scheduled Part 135 accident rates experienced a dramatic increase. This is partly attributable to a sharp decrease in activity among scheduled Part 135 operators, including an 87.6% decrease in flight hours and an 80.9% decrease in departures between 1996 and 1999. During the same period, there was an 18.2% increase in the number of scheduled Part 135 accidents. It is likely that these changes are due to the reclassification of aircraft from scheduled Part 135 to Part 121. Those that were reclassified to Part 121 were comprised of larger aircraft, flown by more established operators. Those remaining in the scheduled Part 135 group were smaller aircraft, operated primarily in Alaska where weather and terrain are more rugged than in the rest of the United States.

Scheduled Part 135 Accident Rates (Using Flight Hours) by Highest Level of Injury, 1990 - 1999

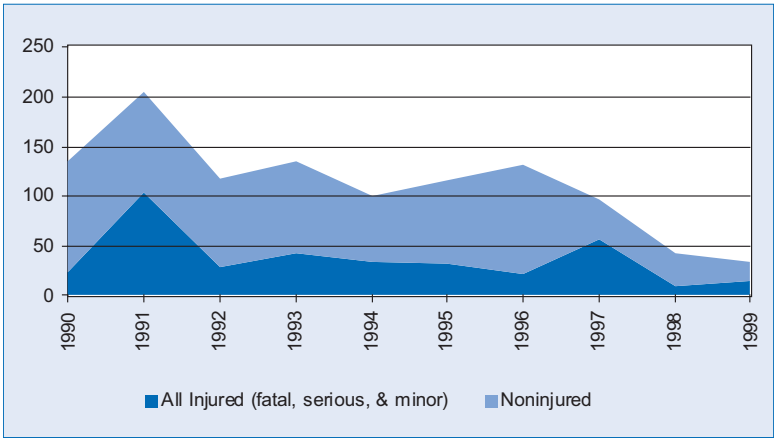


Scheduled Part 135 Accident Rates (Using Departures) by Highest Level of Injury, 1990 - 1999



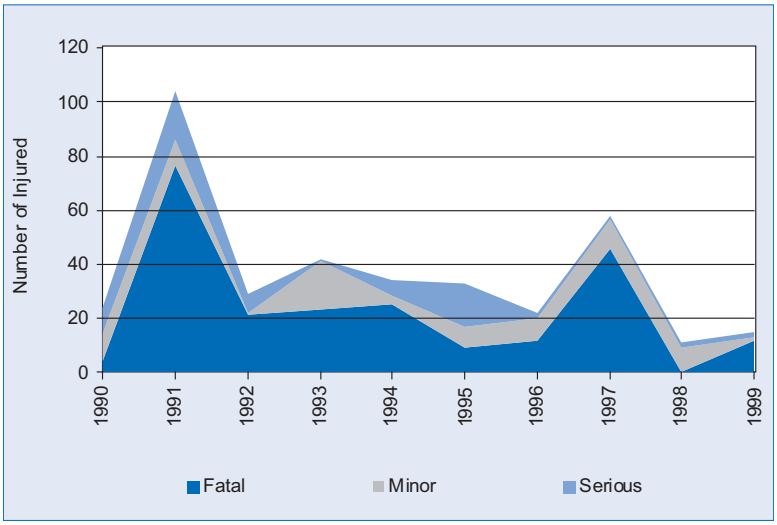
In 1999, 34 people boarded scheduled Part 135 flights that were involved in accidents and, from this group, 15 people received injuries. The relative proportion of people who were injured in scheduled Part 135 accidents is considerably higher than in Part 121 accidents.

Injured Compared to Noninjured Aboard Scheduled Part 135 Accident Flights, 1990 - 1999



In 1999, scheduled Part 135 accidents resulted in 12 fatal injuries, 2 serious injuries, and 1 minor injury.

Number of Injured by Level of Injury, Scheduled Part 135, Accident Flights, 1990 - 1999



As noted earlier, Part 135 accidents are also classified by the level of damage (destroyed, substantial, minor, or none) sustained by the aircraft.

Definitions of Level of Aircraft Damage

Destroyed - Damage due to impact, fire, or in-flight failures to the extent to not be economically repairable.

Substantial - Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades,

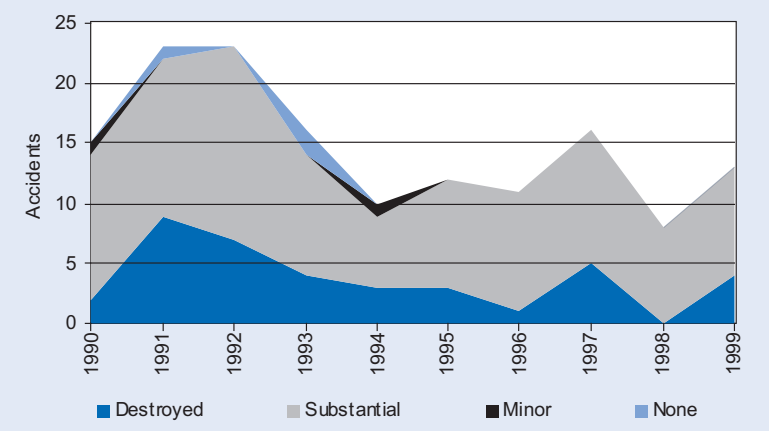
and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.[22]

Minor - Any damage that neither destroys the aircraft nor causes substantial damage.

None - No damage.

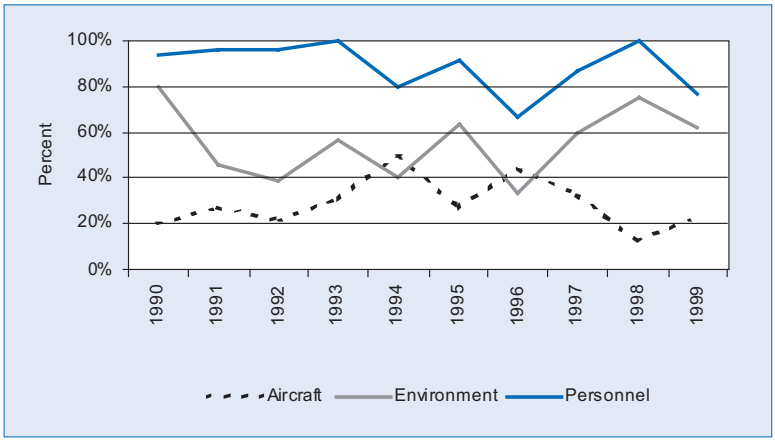
Of the 13 aircraft involved in scheduled Part 135 accidents in 1999, 9 had substantial damage and 4 were destroyed. The following graph also shows that, over the past 10-year period, most scheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.

Scheduled Part 135 Accidents by Level of Aircraft Damage, 1990 - 1999



In 1999, 23.1% of all scheduled Part 135 accidents listed aircraft as a cause or factor in the accident. Environmental causes/factors were present in 61.5% of accidents, and personnel-related causes/factors were present in 76.9% of accidents.

Broad Causes/Factors for Scheduled Part 135 Accidents, 1990 - 1999



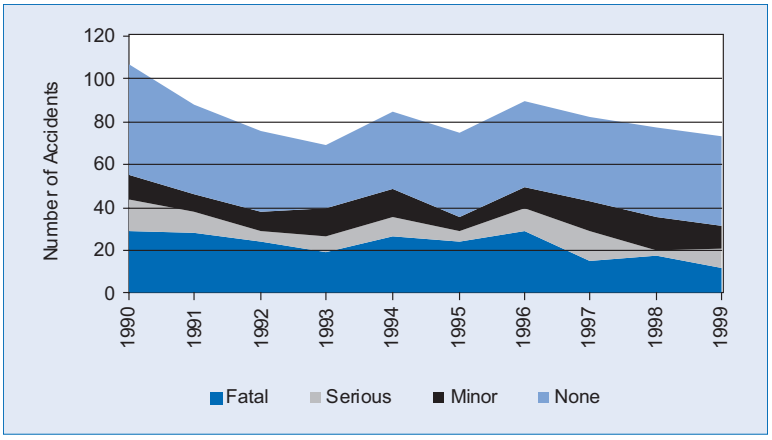
[22] Title 49 CFR 830.2.

NONSCHEDULED PART 135 OPERATIONS: 10-YEAR SUMMARY

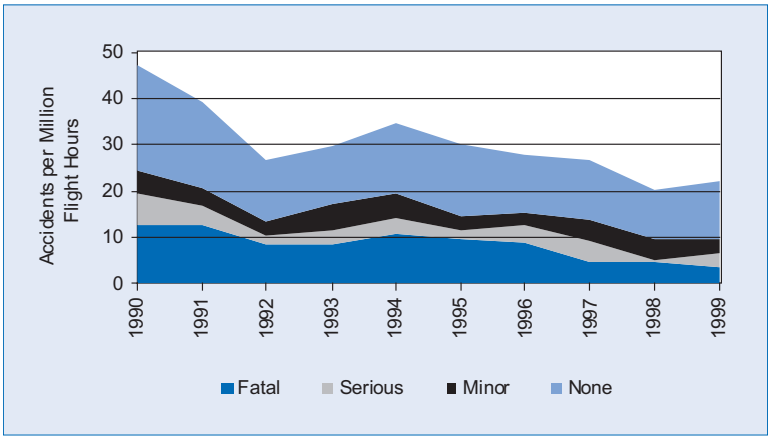
Nonscheduled operations refer to revenue-earning flights in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative. They include all cargo flights and some passenger flights.

There were 74 aircraft involved in 73 nonscheduled Part 135 accidents in 1999.[23] Over the past 10 years, both the number of accidents and the accident rates for nonscheduled Part 135 accidents have declined. However, the drop in accident rates that occurs after 1991 is partly influenced by the FAA's 2002 revision of nonscheduled Part 135 flight hours for the period of 1992 forward.

Nonscheduled Part 135 Accidents by Highest Level of Injury 1990 - 1999

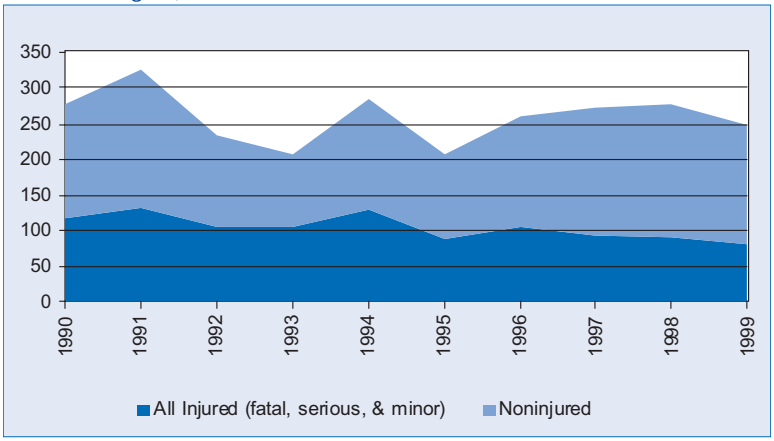


Nonscheduled Part 135 Accident Rates (Using Flight Hours) by Highest Level of Injury 1990 - 1999

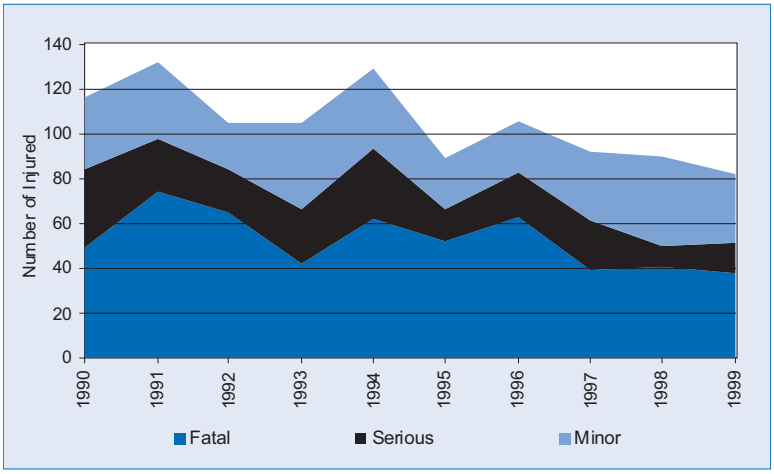


[23] A collision between aircraft is counted as one accident for the purpose of this publication. In 1999, there was one accident in which two nonscheduled Part 135 aircraft collided.

