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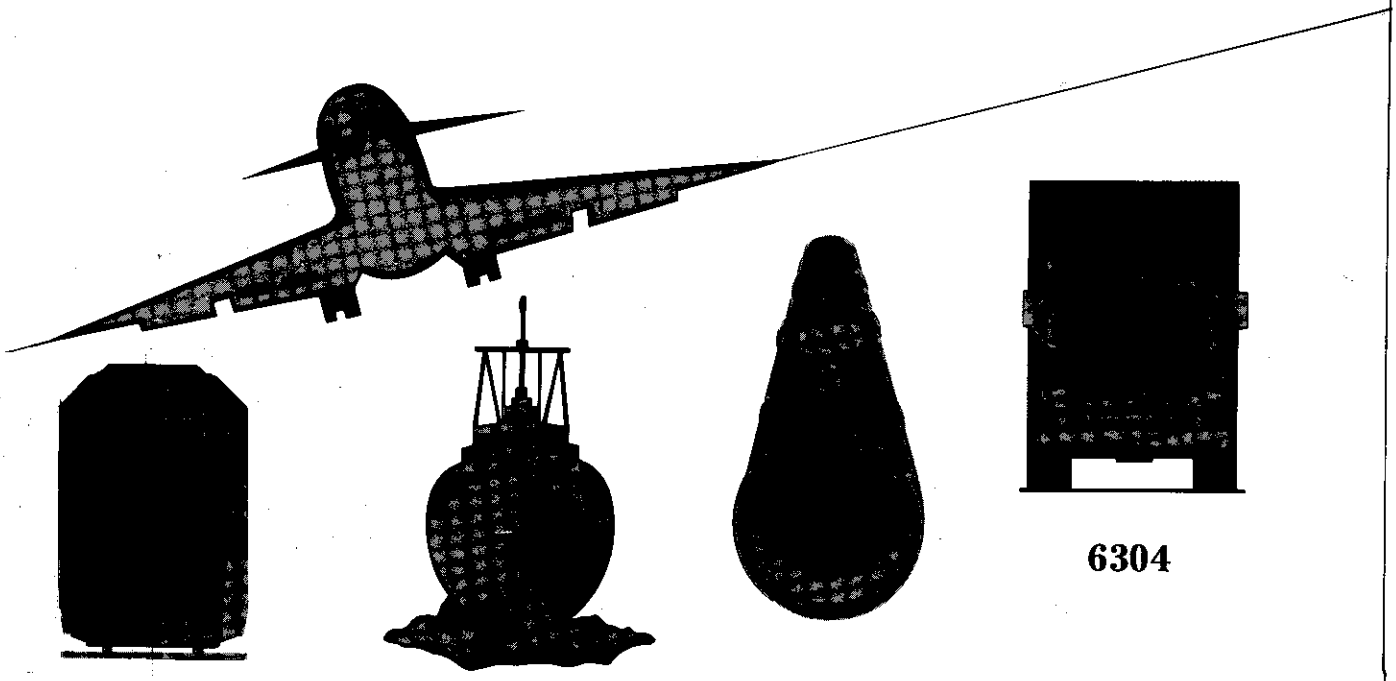
# ANNUAL REVIEW OF AIRCRAFT ACCIDENT DATA

## U.S. GENERAL AVIATION
## CALENDAR YEAR 1991



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16. Abstract

This report presents a statistical compilation and review of general aviation accidents which occurred in 1991 in the United States, its territories and possessions, and in international waters. The accidents reported are all those involving U.S. registered aircraft not conducting operations under 14 CFR 121, 14 CFR 125, 14 CFR 127, or 14 CFR 135.

This report is divided into five sections: All Accidents; Fatal Accidents; Serious Injury Accidents; Property Damage Accidents and Midair Collision Accidents. Several tables present accident parameters for 1991 accidents only, and each section includes tabulations which present comparative statistics for 1991 and for the five-year period 1986-1990.

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## INTRODUCTION

A total of 2,203 U.S. registered general aviation aircraft were involved in 2,170 accidents during calendar year 1991, including 431 accidents that resulted in fatal injuries.[1] This report presents a statistical review of these accidents, all involving U.S. registered aircraft that were **not** conducting air carrier revenue operations under Title 14 Code of Federal Regulations (CFR)Parts 121, 125, 127, or 135.