Injured Compared to Noninjured Aboard Nonscheduled Part 135 Accident Flights, 1990 - 1999

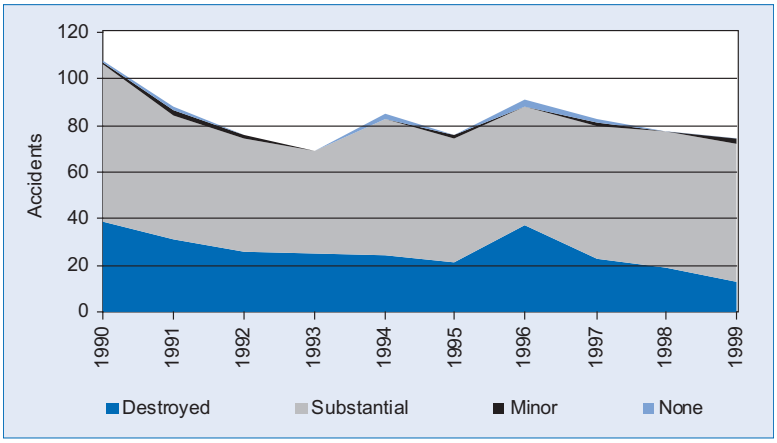


Number of Injured by Level of Injury, Nonscheduled Part 135 Accident Flights, 1990 - 1999



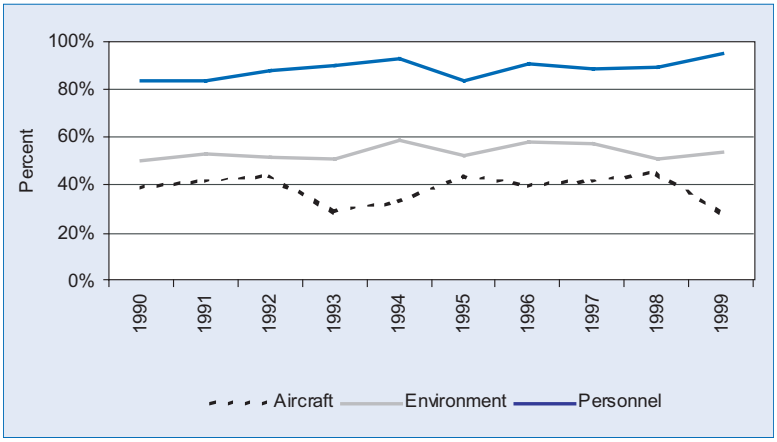
Of the 74 aircraft involved in nonscheduled Part 135 accidents in 1999, 13 were destroyed, 59 had substantial damage, and 2 sustained minor damage. Similar to scheduled Part 135 aircraft, the following graph shows that, over the past 10-year period, most nonscheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.

Nonscheduled Part 135 Aircraft Accidents by Level of Aircraft Damage, 1990 - 1999



In 1999, cause/factor information was available for 71 of 73 accidents. In 28.2% of these cases, aircraft were causes/factors in the accident. Environmental causes/factors were present in 53.5% of accidents, and personnel-related causes/factors were present in 94.4% of accidents.

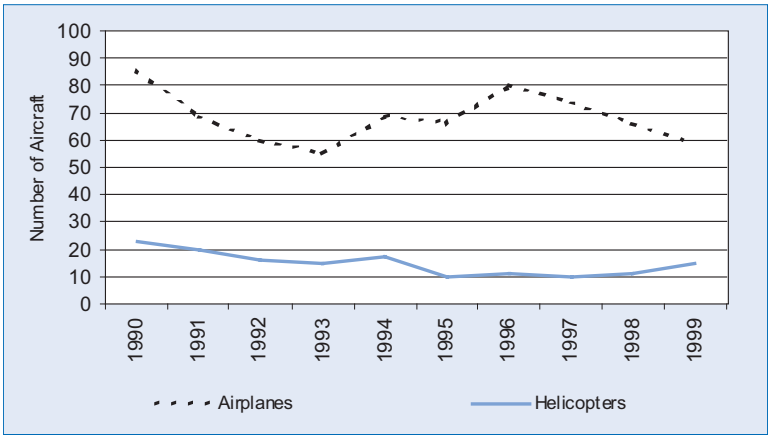
Broad Causes/Factors for Nonscheduled Part 135 Accidents, 1990 - 1999*



* Broad causes/factors were available in 71 of 73 accidents.

Of the 74 nonscheduled Part 135 aircraft involved in accidents in 1999, 59 were airplanes and 15 were helicopters. The ratio of airplanes to helicopters involved in accidents has been fairly stable over the past several years.

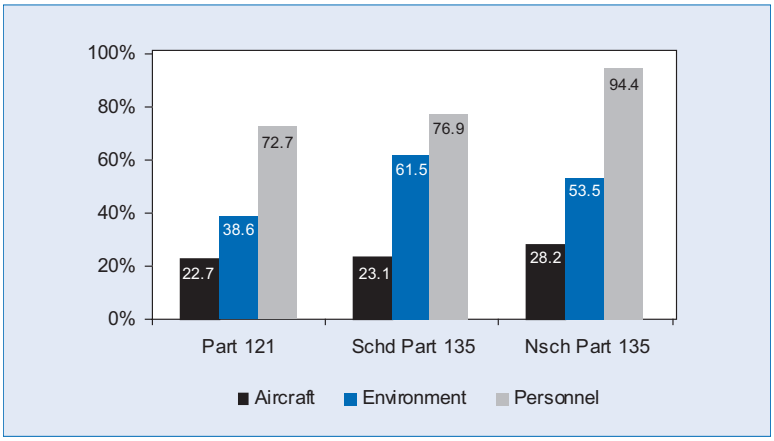
Nonscheduled Part 135 Accident Aircraft by Category, 1990 - 1999



FOCUS ON 1999

While the previous section described trends in accidents among U.S. air carriers over a 10-year period, this section focuses on events specific to 1999. As an overview, the following graph provides a comparison of the role that personnel, environment, and aircraft played in all air carrier accidents that occurred in 1999. Most notable is the fact that personnel were cited as a cause or factor in the largest percent of accidents for all categories of commercial operations described in this review. Environment accounted for the second largest contribution, and aircraft-related problems contributed the least.

Contribution of Broad Causes/Factors to Accidents by FAR Part for 1999*

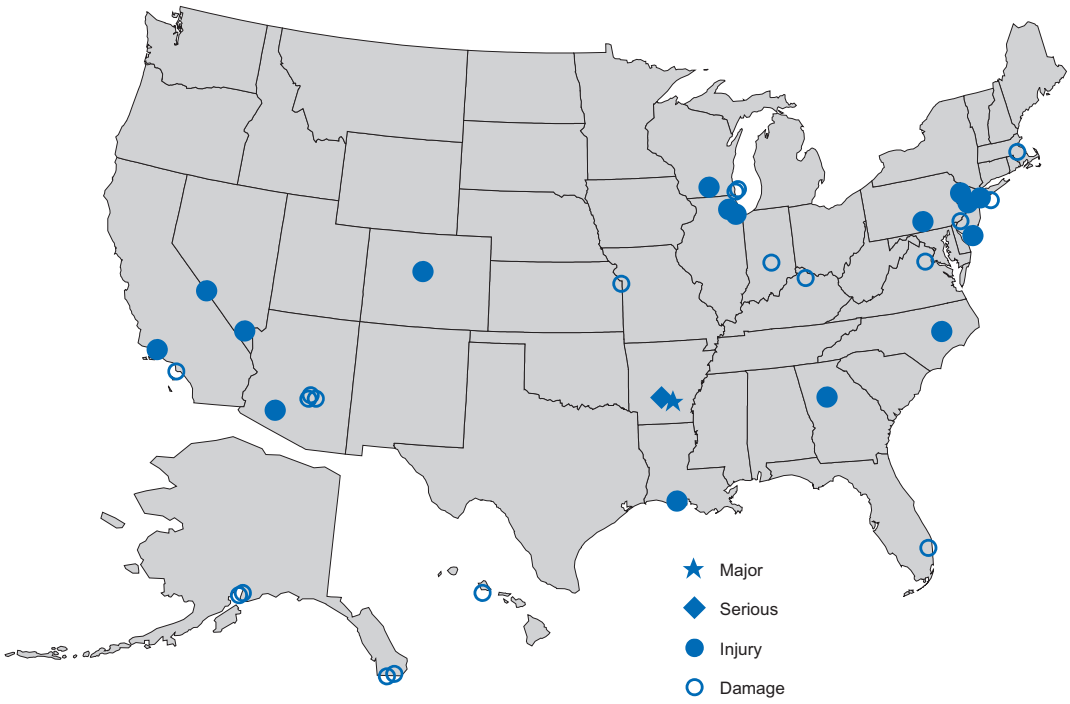


* Broad causes/factors were available in 44 of 51 Part 121 accidents, 13 of 13 scheduled Part 135 accidents, and 71 of 73 nonscheduled Part 135 accidents.

1999 PART 121 ACCIDENTS

As discussed in the Introduction, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft. Of the 51 Part 121 accidents in 1999, 42 occurred in the United States and its territories, 7 in foreign countries, 1 over the Atlantic Ocean, and 1 over the Pacific Ocean.

Location of Part 121 Accidents in 1999 – United States Detail View



Of the 52 Part 121 aircraft involved in accidents in 1999, 80.8% were passenger flights, and 19.2% were cargo-only. In addition, 11.5% of Part 121 accidents occurred during nonscheduled flights while 88.5% occurred during scheduled operations. This is particularly notable since nonscheduled flights accounted for only 4.9% of total Part 121 flight hours and just 4.0% of Part 121 departures. Nonscheduled flights were similarly overrepresented during the years 1996 through 1998. Finally, the large majority of Part 121 accidents (92.3%) had a severity classification of either Injury or Damage (i.e., the two least severe categories).

Part 121 Accident Severity Classifications by Type of Operation for 1999

	Scheduled		Nonscheduled		
	Cargo	Passenger	Cargo	Passenger	Total
Major	1	1	0	0	2
Serious	0	2	0	0	2
Injury	0	20	0	0	20
Damage	5	17	4	2	28
Total	**6**	**40**	**4**	**2**	**52**

The following table displays the first occurrences for 45 aircraft involved in 44 accidents for which occurrence data were available. There are a total of 52 occurrence codes that may be used to outline the events in any given accident. The most frequently cited first occurrences for Part 121 accidents in 1999 were in-flight encounters with weather and on-ground/water collisions with objects, each of which accounted for 17.8% of all aircraft.

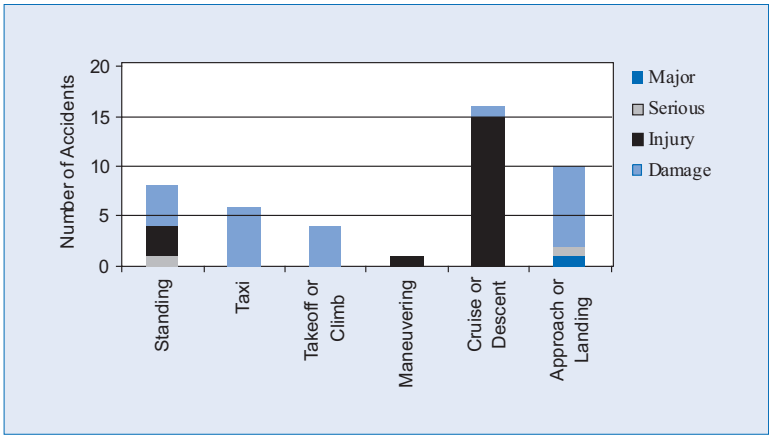
Part 121 Accident First Occurrences for 1999*

	Number of Aircraft	Percent of Aircraft
In-flight encounter with weather	8	17.8
On-ground/water collision with object	8	17.8
In-flight collision with object	5	11.1
Miscellaneous/other	5	11.1
Airframe/component/system failure/malfunction	3	6.7
Altitude deviation, uncontrolled	2	4.4
Hard landing	2	4.4
Loss of control - on-ground	2	4.4
Collision between aircraft (other than midair)	2	4.4
Vortex turbulence encountered	2	4.4
Abrupt maneuver	1	2.2
Near collision between aircraft	1	2.2
Overrun	1	2.2
Loss of engine power (total) mech failure/malfunction	1	2.2
Loss of engine power (partial) mech failure/malfunction	1	2.2
Propeller/rotor contact to person	1	2.2
Total aircraft	**45**	**100.0**
Total accidents	**44**	

* 45 of 52 Part 121 aircraft accidents included occurrence data.

The following graph displays the aircraft's phase of flight during the first occurrence. There are 50 distinct phase-of-flight codes that investigators may use to describe the chronology of occurrences. However, these detailed phases have been condensed for this graph. For example, the category "Standing" includes standing with engines operating, standing with engines not operating, and standing while starting engines. For Part 121 accidents in 1999, the first occurrences for approximately one third (35.6%) of all aircraft that were involved in accidents happened during the cruise or descent phase.

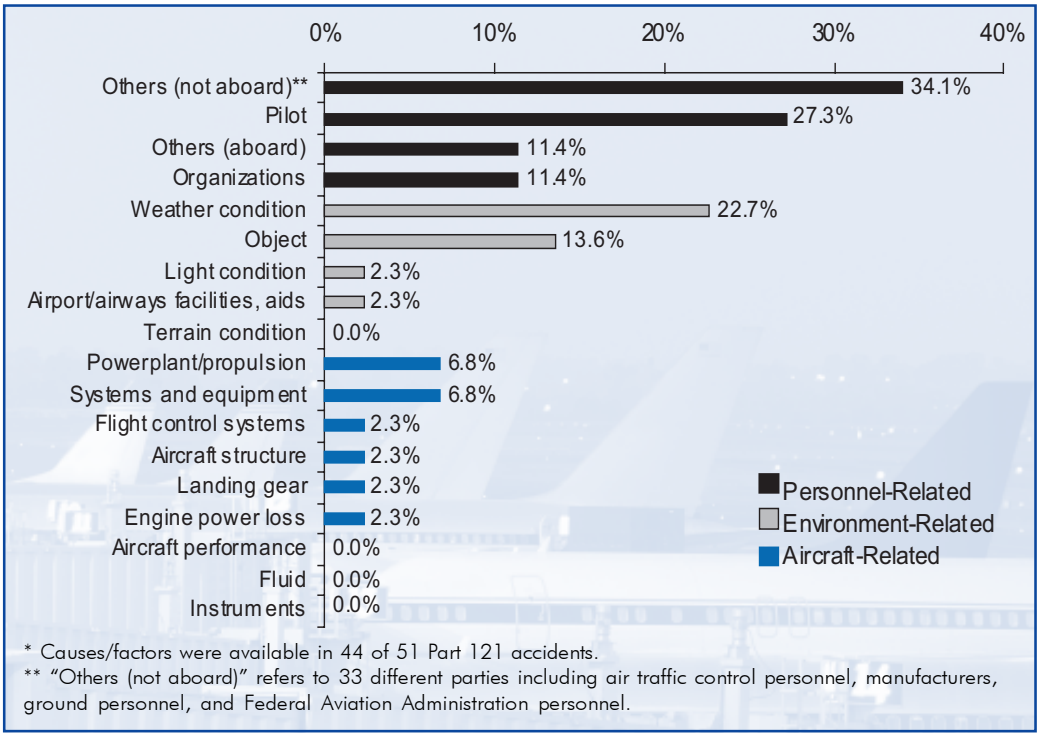
Part 121 Phase of Flight During First Occurrence for 1999



The following graph displays the causes and factors of 1999 Part 121 accidents. There are about 2,000 unique codes that investigators may use to document causes/factors. The following graph summarizes them using the broad cause/factor (personnel, environment,

and aircraft), represented by color coding, as well as the next level of subcategory, represented with individual bars on the chart.

Part 121 Most Prevalent Causes/Factors for 1999*



* Causes/factors were available in 44 of 51 Part 121 accidents.
** "Others (not aboard)" refers to 33 different parties including air traffic control personnel, manufacturers, ground personnel, and Federal Aviation Administration personnel.

It is clear from this graph that many of these accidents are attributed to personnel-related causes and factors. With 27.3%, the pilot is the most frequently cited individual in the personnel category; however, there were numerous accidents attributed to other people not aboard the aircraft, such as ground personnel, air traffic controllers, and manufacturer personnel. The most frequently cited cause/factor in the environmental category was weather with 22.7%. "Objects," such as birds or airport vehicles, was the second-highest category with 13.6%. In the broad category of aircraft, systems/equipment and powerplant/propulsion each accounted for 6.8% of the causes/factors with no other category capturing more than 5%.

Among the 51 Part 121 accidents that occurred in 1999, 2 accidents resulted in 12 fatalities. Eleven people were fatally injured on June 9 in Little Rock, Arkansas, when a McDonnell Douglas MD-82 overran the end of a runway. One fatality occurred on July 28 in Little Rock, Arkansas, when a ground crewmember received fatal injuries from contact with a rotating propeller of an Aerospatiale ATR 42-500 turbo-propeller airplane.

In addition to these fatalities, there were 67 serious injuries and 181 minor injuries that resulted from Part 121 accidents in 1999. The majority of these injuries resulted from the June 9 overrun accident in Little Rock. Cabin crews suffered the highest percentage of injury with 42 (25.3%) of all cabin crewmembers involved in accidents sustaining some level of injury. Of the 3,853 passengers involved in accidents, only 211 (5.5%) received injuries, and of the 109 flight crewmembers, only 4 (3.7%) sustained injuries.

Part 121 Accident Injuries by Role for 1999

	Fatal	Serious	Minor	None	Total
Flight crew	1	1	2	105	109
Cabin crew	0	18	24	124	166
Other crew	0	0	0	12	12
Passengers	10	46	155	3,642	3,853
Total aboard	11	65	181	3,883	4,140
On ground	1	2	0	-	3
Total	**12**	**67**	**181**	**3,853**	**4,143**
Accidents	2	21	1	26	51

The majority of 1999 Part 121 accidents involved aircraft with turbofan engines (63.5%). In addition, 23.1% had turboprop, and 13.5% had turbojet engines.

Part 121 Engine Type by Level of Aircraft Damage for 1999

	Turbofan	Turboprop	Turbojet	Total
Destroyed	2	0	0	2
Substantial	16	8	4	28
Minor	2	2	0	4
None	13	2	3	18
Total	**33**	**12**	**7**	**52**

1999 Part 135 Accidents

As noted in the Introduction, Part 135 applies to commercial air carriers that operate small commuter flights (i.e., scheduled Part 135), cargo flights, and air taxis (i.e., nonscheduled Part 135). The presentation of data for scheduled and nonscheduled Part 135 operations is separated due to the distinct operating characteristics of these groups.

Scheduled Part 135 operations consist of common carriage passenger-revenue flights using aircraft with fewer than 10 seats. In addition, to be considered a scheduled operation, the departure location, departure time, and arrival location must be offered in advance by the operator, and the operator must include five or more round trips per week between two or more points.

Nonscheduled operations include flights in which the departure time, departure location, and arrival location are specifically negotiated with the customer. These include common carriage operations conducted with aircraft having a passenger-seat configuration of 30 seats or fewer and a payload capacity of 7,500 pounds or less; private carriage operations conducted with aircraft having a passenger-seat configuration of fewer than 20 seats and a payload capacity of less than 6,000 pounds; and cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less.

Of the 87 aircraft involved in Part 135 accidents in 1999, 13 were scheduled and 74 were nonscheduled. All of the scheduled Part 135 accidents took place on passenger flights. For nonscheduled Part 135 accidents, 68.9% were passenger flights and 31.1% carried cargo and/or mail. In both nonscheduled and scheduled Part 135 accidents, fewer than half resulted in injuries.

Part 135 Accident Aircraft Classified by Schedule Type and Highest Injury for 1999

	Scheduled	Nonscheduled		
	Passenger	Passenger	Cargo and/or Mail	Total
Fatal	5	7	5	17
Serious	0	8	1	9
Minor	1	7	4	12
None	7	29	13	49
Total	**13**	**51**	**23**	**87**

There are two main types of flight plans that are filed: visual flight rules (VFR) and instrument flight rules (IFR). VFR govern the conduct of flight under visual meteorological conditions (VMC), and IFR govern the conduct of flight under instrument meteorological conditions (IMC). An IFR flight plan is also required to receive certain air traffic control services. For scheduled Part 135 accidents in 1999, all but one had filed VFR flight plans, with the remaining flight having no flight plan filed. For nonscheduled flights, the flight plans of 54.1% were under VFR and 33.8% were under IFR. In 12.2% of cases, the flight plan was unknown or there was no flight plan.

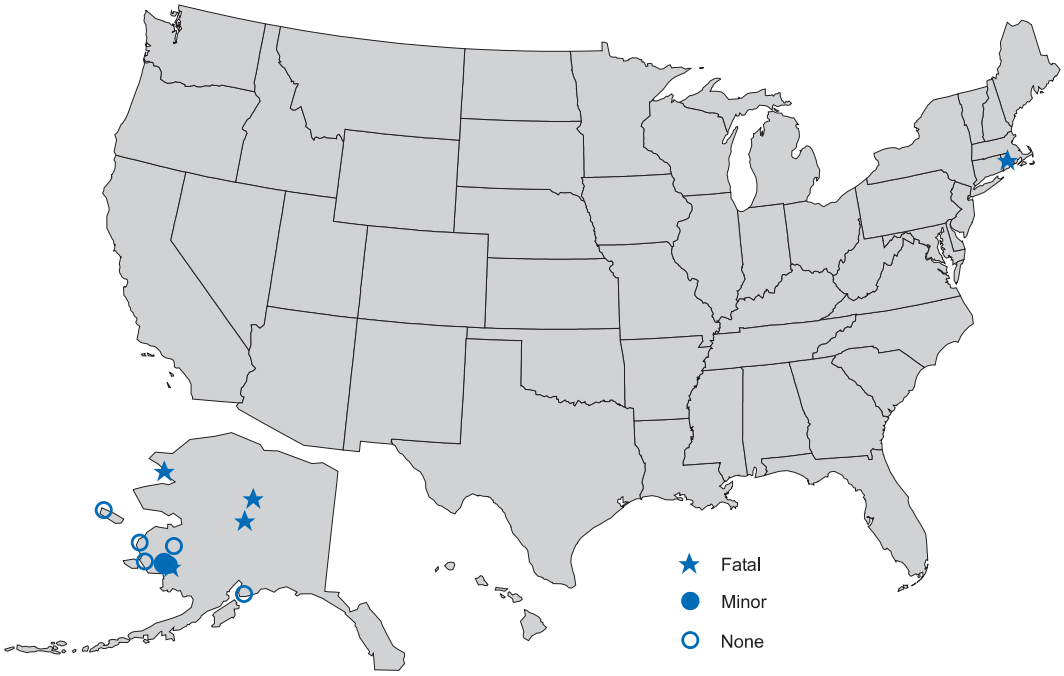
Part 135 Accident Aircraft by Schedule Type and Flight Plan for 1999

	Scheduled	Nonscheduled	Total
Visual Flight Rules (VFR)	12	40	52
Instrument Flight Rules (IFR)	0	25	25
Unknown or None	1	9	10
Total	**13**	**74**	**87**

1999 Scheduled Part 135 Accidents

There were 13 scheduled Part 135 accidents in 1999. All of the accidents occurred in the United States, with 12 accidents in Alaska and 1 in Rhode Island. The large proportion of accidents in Alaska is partly due to the fact that over half of all scheduled Part 135 operators are certificated in Alaska; however, it is also likely due to the more challenging operating environment in Alaska.

1999 Scheduled Part 135 Accidents



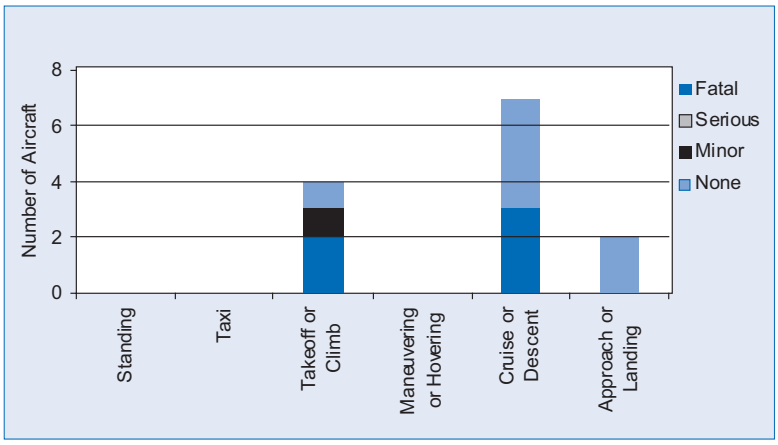
Four first occurrences accounted for 10 of the 13 scheduled Part 135 accidents that occurred in 1999. In-flight encounter with weather accounted for 30.8% of all accidents, while in-flight collision with object, in-flight collision with terrain/water, and loss of control in-flight each accounted for 15.4%.

First Occurrences for Scheduled Part 135 Accidents in 1999

	Number of Aircraft	Percent of Aircraft
In-flight encounter with weather	4	30.8
In-flight collision with object	2	15.4
In-flight collision with terrain/water	2	15.4
Loss of control - in-flight	2	15.4
Forced landing	1	7.7
Overrun	1	7.7
Loss of engine power	1	7.7
Total aircraft	**13**	**100.0**
Total accidents	**13**	

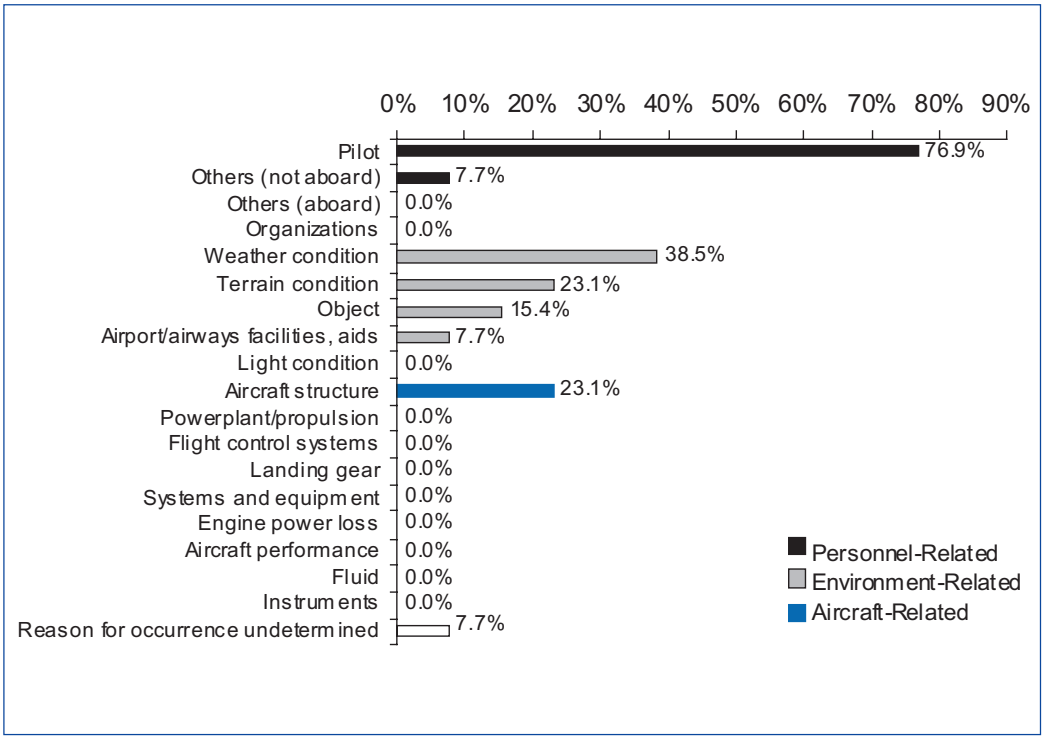
Of the 13 scheduled Part 135 accidents that occurred in 1999, the phase of flight during the first accident occurrence was cruise or descent in 7 cases, takeoff or climb in 4 cases, and approach or landing in 2 cases.