### General Aviation Accident Trends

Total general aviation accidents decreased by about 2 percent from the 2,214 accidents reported in 1990, continuing a long term downward trend that has been observed since 1975, when commuter and air taxi (operations covered by 14 CFR Part 135) were distinguished from general aviation accidents. The overall accident rate increased very slightly between 1990 and 1991, from 7.76 to 7.96 accidents per 100,000 hours flown. The overall accident rate has otherwise shown a steady decline over the past 16 years. The number of fatal general aviation accidents also reached a new low of 431 accidents in 1991, although the number killed increased to 781 from the 766 who perished in 1990. The fatal accident rate (1.58 fatal accidents per 100,000 hours flown) was slightly higher than the 1.55 reported for 1990.

### Types of Aircraft

Single reciprocating engine, fixed wing aircraft accounted for more than 80 percent of all of the general aviation accidents that occurred in calendar year 1991; with a total of 1747 accidents, 328 fatal accidents, and 559 fatalities, culminating in an accident rate of 8.76 and a fatal accident rate of 1.64 per 100,000 hours flown. In contrast, there were 156 accidents, 49 fatal accidents, and 108 fatalities involving multiple reciprocating engine, fixed wing aircraft. Turboprop aircraft were involved in 36 general aviation accidents in 1991, 12 of which were fatal accidents that resulted in 22 fatalities. Turbojet aircraft were involved in 10 general aviation accidents, 7 of which were fatal accidents that resulted in 32 fatalities.

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[1]A collision between aircraft is counted as one accident for the purpose of this report. There were 19 accidents in which two general aviation aircraft collided in the air and 14 on the ground.

By far the highest accident rates (25 accidents and 3.80 fatal accidents per 100,000 hours flown) occurred in reciprocating engine rotorcraft. This aircraft type accounted for a total of 125 accidents and 19 fatal accidents with 23 fatalities during 1991. In contrast, turbine powered rotorcraft were involved in 41 accidents (2.56 per 100,000 hours flown) and 10 fatal accidents (0.63 per 100,000 hours flown) that accounted for 17 fatalities.

**Purpose of Flight**

Most general aviation accidents in 1991 were associated with personal flying. This purpose for flying was cited in 1,375 accidents and 300 fatal accidents that resulted in 543 fatalities. Unfortunately, exposure data (number of flying hours) do not reliably distinguish between personal and business flying; consequently, a valid accident rate can not be calculated solely for personal flying. Business flying was cited for 148 accidents and 49 fatal accidents, with 84 fatalities. The combined personal/business accident rate was 11.01 accidents per 100,000 hours flown, and the fatal accident rate was 2.52 per 100,000 hours flown. Instructional flying accounted for 339 accidents (5.52 accidents per 100,000 hours flown), 31 fatal accidents (0.50 per 100,000 hours flown) and 52 fatalities. Aerial application accounted for 158 accidents (8.27 per 100,000 hours), 13 fatal accidents (0.68 per 100,000 hours) and 12 fatalities.

**Phase of Flight and Type of Occurrence**

More than 34 percent of the aircraft involved in accidents were on approach or landing when the accident sequence of events was initiated. In about 22 percent of the cases, the aircraft were taking off. Cruise (17 percent) and maneuvering (15 percent) were the other main phases of flight associated with calendar year 1991 accidents. In fatal accidents, on the other hand, maneuvering (nearly 27 percent) and cruise (over 21 percent) were the most frequently cited accident phases of flight. Approach and landing accounted for 18 percent of the fatal accidents, while slightly more than 17 percent of the fatal crashes occurred on takeoff.

Safety Board investigations of aircraft accidents identify one or more occurrences that describe the accident sequence of events. The first occurrence is the event that initiates the accident sequence. Loss of control, either in flight (by 15 percent of the accident-involved pilots) or on the ground (by 10 percent of the pilots) was a prevalent

first occurrence for all accidents. Partial or total loss of engine power for mechanical or nonmechanical reasons was reported as a first occurrence for nearly 29 percent of the accident-involved aircraft. Collisions were cited in more than 18 percent of the accidents, although mid-air collisions accounted for fewer than 2 percent of the accident-involved aircraft. Loss of control in the air was cited as a first occurrence in over 28 percent of the fatal accident-involved aircraft, and collisions were cited in 27 percent of the fatal crashes. In-flight encounters with weather were cited as the first occurrence in over 12 percent of the fatal accident flights.