Scheduled Part 135, Phase of Flight During First Occurrence for 1999



As with Part 121, the pilot was identified as a cause/factor in a large number of scheduled Part 135 accidents (76.9%). The largest contributor in the broad category of environmental factors was weather conditions, cited in 5 of 13 accidents (38.5%). Finally, the only aircraft-related cause/factor was aircraft structure, listed in 3 accidents (23.1%).

Scheduled Part 135 Accidents, Top Causes/Factors for 1999



There were 12 fatalities that resulted from scheduled Part 135 accidents in 1999. In addition, there were 2 serious injuries and 1 minor injury. The proportion of people injured in flights was approximately equal for crewmembers and passengers with 46.2% and 42.9%, respectively.

Scheduled Part 135 Injuries by Role for 1999

	Fatal	Serious	Minor	None	Total
Flight Crew	5	0	1	7	13
Cabin Crew	0	0	0	0	0
Other Crew	0	0	0	0	0
Passengers	7	2	0	12	21
Total aboard	12	2	1	19	34
On-ground	0	0	0	-	0
Total	**12**	**2**	**1**	**19**	**34**
Accidents	5	0	1	7	13

Eleven of 13 scheduled Part 135 accidents involved airplanes with reciprocating engines, and two accidents involved airplanes with turboprop engines.

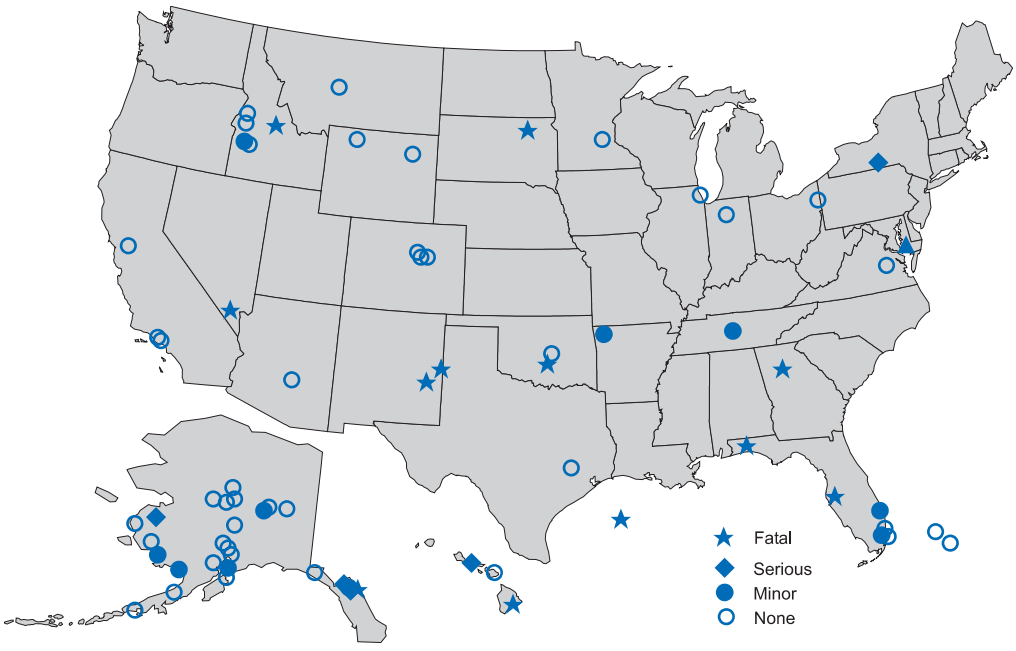
Scheduled Part 135 Accidents by Engine Type for 1999

	Reciprocating	Turboprop	Total
Destroyed	4	0	4
Substantial	7	2	9
Minor	0	0	0
None	0	0	0
Total	**11**	**2**	**13**

1999 Nonscheduled Part 135 Accidents

There were 73 nonscheduled Part 135 accidents in 1999 with 71 occurring in the United States and 2 in the Caribbean. Of the 71 that occurred in the U.S., 26 were in Alaska and the remaining accidents were distributed among the lower 49 states and Puerto Rico (including 4 helicopter accidents that occurred over the Gulf of Mexico but are not shown on the following map).

1999 Nonscheduled Part 135 Accidents



In 1999, of the 74 aircraft involved in 73 nonscheduled Part 135 accidents, there were 59 airplanes and 15 helicopters. All aircraft, except for two that crashed outside of the United States, had occurrence data available. For the airplanes, in-flight encounters with weather, mechanical losses of engine power, and on-ground/water collisions with objects were the most frequently cited first occurrences. For helicopter accidents, the most frequently cited first occurrences were in-flight encounter with weather, in-flight loss of control, and on-ground/water loss of control. For a more detailed itemization of first occurrences, see the table below.

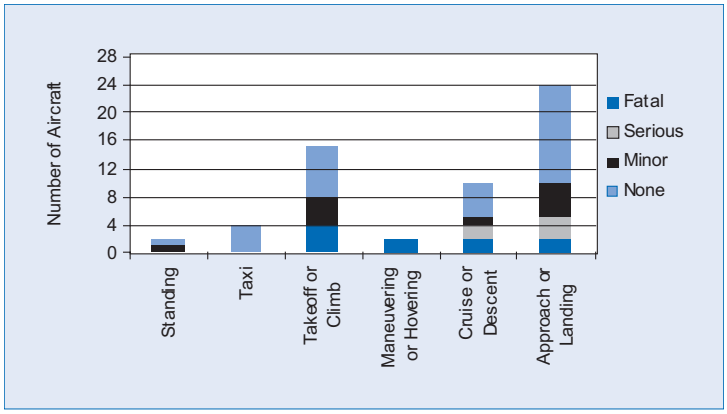
First Occurrences for Nonscheduled Part 135 Airplanes Involved in Accidents in 1999*

	Number of Airplanes	Percent of Airplanes	Number of Helicopters	Percent of Helicopters
In-flight encounter with weather	6	10.5	3	20.0
Loss of engine power (total) - mech failure/malfunction	5	8.8		
On-ground/water collision with object	5	8.8		
Airframe/component/system failure/malfunction	4	7.0		
In-flight collision with terrain/water	4	7.0	1	6.7
Loss of control - in-flight	4	7.0	3	20.0
On-ground/water encounter with terrain/water	4	7.0		
Loss of control - on-ground/water	3	5.3	3	20.0
Loss of engine power	3	5.3	2	13.3
Loss of engine power (partial) - nonmechanical	3	5.3		
Loss of engine power (total) - nonmechanical	3	5.3		
Collision between aircraft (other than midair)	2	3.5		
Overrun	2	3.5		
Dragged wing, rotor, pod, float or tail/skid	1	1.8		
Gear collapsed	1	1.8		
In-flight collision with object	1	1.8	2	13.3
Nose down	1	1.8		
Nose over	1	1.8		
On-ground/water encounter with weather	1	1.8		
Propeller/rotor contact to person	1	1.8		
Undershoot	1	1.8		
Vortex turbulence encountered	1	1.8		
Miscellaneous/other			1	6.7
Total	**57**	**100.0**	**15**	**100.0**

* Occurrence data were available for 72 of 74 aircraft.

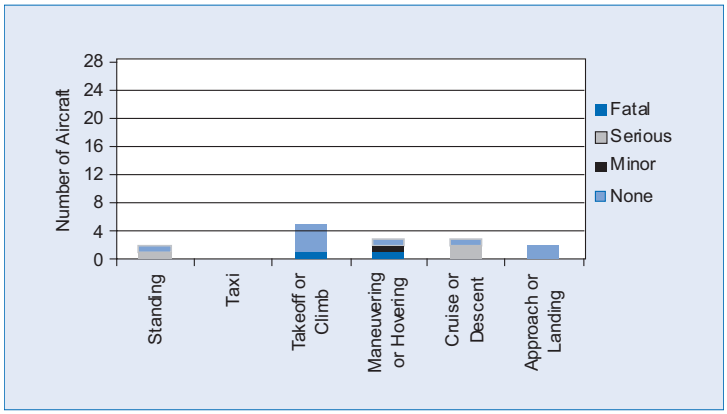
Of the 57 nonscheduled Part 135 airplanes with occurrence data available, the majority of first occurrences happened during approach/landing (42.1%) or during takeoff/climb (26.3%) with a somewhat smaller number (17.5%) during cruise/descent. Of the 15 helicopters involved in accidents, 33.3% crashed during the takeoff/climb phase and the remaining accidents were fairly evenly distributed across all of the phases of flight with the exception of taxiing.

Nonscheduled Part 135 Airplanes Phase of Flight During First Occurrence for 1999*



* Phase of flight data were available for 57 of 59 airplanes.

Nonscheduled Part 135 Helicopters Phase of Flight During First Occurrence for 1999



For both nonscheduled Part 135 airplane and helicopter accidents, the pilot was the most frequently cited cause/factor. For both airplanes and helicopters, the next most frequently cited causes/factors were terrain and weather conditions.

Among the 73 nonscheduled Part 135 accidents that occurred in 1999, 12 accidents resulted in 38 fatalities. In addition to these fatalities, there were 14 serious injuries and 31 minor injuries. Of the 162 passengers involved in accidents, 31.5% received injuries. For flight crewmembers, this rate was slightly higher with 37.8% sustaining some level of injury. However, neither the one cabin crewmember nor the four medical flight workers classified as "other" crewmembers were injured.

Nonscheduled Part 135 Accidents, Top Causes/Factors for 1999*

	Airplanes (percent)	Helicopters (percent)
Personnel		
Pilot	73.7	93.3
Others (not aboard)	21.1	13.3
Others (aboard)	1.8	0.0
Organizations	1.8	13.3
Aircraft		
Power plant/propulsion	12.3	0.0
Fluid	7.0	0.0
Aircraft structure	5.3	0.0
Engine power loss	3.5	0.0
Flight control systems	1.8	0.0
Landing gear	1.8	6.7
Instruments	1.8	0.0
Systems and equipment	1.8	0.0
Aircraft performance	0.0	0.0
Environment		
Terrain condition	24.6	33.3
Weather condition	22.8	46.7
Light condition	7.0	20.0
Object	7.0	0.0
Airport/airways facilities, aids	7.0	0.0

* Cause/factor data were available for 57 of 59 airplanes and for 15 of 15 helicopters.

Injuries by Role for Nonscheduled Part 135 Accidents in 1999

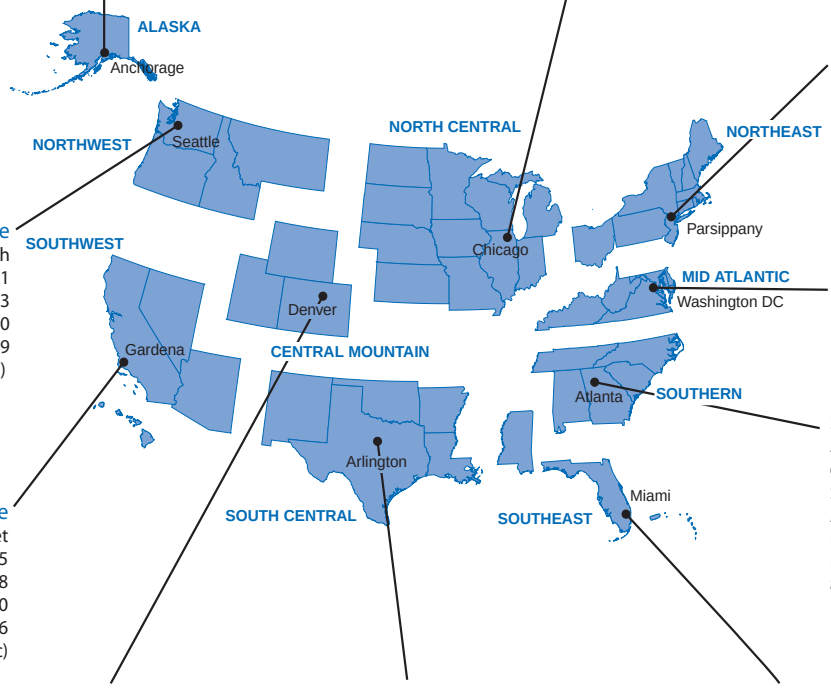
	Fatal	Serious	Minor	None	Total
Flight Crew	13	5	13	51	82
Cabin Crew	0	0	0	1	1
Other Crew	0	0	0	4	4
Passengers	25	8	18	111	162
Total aboard	38	13	31	167	249
On-ground	0	1	0		1
Total	**38**	**14**	**31**	**167**	**250**
Accidents	12	9	11	41	73

The most common engine type among nonscheduled Part 135 accident aircraft was reciprocating with 63.5%. Turboshaft and turboprop engines represented 17.6% and 12.2%, respectively, and there were just a few turbofan and turbojet engines in the set.

Nonscheduled Part 135 Accidents - Engine Type by Aircraft Damage, 1999

	Reciprocating	Turboshaft	Turboprop	Turbojet	Turbofan	Total
Destroyed	7	3	2	0	1	13
Substantial	39	10	6	3	1	59
Minor	1	0	1	0	0	2
None	0	0	0	0	0	0
Total	**47**	**13**	**9**	**3**	**2**	**74**

NTSB Regional Offices for Aviation Accident Investigation



Alaska Regional Office
222 West 7th Avenue
Room 216, Box 11
Anchorage, Alaska 99513
Phone: 907-271-5001
FAX: 907-271-3007
8 a.m.-4:30 p.m (Alaska)

North Central Regional Office
31 West 775 North Avenue
West Chicago, Illinois 60185
Phone: 630-377-8177
FAX: 630-377-8172
7:30 a.m.-4 p.m. (Central)

Northeast Regional Office
2001 Route 46
Suite 504
Parsippany, New Jersey 07054
Phone: 973-334-6420
FAX: 973-334-6759
8:30 a.m.-5 p.m. (Eastern)

Northwest Regional Office
19518 Pacific Highway South
Room 201
Seattle, Washington 98188-5493
Phone: 206-870-2200
FAX: 206-870-2219
8 a.m.-4:30 p.m (Pacific)

Mid-Atlantic Regional Office
490 L'Enfant Plaza, S.W.
Washington, D.C. 20594
Phone: 202-314-6320
FAX: 202-314-6329
8:30 a.m.-5 p.m. (Eastern)

Southern Regional Office
Atlanta Federal Center
60 Forsyth Street, SW
Suite 3M25
Atlanta, Georgia 30303-3104
Phone: 404-562-1666
FAX: 404-562-1674
8 a.m.-4:30 p.m. (Eastern)

Southwest Regional Office
1515 W. 190th Street
Suite 555
Gardena, California 90248
Phone: 310-380-5660
FAX: 310-380-5666
7 a.m.-3:30 p.m. (Pacific)

Central Mountain Regional Office
4760 Oakland Street
Suite 500
Denver, Colorado 80239
Phone: 303-361-0600
FAX: 303-361-0619
7:30 a.m.-4 p.m (Mountain)

South Central Regional Office
624 Six Flags Drive
Suite 150
Arlington, Texas 76011
Phone: 817-652-7800
FAX: 817-652-7803
7:30 a.m.-4 p.m. (Central)

Southeast Regional Office
8405 N.W. 53rd Street
Suite B-103
Miami, Florida 33166
Phone: 305-597-4610
FAX: 305-597-4614
8 a.m.-4:30 p.m. (Eastern)

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1999 Part 121
Accidents

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
January 13, 1999	N785AT	Passenger	New York, NY	American Trans Air	Boeing 727-200	None	Serious	Injury	0	Miscellaneous/Other	Standing
Probable Cause: Inadequate counterbalancing to compensate for the weight of the cargo door.											
January 15, 1999	N300ME	Passenger and Cargo	Plainfield, PA	Midwest Express	Douglas DC-9	None	Serious	Injury	0	Vortex Turbulence Encountered	Descent - Normal
Probable Cause: The wake turbulence from the proceeding Boeing 747.											
January 15, 1999	N373AA	Passenger	London, England	American Airlines	Boeing 767-300	Substantial		Damage	0		
Probable Cause: Not available.											
February 1, 1999	N640AW	Passenger	Las Vegas, NV	America West Airlines	Airbus Industrie A-320-232	None	Serious	Injury	0	Miscellaneous/Other	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The injured passenger's failure to follow the instructions of the cabin attendants.											
February 7, 1999	N586UA	Passenger	Climax, CO	United Air Lines	Boeing 757-222	None	Serious	Injury	0	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The flight's encounter with turbulence.											
February 8, 1999	N148SK	Passenger	Milwaukee, WI	Astral Aviation,	Beech 1900D	Substantial	None	Damage	0	In Flight Collision With Object	Approach
Probable Cause: The in-flight collision with a bird.											
February 8, 1999	N433AA	Passenger	Raleigh, NC	American Airlines	McDonnell Douglas MD-80	None	Serious	Injury	0	In Flight Encounter With Weather	Descent - Normal
Probable Cause: The flight encountered clear air turbulence while descending through 17,000 feet mean sea level (MSL).											
February 22, 1999	N682DA	Passenger and Cargo	Covington, KY	Delta Air Lines	Boeing 757	Substantial	None	Damage	0	In Flight Collision With Object	Takeoff - Roll/Run (Ground Or Water)
Probable Cause: A flock birds were ingested into both engines, resulting in substantial damage to the engines.											
March 1, 1999	N285F	Cargo	Shannon, Ireland	Renown Aviation	Lockheed L-188	Substantial	None	Damage	0		
Probable Cause: Not available.											
March 3, 1999	N343BE	Passenger	Atlantic City, NJ	Business Express	Saab-Scania AB (Saab) 340A	None	Serious	Injury	0	In Flight Encounter With Weather	Descent - Normal
Probable Cause: Unanticipated in-flight turbulence.											
March 4, 1999	N195US	Cargo	Kansas City, MO	USA Jet Airlines	Douglas DC-9-15F	Substantial	None	Damage	0	In Flight Collision With Object	Approach
Probable Cause: Ingestion of birds into both engines, resulting in foreign object damage and the subsequent partial power loss to both engines. A factor relating to this accident was the dark night.											
March 17, 1999	N17321	Passenger	Newark, NJ	Continental Airlines	Boeing 737-300	None	Serious	Injury	0	Miscellaneous/Other	Standing - Engine(S) Not Operating
Probable Cause: The flight attendant's failure to follow cabin door opening procedures.											
April 12, 1999	N347BE	Passenger	Boston, MA	Business Express	Saab-Scania AB (Saab) 340B	Substantial	None	Damage	0	Miscellaneous/Other	Standing - Engine(S) Not Operating
Probable Cause: The belt-loader driver's loss of control of the vehicle, and his failure to follow published procedures for approaching the airplane with the belt-loader.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
April 23, 1999	N719AS	Passenger	Fitiuta, AS	Samoa Aviation,	de Havilland DHC-6-200	Substantial	None	Damage	0	Loss Of Control - On Ground/Water	Landing - Roll
Probable Cause: The mechanical separation of the left engine beta control linkage during landing rollout, which resulted in asymmetrical decelerative action and the pilot's subsequent inability to maintain directional control The separation of the linkage was due to the airline's inadequate inspection and quality assurance procedures. An inoperative windsock pivot point, which resulted in faulty wind direction information to the flight crew was a factor in this accident.											
May 5, 1999	N208AU	Passenger	Chicago, IL	Vanguard Airlines	Boeing 737-222	None	Serious	Injury	0	In Flight Encounter With Weather	Descent
Probable Cause: The flight attendants did not follow the cockpit crews instructions to be seated because of expected turbulence. A factor associated with the accident was the turbulence encountered.											
May 8, 1999	N232AE	Passenger	Jamaica, NY	American Eagle	Saab-Scania AB (Saab) 340B	Substantial	Serious	Serious	0	Overrun	Landing - Roll
Probable Cause: The pilot-in-command's failure to perform a missed approach as required by his company procedures. Factors were the pilot-in-command's improper in-flight decisions, the pilot-in-command's failure to comply with FAA regulations and company procedures, inadequate crew coordination, and fatigue.											
May 25, 1999	N16703	Passenger and Cargo	Newark, NJ	Continental Airlines	Boeing 737	None	Serious	Injury	0	Altitude Deviation,Uncontrolled	Descent - Normal
Probable Cause: In flight encounter with turbulence which caused a flight attendant to fall and break two bones in his right leg.											
May 25, 1999	N72GC	Passenger	Anchorage, AK	Era Aviation	de Havilland DHC-6-300	Substantial	None	Damage	0	In Flight Collision With Object	Approach - Vfr Pattern - Downwind
Probable Cause: An in-flight collision with a bird.											
May 28, 1999	N282SC	Passenger and Cargo	Sterling, VA	Sun Country Airlines	Boeing 727	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - Pushback/Tow
Probable Cause: Inadequate visual lookout by the tug operator. A factor in this accident was inadequate pushback procedures by the airline which failed to provide proper assistance (wing walkers) to the tug operator.											
June 1, 1999	N215AA	Passenger	Little Rock, AR	American Airlines	McDonnell Douglas MD-82	Destroyed	Fatal	Major	11	Loss Of Control - On Ground/Water	Landing - Roll
Probable Cause: The flight crew's failure to discontinue the approach when severe thunderstorms and their associated hazards to flight operations had moved into the airport area and the crew's failure to ensure that the spoilers had extended after touchdown. Contributing to the accident were the flight crew's (1) impaired performance resulting from fatigue and the situational stress associated with the intent to land under the circumstances (2) continuation of the approach to a landing when the company's maximum crosswind component was exceeded, and (3) use of reverse thrust greater than 1.3 engine pressure ratio after landing.											
June 2, 1999	N656DL	Passenger	Phoenix, AZ	Delta Air Lines	Boeing 757-232	Substantial	None	Damage	0	Hard Landing	Landing - Flare/Touchdown
Probable Cause: The pilot's excessive and rapid forward control column movement in response to a bounced landing, which resulted in the hard touchdown of the nose wheel.											
June 9, 1999	N198UA	Passenger	Pacific Ocean	United Airlines	Boeing 747-422	None	Serious	Injury	0	Miscellaneous/Other	Cruise - Normal
Probable Cause: Intentional tampering/altering of a galley lift interlock microswitch by unknown persons.											
June 11, 1999	N781UA	Passenger	Madison, WI	United Air Lines	Boeing 777-222	None	Serious	Injury	0	Altitude Deviation, Uncontrolled	Descent - Normal
Probable Cause: The pilot-in-command's inadequate evaluation of the weather conditions. Factors associated with the accident were the turbulence encountered and the seat belt sign was not illuminated.											
June 25, 1999	N650SW	Passenger	Lafayette, LA	Southwest Airlines	Boeing 737-3H4	None	Serious	Injury	0	In Flight Encounter With Weather	Cruise - Normal
Probable Cause: The pilot's inadvertent flight into an adverse weather condition. A factor was the turbulence.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
June 28, 1999	N420FE	Cargo	Manila, Philippines	Federal Express	Airbus Industrie A310	Substantial	None	Damage	0		
Probable Cause: Not available											
June 30, 1999	N582FE	Cargo	Manila, Philippines	Federal Express	McDonnell Douglas MD-11	Substantial	None	Damage	0		
Probable Cause: Not available											
July 2, 1999	N502ME	Passenger	Milwaukee, WI	Midwest Express	McDonnell Douglas DC-9-32	Substantial	None	Damage	0	On Ground/Water Collision With Object	Standing - Engine(S) Not Operating
Probable Cause: The vehicle driver's inadvertent application of the accelerator pedal while backing towards the aircraft.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
July 8, 1999	N12221	Passenger	Atlantic Ocean	Continental Airlines	Boeing 737-824	Minor	Serious	Injury	0	In Flight Encounter With Weather	Cruise - Normal
Probable Cause: The aircrew's inadvertent encounter with unforecast clear air turbulence.											
July 15, 1999	N80057	Passenger and Cargo	Jamaica, NY	American Airlines	Airbus Industrie A-300-600ER	Substantial	None	Damage	0	Hard Landing	Landing - Flare/Touchdown
Probable Cause: Improper use of the flight controls by the captain trainee, and inadequate supervision by the check airman.											
July 24, 1999	N910AW	Passenger	Phoenix, AZ	America West Airlines	Boeing 757-2G7	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - Pushback/Tow
Probable Cause: The failure of the flight crew and the tug driver to verify that the aircraft was properly configured for pushback. Factors in the accident were the left wing walker's failure to notify the tug driver of his observations that the jet bridge was still in contact with the aircraft, and, self induced pressure on the part of the captain created by a chain of circumstances surrounding the numerous delays											
July 28, 1999	N14451	Passenger	Little Rock, AR	Continental Express	Aerospatiale ATR-42-500	Minor	Fatal	Serious	1	Propeller/Rotor Contact To Person	Standing - Engine(S) Operating
Probable Cause: The station manager's inadvertent encounter with the rotating propeller due to his diverted attention.											
July 29, 1999	N707CK	Cargo	Anchorage, AK	Kitty Hawk International	Boeing 747-269B	Substantial	None	Damage	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Climb - To Cruise
Probable Cause: The failure of a turbine blade, and subsequent penetration of the shroud (containment ring). A factor associated with the accident was the FAA's insufficient design standards/requirements addressed in an FAA Air Worthiness Directive, which called for a strengthened containment ring. The failed containment ring was in compliance with the Air Worthiness Directive											
August 7, 1999	N224SA	Passenger	Ketchikan, AK	Seaborne Aviation	de Havilland DHC 6-300	Minor	None	Damage	0	Collision Between Aircraft (Other Than Midair)	Standing - Engine(S) Operating
Probable Cause: A failure of ground handling personnel to verify a release procedure/directive, and removal of the airplane's tiedown, and subsequent collision with a parked airplane.											
August 7, 1999	N288SA	Passenger	Ketchikan, AK	Seaborne Aviation	de Havilland DHC-6-300	Substantial	None	Damage	0	Collision Between Aircraft (Other Than Midair)	Standing - Engine(S) Not Operating
Probable Cause: A failure of ground handling personnel to verify a release procedure/directive, and removal of a second airplane's tiedown, and subsequent collision from a second airplane.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
August 7, 1999	N68058	Cargo	Memphis, TN	Federal Express	McDonnell Douglas DC-10-10F	Substantial	None	Damage	0	Airframe/Component/System Failure/ Malfunction	Approach - Vfr Pattern - Final Approach
Probable Cause: The inadequate design by the airplane manufacturer for using bolts to secure the inboard trailing edge flap that are susceptible to stress corrosion cracking. Also, the stress corrosion cracking failure of the four H-11 bolts that secure the left inboard trailing edge flap to the outboard hinge which allowed the separation of the flap and vane while on final approach											
August 13, 1999	N282AT	Passenger	Chicago, IL	American Eagle	Aerospatiale ATR-42-300	None	Serious	Injury	0	On Ground/Water Collision With Object	Standing - Engine(S) Operating
Probable Cause: The failure of the ramp service clerk to maintain clearance with the operating propeller. A factor related to the accident the inattentiveness on the part of the clerk.											
September 2, 1999	N371UA	Passenger	Santa Barbara, CA	United Airlines	Boeing 737-322	Minor	Serious	Injury	0	Vortex Turbulence Encountered	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The flight's encounter with wake vortices from a preceding heavy aircraft.											
September 12, 1999	N17356	Passenger	West Palm Beach, FL	Continental Airlines	Boeing B737-300	Substantial	None	Damage	0	Loss Of Engine Power(Partial) - Mech Failure/Malf	Climb
Probable Cause: The fatigue fracture and separation of the high pressure turbine forward rotating air seal due to a manufacturing defect in a bolt hole that was not detected by the engine manufacturer due to inadequate and ineffective inspection techniques. Contributing to the accident was the engine manufacturers failure to provide adequate hole making requirements at the time the forward rotating air seal was manufactured and the engine manufacturers failure at the time of last inspection to require eddy current inspections for the high pressure turbine forward rotating air seal bolt holes											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
September 12, 1999	N388UA	Passenger	Los Angeles, CA	United Airlines	Boeing 737-322	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - Pushback/Tow
Probable Cause: The lavatory service driver's failure to follow established company procedures and directives. A factor in the accident was the airline's use of a one person pushback procedure.											
September 16, 1999	N628AW	Passenger	Beatty, NV	America West Airlines	Airbus Industrie A320-231	None	Serious	Injury	0	In Flight Encounter With Weather	Descent - Normal
Probable Cause: The failure of the injured passengers to remain seated with their seat belts fastened as directed by the captain.											
September 20, 1999	N904AW	Passenger	Agua Caliente, AZ	America West Airlines	Boeing 757-2S7	None	Serious	Injury	0	Airframe/Component/System Failure/ Malfunction	Descent - Normal
Probable Cause: The systemic failure of the airline's maintenance department to identify and correct the long standing history of intermittent faults, nuisance warnings, and erratic behavior in this airplane's GPWS system. Also causal is the airline's failure to perform the service bulletins and service letter upgrades to the system, which would have eliminated or greatly reduced the likelihood of this particular nuisance warning, a condition that was identified and corrected by the manufacturers 11 years prior to the accident, and was the subject of one or more of the SB/SL upgrades											
September 27, 1999	N196DN	Passenger	Atlanta, GA	Delta Airlines	Boeing 767-332	None	Serious	Injury	0	Abrupt Maneuver	Maneuvering (Includes Buzzing)
Probable Cause: FAA approach/departure controller's improper service and failure to coordinate and resolve a conflict between aircraft prior to effecting a frequency change, and the improper application of visual separation rules to a flight in the clouds, resulting the crew being required to make an abrupt maneuver to avoid the traffic, causing serious injury to a flight attendant.											
September 30, 1999	N821UA	Passenger	Sparta, NJ	United Airlines	Airbus Industrie 319 131	None	Serious	Injury	0	In Flight Encounter With Weather	Cruise - Normal
Probable Cause: The airplane's encounter with clear air turbulence.											
October 5, 1999	N606FE	Cargo	Newark, NJ	Federal Express	McDonnell Douglas MD-11F	Substantial	None	Damage	0	Airframe/Component/System Failure/	Landing - Roll
Probable Cause: A divergent, longitudinal oscillation of undetermined origin on the center landing gear, which caused a failure of the center landing gear lower drag brace during landing roll.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Severity	Total Fatalities	First Occurrence	Phase of Flight
October 6, 1999	N818EX	Passenger	Philadelphia, PA	Allegheny Airlines	Boeing - Canada (de Havilland) DHC-8-102	Substantial	None	Damage	0	In Flight Collision With Object	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: An in flight collision with birds.											
October 15, 1999	N627AW	Passenger	Phoenix, AZ	America West Airlines	Airbus Industrie A-320-231	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - Pushback/Tow
Probable Cause: The airline's failure to fully review the obstruction clearances and revise the pushback procedures in an area of the ramp where new construction had impinged on the available ramp space. Also causal was the failure of the tug driver and the wing walkers to maintain adequate communications during the pushback. A factor in the accident was the failure of the airline to follow its own internal decision processes when implementing the procedural change on this ramp.											
October 17, 1999	N581FE	Cargo	Subic Bay, Philippines	Federal Express	McDonnell Douglas MD-11F	Destroyed	Minor	Major	0		
Probable Cause: Not available											
November 5, 1999	N784UA	Passenger and Cargo	London, England	United Airlines	Boeing 777-200	Substantial	None	Damage	0		
November 7, 1999	N602GC	Cargo	Honolulu, HI	Gemini Air Cargo	McDonnell Douglas DC-10-30F	Substantial	None	Damage		Near Collision Between Aircraft	Climb - To Cruise
Probable Cause: The pilot-in-command initiated an evasive maneuver during a near midair collision. The airplane entered a prestall buffet, which resulted in buckling of the elevator skins.											
November 27, 1999	N521DA	Passenger and Cargo	Flushing, NY	Delta Air Lines	Boeing 727-232	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - Pushback/Tow
Probable Cause: The use of a defective tow bar, due to the lack of an adequate inspection by contract personnel, the airlines lack of an adequate preventative maintenance program for the tow bars, and the lack of oversight by the airline on the contract personnel who inspected the tow bar. A factor was the softer than specified shear pins used in the tow bar											
December 13, 1999	N786UA	Passenger and Cargo	London, England	United Air Lines	Boeing 777-222	None	Serious	Injury	0		
Probable Cause: Not available											
December 17, 1999	N995CF	Cargo	Indianapolis, IN	Emery Worldwide	Douglas DC-8-62	Substantial	None	Damage	0	On Ground/Water Collision With Object	Taxi - To Takeoff
Probable Cause: The flight crew misjudged the clearance between their right wing and the radome of the parked aircraft. A factor associated with the accident was the ground handling contractor failed to identify the unsafe/hazardous condition that existed on the congested ramp area.											

1999 Scheduled Part 135 Accidents

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
March 27, 1999	N81844	Passenger and Cargo	Chefornak, AK	Peninsula Airways	Piper PA-32-301	Substantial	None	0	In Flight Collision With Terrain/Water	Landing - Flare/Touchdown
Probable Cause: The pilot's selection of an unsuitable landing site. A factor associated with the accident was rough and uneven terrain.										
April 11, 1999	N59985	Passenger and Cargo	Chevak, AK	Yute Air Alaska	Piper PA-31-350	Substantial	None	0	Overrun	Landing - Roll
Probable Cause: The pilot's inadequate in-flight planning/decision, and his failure to attain the proper touchdown point on the runway. Factors in the accident were a tail wind condition, and the presence of snow and ice on the runway surface.										
April 14, 1999	N73188	Passenger and Cargo	Kotzebue, AK	Village Aviation, Doing Business As Camai Air	Cessna 207A	Destroyed	Fatal	1	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's continued VFR flight into instrument meteorological conditions, spatial disorientation, and an inadvertent stall. Factors in the accident were weather conditions consisting of snow and mist, and flat lighting conditions.										
June 11, 1999	N41078	Passenger and Cargo	Tanana, AK	Larry's Flying Service	Piper PA-31-350	Destroyed	Fatal	1	Loss Of Engine Power	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: Undetermined.										
September 3, 1999	N9166K	Passenger and Cargo	Bettles, AK	Servant Air	Piper PA-32R-300	Destroyed	Fatal	1	In Flight Collision With Terrain/Water	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's continued flight into known adverse weather conditions. Factors in the accident were low ceilings and snow.										
September 5, 1999	N4830S	Passenger	Westerly, RI	New England Airlines	Piper PA-32-260	Substantial	Fatal	3	Loss Of Control - In Flight	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The pilot's loss of control of the airplane during a turn.										
October 11, 1999	N74923	Passenger and Cargo	Soldotna, AK	FS Air Service	Piper PA-31	Substantial	None	0	In Flight Collision With Object	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: An in-flight collision with a bird.										
October 15, 1999	N220CS	Passenger	Gambell, AK	Cape Smythe Air Service	Piper PA-31-T3	Substantial	None	0	In Flight Collision With Object	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: An in-flight collision with a bird.										
October 27, 1999	N207SE	Passenger	Bethel, AK	Hageland Aviation Services	Cessna 207	Substantial	None	0	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's inadequate evaluation of the weather, and his decision to initiate flight into adverse weather conditions. Factors in the accident were adverse weather consisting of low ceilings and icing conditions, inadequate supervision by company management, and airframe icing.										
October 28, 1999	N31606	Passenger	Russian Mission, AK	Bidzy Ta Hot Aana, doing business as Tanana Air Service	Piper PA-32-300	Substantial	None	0	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's continued flight into adverse weather, and an inadvertent stall. Factors in the accident were adverse weather consisting of icing conditions, and airframe icing.										
December 6, 1999	N5187B	Passenger and Cargo	Bethel, AK	Arctic Air Group, Doing Business As Arctic Circle Air Service	Cessna 208B	Substantial	None	0	Forced Landing	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The pilot's inadequate preflight and his failure to remove snow and airframe ice from the airplane.										
December 7, 1999	N1747U	Passenger	Bethel, AK	Grant Aviation	Cessna 207	Destroyed	Fatal	6	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's continued VFR flight into instrument meteorological conditions. Factors associated with the accident were low ceilings, fog, and snow-covered terrain.										

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
December 24, 1999	N1864	Passenger	Bethel, AK	Grant Aviation	Cessna T207A	Substantial	Minor	0	Loss Of Control - In Flight	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The pilot's failure to remove frost from the airplane prior to flight, and an inadvertent stall/mush.										

1999 Nonscheduled Part 135 Accidents

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
January 5, 1999	N6GR	Passenger	Anchorage, AK	Jim Air	Airplane	Piper PA-31-350	Substantial	None	0	On Ground/Water Collision With Object	Taxi - From Landing
Probable Cause: The failure of the driver of a vehicle to maintain an adequate visual lookout.											
January 6, 1999	N50BA	Passenger	Plymouth, IN	Byerly Aviation	Airplane	Rockwell 500-S	Substantial	None	0	Loss Of Control - On Ground/Water	Landing - Roll
Probable Cause: The pilot's failure to maintain directional control of the airplane while landing. Factors associated with the accident were the tailwind condition and the pilot landing in the wrong direction.											
January 10, 1999	N6312H	Mail	Quinhagak, AK	Village Aviation	Airplane	Cessna 207	Substantial	Minor	0	Loss Of Engine Power	Approach
Probable Cause: Loss of engine power due to fracture of the engine crankshaft, and the manufacturer's improper manufacturing procedure during engine assembly. Factors associated with the accident were the manufacturer's inadequate quality control standards, trees, and snow-covered terrain.											
January 12, 1999	N19TA	Cargo	Chevak, AK	Arctic Transportation Services	Airplane	Cessna 207	Substantial	None	0	In Flight Encounter With Weather	Descent - Normal
Probable Cause: The pilot's continued flight into adverse weather conditions. Factors associated with the accident were freezing rain, an accumulation of ice on the wings and ailerons, and diminished directional control.											
January 14, 1999	N882BB	Passenger and Cargo	Youngstown, OH	Hawkeye Charter Service	Airplane	Cessna 421B	Substantial	None	0	On Ground/Water Encounter With Weather	Landing - Roll
Probable Cause: The pilot's failure to maintain aircraft control. A factor was the icy runway.											
January 28, 1999	N130F	Cargo	Chicago, IL	Airnet Systems	Airplane	Gates Learjet 35	Substantial	None	0	Loss Of Control - In Flight	Landing - Flare/Touchdown
Probable Cause: The second pilot's failure to maintain adequate airspeed which resulted in an inadvertent stall mush.											
February 2, 1999	N980FE	Cargo	Cody, WY	Corporate Air	Airplane	Cessna 208B	Substantial	None	0	Nose Down	Taxi - To Takeoff
Probable Cause: The pilot's inability to maintain aircraft control due to unfavorable winds conditions.											
February 11, 1999	N31240	Cargo	Saint Mary's, AK	Alaska Central Express	Airplane	Beech 1900C	Substantial	Serious	0	In Flight Collision With Terrain/Water	Approach - Faf/Outer Marker To Threshold (Ifr)
Probable Cause: The pilot's descent below the minimum descent altitude on the instrument approach. Factors were pilot fatigue resulting from the pilot's rest period being interrupted by scheduling discussions and the night weather conditions of low ceilings and whiteout.											
February 13, 1999	N220HH	Passenger	Hockley, TX	Hermann Hospital Life Flight, doing business as Hermann Life Flight	Helicopter	Eurocopter BK 117 B-1	Substantial	None	0	In Flight Collision With Object	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The pilot's failure to maintain clearance with the power lines. A factor was the sunglare reducing the pilot's visibility.											
February 16, 1999	N711TE	Passenger	Van Nuys, CA	Trans Exec Air Service	Airplane	Grumman G-1159	Substantial	None	0	Overrun	Landing - Roll
Probable Cause: The pilot performed inadequate in flight planning and decided to continue the approach and landing with excessive airspeed. The pilot failed to follow company directives, which required a go around under the encountered flight conditions. This led to a long landing, resulting in an overrun and collision with parked airplanes											
February 17, 1999	N15MA	Cargo	Nassau, Bahamas	Florida Air Cargo	Airplane	Douglas DC-3C	Substantial	None	0	Nsch	
Probable Cause: Not available.											
February 28, 1999	N2313Z	Passenger	Stuart, FL	Stuart Jet Center	Airplane	Piper PA-23-250	Substantial	None	0	In Flight Encounter With Weather	Landing - Flare/Touchdown
Probable Cause: The inadequate touchdown resulting in a hard landing on the nose landing gear and subsequent structural damage.											
March 3, 1999	N756AV	Cargo	Cascade, ID	Arnold Aviation	Airplane	Cessna TU206G	Substantial	None	0	Nose Over	Landing - Roll
Probable Cause: Unsuitable terrain for landing was selected. Snow covered airstrip was a factor.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
March 5, 1999	N151SA	Cargo	Denver, CO	Superior Aviation	Airplane	Swearingen SA226TC	Substantial	None	0	Collision Between Aircraft (Other Than Midair)	Standing - Engine(S) Operating
Probable Cause: The pilot of N328BA's failure to maintain visual lookout while taxiing, causing the subsequent collision with N151SA.											
March 5, 1999	N328BA	Cargo	Denver, CO	Superior Aviation	Airplane	Swearingen SA226TC	Minor	None	0	Collision Between Aircraft	Taxi (Includes Runaway While Hand-Propping)
Probable Cause: The pilot of N328BA's failure to maintain visual lookout while taxiing, causing the subsequent collision with N151SA.											
March 9, 1999	N5454F	Cargo	Richmond, VA	Ram Air Frieght	Airplane	Piper PA-32R-300	Substantial	None	0	In Flight Encounter With Weather	Climb
Probable Cause: The pilot's inadequate preflight planning/preparation which resulted in flight into icing weather conditions. A factor related to the accident was restricted visibility through the icy windshield during landing.											
March 15, 1999	N4127T	Cargo	Broomfield, CO	Star West Aviation	Airplane	Cessna 320D	Substantial	None	0	Loss Of Engine Power(Partial) - Nonmechanical	Cruise - Normal
Probable Cause: A partial loss of power on the left engine for undetermined reasons. A factor was the pilot's failure to maintain directional control of the aircraft during landing flare/touchdown.											
March 17, 1999	N6100R	Passenger	Eugene Is. 193, Gulf of Mexico	Petroleum Helicopters	Helicopter	Eurocopter AS-350-B2	Destroyed	Fatal	2	Loss Of Control - On Ground/Water	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The loss of control as a result of the spring-steel extension becoming entangled with the hatch door handle during takeoff. A contributing factor was the flat design of the spring-steel extension.											
March 17, 1999	N197EH	Passenger	Girdwood, AK	Era Aviation	Helicopter	Eurocopter AS-350-B2	Substantial	None	0	In Flight Encounter With Weather	Landing (Modify With Operational Code 24563, If Touch-&-Go)
Probable Cause: The pilot's misjudged flare while landing. Factors associated with the accident were whiteout conditions, and snow-covered terrain.											
March 30, 1999	N508GP	Passenger	Rogers, AR	Frazier Group	Airplane	Gates Learjet 35A	Substantial	Minor	0	Undershoot	Landing - Flare/Touchdown
Probable Cause: The pilot's failure to maintain the proper descent rate, his failure to attain the proper touchdown point and the fightcrew's delay in taking remedial action. A factor was the downdraft.											
April 1, 1999	N8367F	Passenger	Fairbanks, AK	Chena River Aviation	Helicopter	Robinson R-22	Substantial	None	0	Loss Of Control - In Flight	Maneuvering (Includes Buzzing)
Probable Cause: The failure of the pilot to maintain rotor rpm during a downwind turn. A factor in the accident was the inadequate altitude to recover from the loss of rotor rpm.											
April 5, 1999	N1942H	Cargo	Fairbanks, AK	Bellair	Airplane	Piper PA-32R	Substantial	Minor	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The loss of engine power due to the failure of maintenance personnel to properly torque a connecting rod bolt during an engine overhaul, and the subsequent disconnection of the connecting rod bolt and connecting rod.											
April 5, 1999	N838MA	Passenger and Cargo	Lantana, FL	Carib-Air Cargo	Airplane	de Havilland DHC-6-200	Substantial	Minor	0	Loss Of Engine Power(Partial) - Nonmechanical	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The pilot's failure to secure the engine oil filler cap during the preflight inspection that resulted the subsequent loss of engine power, and his in-flight decision to attempt a single engine go-around with full wing flaps extended.											
April 5, 1999	N255AL	Passenger	Shawnee, OK	Air Flite	Helicopter	Bell 206L-1	Substantial	None	0	Loss Of Engine Power	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The improper flare during an autorotation by the pilot-in-command. A factor was the loss of engine power for an undetermined reason.											
April 6, 1999	N80UL	Passenger and Cargo	Nashville, TN	Paragon Air Express	Airplane	Beech 58	Substantial	Minor	0	Loss Of Control - On Ground/Water	Approach - Vfr Pattern - Final Approach
Probable Cause: The pilot's inflight decision to land on a runway with a strong cross wind, rather then on a runway into the wind. A factor was the strong cross wind conditions.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
April 19, 1999	N414JA	Mail	Kongiganak, AK	Larry's Flying Service	Airplane	Britten-Norman BN-2B-21	Substantial	None	0	On Ground/Water Encounter With Terrain/Water	Landing - Roll
Probable Cause: The deep, water filled hole in the runway.											
April 20, 1999	N744MA	Cargo	Fort Lauderdale, FL	Execstar Aviation	Airplane	Cessna 402B	Substantial	Minor	0	Loss Of Engine Power(Total) - Nonmechanical	Approach
Probable Cause: A loss of engine power due to fuel exhaustion and the pilot in command's failure to ensure that the aircraft had adequate fuel to complete the flight.											
April 27, 1999	N819BW	Passenger and Cargo	Goldsby, OK	Texas Air Charters	Airplane	Cessna 402C	Destroyed	Fatal	1	Airframe/Component/ System Failure/Malfunction	Descent - Normal
Probable Cause: The fatigue failure of the right wing spar as a result of inadequate quality control during manufacture of the spar. A factor was the inadequate inspection of the right wing by maintenance personnel, which failed to detect the crack.											
April 27, 1999	N3125N	Passenger	Healy, AK	Forty Mile Air	Airplane	de Havilland DHC-3	Substantial	None	0	Loss Of Control - On Ground/Water	Landing - Roll
Probable Cause: The pilot's selection of an unsafe/hazardous area for landing. Factors in the accident were the presence of a tail wind, the pilot's inadequate evaluation of the wind conditions, and a narrow airstrip.											
April 27, 1999	N93311	Passenger	Juneau, AK	Ward Air	Airplane	Cessna 185	Substantial	Serious	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Approach - Vfr Pattern - Final Approach
Probable Cause: The failure of the engine driven fuel pump for undetermined reasons. Factors associated with this accident were the low altitude at which the failure occurred resulting in task overload of the pilot, and landing the amphibious airplane in the swampy terrain short of the runway with the wheels extended.											
June 1, 1999	N1929T	Passenger	Glennallen, AK	Josh Johnson, doing business as Alaska Chopper	Helicopter	Robinson R22	Substantial	None	0	Loss Of Control - In Flight	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The pilot's failure to maintain rotor RPM during takeoff. Factors associated with the accident were a downdraft, and uneven terrain.											
June 8, 1999	N440AB	Passenger	Fort Lauderdale, FL	Air Sunshine	Airplane	Cessna 402C	Substantial	None	0	On Ground/Water Collision With Object	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The pilot's decision takeoff with condensation on the cockpit windows which restricted visibility, his improper use of aileron control, improper compensation for winds during takeoff, and his failure to maintain directional control during takeoff, resulting in the aircraft running off the left side of the runway, colliding with a taxiway sign and ditch, and collapsing the landing gear											
June 9, 1999	N265AH	Passenger	Juneau, AK	Era Aviation	Helicopter	Bell 206B	Substantial	Minor	0	In Flight Collision With Terrain/Water	Hover - In Ground Effect
Probable Cause: The pilot's selection of an unsuitable landing/takeoff area, and his failure to maintain clearance from terrain. Factors associated with the accident are the confined/congested landing/takeoff area, and rocks/boulders in the takeoff area.											
June 9, 1999	N6099S	Passenger	Juneau, AK	Coastal Helicopters	Helicopter	Eurocopter AS-350BA	Destroyed	Fatal	7	In Flight Encounter With Weather	Maneuvering (Includes Buzzing)
Probable Cause: The pilot's continued VFR flight into adverse weather, spatial disorientation, and failure to maintain aircraft control. Factors associated with the accident were pressure by the company to continue flights in marginal weather, and the "flat" lighting leading to whiteout conditions. Additional factors were the pilot's lack of instrument experience, lack of total experience, inadequate certification and approval of the operator by the FAA, and the FAA's inadequate surveillance of the emergency instrument procedures in use by the company.											
June 25, 1999	N3019W	Passenger and Cargo	Munson, FL	Aerocenter	Airplane	Beech C90	Destroyed	Fatal	2	In Flight Encounter With Weather	Descent - Normal
Probable Cause: The poor in-flight weather evaluation by the pilot-in-command and his operation of the airplane at an indicated airspeed greater than the design maneuvering speed (Va) in a thunderstorm contrary to the pilot's operating handbook resulting in an in-flight breakup. A contributing factor in the accident was the failure of the pilot to obtain in-flight weather advisories with any air traffic control facility before encountering the											
June 29, 1999	N17915	Cargo	Atlanta, GA	Paragon Air Express	Airplane	Beech BE-58	Destroyed	Fatal	2	Loss Of Engine Power	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The loss of engine power for undetermined reasons, and the pilot's failure to follow emergency procedures that resulted in the uncontrolled collision with trees.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
June 29, 1999	N126KT	Passenger	Talkeetna, AK	K2 Adventures	Airplane	Cessna TU206	Substantial	None	0	Loss Of Engine Power(Total) - Nonmechanical	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot not following emergency procedures, and improper use of the electric fuel boost pump, while attempting to restart the engine in flight. A factor associated with this accident was the inadequate fuel consumption calculations by the pilot.											
July 3, 1999	N3528Y	Passenger and Cargo	Garden City, ID	Salmon Air	Airplane	Piper PA-31-350	Substantial	Minor	0	Loss Of Engine Power(Total) - Nonmechanical	Cruise - Normal
Probable Cause: Loss of engine power due to fuel exhaustion because the pilot failed to refuel the airplane. A ditch in the landing area was a contributing factor in the accident.											
July 8, 1999	N47122	Passenger	Deadhorse, AK	U.S. Bureau Of Land Management	Helicopter	Bell 206B	Substantial	None	0	Miscellaneous/Other	Standing - Starting Engine(S)
Probable Cause: A failure of the pilot-in-command to perform an adequate preflight inspection, and remove a rotor blade tie-down strap.											
July 23, 1999	N621KE	Cargo	Minneapolis, MN	May Air Express	Airplane	Beech G18S	Substantial	None	0	Loss Of Engine Power	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: The premature gear retraction and proper runway alignment not maintained during takeoff by the pilot. An additional cause was the proper descent rate not maintained by the pilot. Contributing factors were the carburetor icing conditions.											
August 2, 1999	N49JT	Passenger	Sand Point, AK	Shumagin Air Service	Airplane	Cessna 180	Substantial	None	0	On Ground/Water Encounter With Terrain/Water	Landing - Flare/Touchdown
Probable Cause: The pilot's selection of unsuitable terrain for landing. A factor in the accident was a large rock.											
August 5, 1999	N4234L	Passenger	Kaunakakai, HI	Paragon Air	Airplane	Partenavia P68C	Minor	Serious	0	Propeller/Rotor Contact To Person	Standing - Engine(S) Operating
Probable Cause: The prospective passenger's intentional act of bypassing proscribed airport procedures for boarding aircraft. A factor was the failure of another operator's ground personnel to comply with ramp access restrictions.											
August 6, 1999	N6687B	Cargo	Clovis, NM	New Mexico Flying Service, doing business as B & M Enterprises	Airplane	Cessna T210M	Destroyed	Fatal	1	Loss Of Control - In Flight	Approach - Vfr Pattern - Final Approach
Probable Cause: The pilot's failure to maintain sufficient airspeed during final approach to landing, resulting in an inadvertent stall. A factor was the high density altitude.											
August 10, 1999	N7739K	Passenger	Council, ID	Baker Aircraft	Airplane	Cessna 180J	Substantial	None	0	Dragged Wing,Rotor,Pod,Float Or Tail/Skid	Landing (Modify With Operational Code 24563, If Touch-&-Go)
Probable Cause: The pilot's inadequate recovery from a bounced landing. Gusting wind conditions and a dirt bank adjacent to the runway edge were factors.											
August 10, 1999	N2785R	Passenger and Cargo	Vermilion 250, Gulf of Mexico	Air Logistics	Helicopter	Mbb BO-105S	Substantial	None	0	Loss Of Control - On Ground/Water	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The failure of the pilot to maintain directional control of the helicopter while attempting to takeoff. A factor was the high wind condition.											
August 19, 1999	N5378V	Passenger	Byron, CA	Auburn Flying Service	Airplane	Cessna T210L	Substantial	None	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Cruise - Normal
Probable Cause: The failure of the operator's maintenance personnel to properly torque the cylinder and engine case through bolts during the replacement of five cylinders, which led to the spinning of the No. 2 main bearing and the resultant oil starvation induced catastrophic internal engine failure.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
August 19, 1999	N640AJ	Cargo	Tampa, FL	Flight Express	Airplane	Cessna 210L	Destroyed	Fatal	1	In Flight Collision With Object	Emergency Descent/Landing (I.E., With Forced Landing, Except After Takeoff Or During Landing Approach)
Probable Cause: The failure of the pilot to follow procedures and directives established by the operator for his failure to fuel the airplane after landing following the first leg. Contributing to the accident was the total loss of engine power due to fuel exhaustion.											
August 20, 1999	N888KA	Passenger and Cargo	Port Alsworth, AK	Ketchum Air Service	Airplane	de Havilland DHC-3T	Substantial	None	0	Overrun	Takeoff - Roll/Run (Ground Or Water)
Probable Cause: The pilot's inadvertent retraction of the trailing edge flaps during the takeoff run.											
August 24, 1999	N6094S	Passenger	Kahului, HI	Sunshine Helicopters	Helicopter	Aerospatiale AS350BA	Substantial	None	0	Loss Of Control - In Flight	Approach - Vfr Pattern - Final Approach
Probable Cause: The pilot's initial misjudgment of the wind speed and his decision to continue a downwind landing approach when his speed and altitude profile was inadequate, and his failure to maintain main rotor rpm, resulting in settling with power and a hard landing.											
August 25, 1999	N930TG	Passenger	Iliamna, AK	Arthur E. Gerken, Doing Business As Iliaska Lodge	Airplane	de Havilland DHC-2	Substantial	None	0	On Ground/Water Encounter With Terrain/Water	Takeoff - Roll/Run (Ground Or Water)
Probable Cause: The pilot's selection of an unsuitable takeoff area, and an inadvertent stall. Factors associated with the accident were large wave/swells, and low light conditions (dawn).											
August 26, 1999	N6610E	Passenger and Cargo	Main Pass 225A, Gulf of Mexico	Petroleum Helicopters	Helicopter	Bell 206-L3	Substantial	Serious	0	Loss Of Control - On Ground/Water	Standing - Engine(S) Operating
Probable Cause: The pilot's failure to maintain directional control of the helicopter. A factor was the tailwind condition.											
September 3, 1999	N800DF	Passenger	Ninilchik, AK	Clearwater Air	Airplane	Cessna 207	Substantial	Minor	0	On Ground/Water Collision With Object	Takeoff - Roll/Run (Ground Or Water)
Probable Cause: The pilot's selection of an unsuitable takeoff area. A factor associated with this accident was the sunglare.											
September 10, 1999	N6007S	Passenger	Juneau, AK	Temsco Helicopters	Helicopter	Eurocopter AS-350B-2	Destroyed	Serious	0	In Flight Encounter With Weather	Descent
Probable Cause: The pilot's continued flight into instrument meteorological conditions (IMC), and inadequate altitude/clearance. Factors associated with the accident were flat light and whiteout conditions, snow, and snow-covered terrain. An additional factor was the FAA's inadequate certification/approval of the operator's training manual, which did not require the operator to provide instrument training or instrument flight proficiency checks to its pilots.											
September 14, 1999	N85LC	Passenger	Delta Junction, AK	Tamarack Air	Airplane	Cessna 185F	Substantial	Minor	0	Airframe/Component/ System Failure/Malfunction	Landing - Roll
Probable Cause: Corrosion and a fatigue failure of the lower end of the landing gear strut. Factors in the accident were the manufacturer's and the FAA's insufficient standards/requirements for life limits and inspection procedures.											
September 19, 1999	N60859	Passenger and Cargo	Pilot Point, AK	C-Air	Airplane	Cessna 185F	Substantial	None	0	In Flight Encounter With Weather	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: The pilot's inadequate compensation for wind conditions. Factors in the accident were the pilot's inadequate evaluation of the weather conditions, a downdraft, and swampy terrain.											
September 25, 1999	N411WL	Passenger	Volcano, HI	Big Island Air	Airplane	Piper PA-31-350	Destroyed	Fatal	10	In Flight Collision With Terrain/Water	Climb
Probable Cause: The pilot's decision to continue visual flight into instrument meteorological conditions (IMC) in an area of cloud-covered mountainous terrain. Contributing to the accident were the pilot's failure to properly navigate and his disregard for standard operating procedures, including flying into IMC while on a visual flight rules flight plan and failure to obtain a current preflight weather briefing											
September 28, 1999	N69945	Passenger	Salisbury, MD	Bay Land Aviation	Airplane	Cessna 310Q	Substantial	Serious	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Approach - Vfr Pattern - Final Approach
Probable Cause: The improper installation of the #2 cylinder that resulted in a fractured crankshaft and a total loss of engine power. Factors in the accident were the premature deployment of the landing gear and flaps by the pilot.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
October 7, 1999	N4762D	Passenger	Bethel, AK	Village Aviation	Airplane	Cessna 172	Substantial	None	0	On Ground/Water Collision With Object	Taxi - From Landing
Probable Cause: The failure of the driver of the forklift to maintain an adequate visual outlook.											
October 7, 1999	N85CG	Passenger	Yakutat, AK	Gulf Air Taxi	Airplane	Cessna A185E	Substantial	None	0	Gear Collapsed	Landing - Roll
Probable Cause: The pilot's selection of an unsuitable landing area. A factor associated with the accident was soft terrain.											
October 14, 1999	N1024B	Cargo	North Las Vegas, NV	Ameriflight	Airplane	Piper PA-31-350	Destroyed	Fatal	1	In Flight Collision With Terrain/Water	Climb - To Cruise
Probable Cause: The failure of the pilot-in-command to maintain separation from terrain while operating under visual flight rules. Contributing factors were the improper issuance of a suggested heading by air traffic contro personnel, inadequate flight progress monitoring by radar departure control personnel, and failure of the radar controller to identify a hazardous condition and issue a safety alert											
October 25, 1999	N47BA	Passenger	Aberdeen, SD	Sunjet Aviation	Airplane	Learjet 35	Destroyed	Fatal	6	Airframe/Component/ System Failure/Malfunction	Climb - To Cruise
Probable Cause: Incapacitation of the flight crewmembers as a result of their failure to receive supplemental oxygen following a loss of cabin pressurization, for undetermined reasons.											
October 31, 1999	N902CT	Passenger	Challis, ID	Stanley Air Taxi	Airplane	Cessna U206F	Substantial	Fatal	4	In Flight Collision With Terrain/Water	Maneuvering (Includes Buzzing)
Probable Cause: Aircraft control was not maintained. The pilot's improper decision to abort the landing and flight into a box canyon were factors.											
November 1, 1999	N511AR	Passenger	Binghampton, NY	Twin Cities Air Service	Airplane	Cessna T303	Substantial	Serious	0	Loss Of Engine Power(Total) - Mech Failure/Malf	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot's improper in-flight decision to descend below the decision height without the runway environment in sight, and his failure to execute a missed approach. A factor in the accident was the failed crankshaft.											
November 12, 1999	N1195L	Passenger	Van Nuys, CA	D&S Aviation	Airplane	American General Aircraft AG5B	Substantial	None	0	Vortex Turbulence Encountered	Approach - Vfr Pattern - Downwind
Probable Cause: The pilot's encounter with unknown and unanticipated wake turbulence from a heavy transport aircraft, which was landing at another airport. A factor in the accident was the tower controller's failure to repeat a previously broadcast wake turbulence cautionary advisory when the aircraft later checked in on tower frequency											
November 16, 1999	N9933M	Cargo	Dillingham, AK	Yute Air Alaska	Airplane	Cessna 207A	Substantial	Minor	0	Loss Of Control - In Flight	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probable Cause: Failure of the pilot to remove frost from the wings prior to flight, and the resulting inadvertent stall/mush.											
November 17, 1999	N519EH	Passenger	Neihart, MT	Omniflight Helicopters	Helicopter	Bell 206L-1	Substantial	None	0	In Flight Collision With Object	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
Probable Cause: Clearance from an object was not maintained. Gusting wind conditions was a factor.											
November 27, 1999	N216SA	Cargo	Boise, ID	Smith Air	Airplane	Dassault DA-20	Substantial	None	0	Airframe/Component/ System Failure/Malfunction	Approach - Vfr Pattern - Final Approach
Probable Cause: Failure of the forward gear door lock pin. An inoperative landing gear door and inadequate maintenance inspection of the aircraft were factors.											
December 5, 1999	N600CK	Passenger and Cargo	Ship Shoal 225, Gulf of Mexico	Evergreen Helicopters, Intl.	Helicopter	Bell 206L-1	Substantial	Serious	0	Loss Of Engine Power	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The loss of power for undetermined reasons. A factor was the rough water condition.											

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
December 8, 1999	N2179S	Cargo	Elida, NM	New Mexico Flying Service, doing business as B&M Enterprises	Airplane	Cessna T210L	Destroyed	Fatal	1	Loss Of Control - In Flight	Maneuvering - Turn To Reverse Direction
Probable Cause: The pilot's failure to maintain aircraft control for reasons undetermined. Factors were icing conditions and instrument failure, as reported by the pilot.											
December 10, 1999	N3912C	Passenger	Gillette, WY	Flight Line Aviation	Airplane	Cessna 421C	Substantial	None	0	On Ground/Water Collision With Object	Landing - Roll
Probable Cause: The collision with a deer on the runway during a night landing. A factor was the dark night.											
December 10, 1999	N27181	Cargo	Scottsdale, AZ	Union Flights Inc, doing business as Union Flights	Airplane	Piper PA-31-350	Substantial	None	0	Loss Of Engine Power(Partial) - Nonmechanical	Descent - Normal
Probable Cause: The pilot's failure to follow the manufacturer's published emergency procedures for engine loss of power resulting in a forced landing in an open construction area where the airplane collided with a berm. A related factor was the loss of engine power in the left engine due to fuel starvation.											
December 23, 1999	N1315A	Passenger and Cargo	Adjuntas, Puerto Rico	M&N Aviation	Airplane	Cessna 208B	Destroyed	Serious	0	In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
Probable Cause: The pilot continued flight into adverse weather conditions that included low ceiling and turbulence. Factors to the accident were trees.											
December 23, 1999	N70021	Passenger	Chenega Bay, AK	Dennis Perry, doing business as Bear Lake Air Service	Airplane	Cessna 185	Substantial	None	0	On Ground/Water Encounter With Terrain/Water	Takeoff - Roll/Run (Ground Or Water)
Probable Cause: The pilot's selection of an unsuitable takeoff area during the incoming tide. Factors associated with the accident were the incoming tide wave, and the pressure induced by the delays encountered picking up the passengers.											
December 31, 1999	N491BB	Passenger	St. Barthelemy	Bohlke International Airways	Airplane	Beech 99A	Substantial	None	0		

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