**Accident Causes**

Actions (or inaction) of the pilot were cited as a cause or contributing factor in more than 80 percent of all accidents and in more than 90 percent of the fatal general aviation accidents. Deficiencies or defects in the propulsion system or controls were cited as causes or contributing factors in 21 percent of all accidents and 11.5 percent of the fatal accidents. Weather was cited as a cause or factor in nearly 19 percent of all accidents and more than 23 percent of the fatal accidents. Terrain or runway conditions were also reported as causes or factors in a large number of accidents (19 percent) and fatal accidents (12 percent).

Multiple causes and factors are frequently cited in general aviation accident investigations; thus, the combined influence of more than one factor is often identified in the analysis of the causes of general aviation accidents.

**Organization of Tabular Presentations**

The accident data upon which this review is based were extracted from the Safety Board's automated Aviation Accident Data System. Flight hours used as exposure measures to compute accident rates were provided by the Federal Aviation Administration of the U.S. Department of Transportation.

The review is divided into five sections. The first section presents a wide range of information on all general aviation accidents, including historical comparison data from the past 10 years. The four remaining sections contain information on fatal accidents, serious injury accidents, property damage accidents, and mid-air collisions, respectively.

Tables that list type of occurrence or phases of operation are based on the first occurrence in the accident sequence. Appendix A provides an explanation of terms used in this report. Appendix B contains a tabulation of cause and factor assignments for all 1991 accidents. Appendix C contains NTSB Form 6120.4 (Factual Aviation Accident/Incident Report Form), the source of data upon which this review is based.

Table 1 - SUMMARY OF LOSSES
ALL OPERATIONS
1987 - 1991

| | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|
| **Accidents** | | | | | |
| Fatal | 447 | 460 | 431 | 442 | 431 |
| Involved Serious Injury | 290 | 296 | 245 | 242 | 262 |
| Involved Minor Injury | 361 | 392 | 365 | 333 | 352 |
| Involved No Injury | 1396 | 1238 | 1189 | 1197 | 1125 |
| Total | 2494 | 2386 | 2230 | 2214 | 2170 |
| **Fatalities** | | | | | |
| Passenger | 353 | 315 | 312 | 303 | 312 |
| Crew | 470 | 475 | 453 | 458 | 455 |
| Other Persons | 15 | 10 | 3 | 5 | 14 |
| Total | 838 | 800 | 750 | 766 | 781 |
| **Aircraft Damage*** | | | | | |
| Destroyed | 689 | 683 | 615 | 613 | 589 |
| Substantial | 1798 | 1703 | 1617 | 1595 | 1581 |
| Minor | 22 | 17 | 14 | 14 | 17 |
| None | 12 | 12 | 12 | 18 | 16 |
| Total | 2521 | 2415 | 2258 | 2240 | 2203 |

*Number of General Aviation Aircraft

Table 2 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES ABOARD, AND RATES
BY TYPE OF AIRCRAFT AND BY KIND OF FLYING
ALL OPERATIONS
1991

| Type of Aircraft | Accidents | Fatal Accidents | Fatalities Aboard | Accident Rate per 100,000 Aircraft Hours Flown | |
|---|---|---|---|---|---|
| | | | | Total | Fatal |
| Fixed Wing | 1944 | 395 | 721 | 7.86 | 1.59 |
| Single Recip. Engine | 1747 | 328 | 559 | 8.76 | 1.64 |
| Multiple Recip. Engine | 156 | 49 | 108 | 5.38 | 1.69 |
| Turboprop | 36 | 12 | 22 | 4.00 | 1.33 |
| Turbojet | 10 | 7 | 32 | 1.00 | 0.70 |
| Rotorcraft | 166 | 29 | 40 | 8.30 | 1.45 |
| Recip. Engine(s) | 125 | 19 | 23 | 25.00 | 3.80 |
| Turbine Powered | 41 | 10 | 17 | 2.56 | 0.63 |
| Gliders | 42 | 5 | 5 | N/A | N/A |
| Balloons | 16 | 2 | 0 | N/A | N/A |
| Kind of Flying | | | | | |
| Personal | 1375 | 300 | 543 | 11.01* | 2.52* |
| Business | 148 | 49 | 84 | | |
| Corporate/Executive | 11 | 4 | 17 | 0.42 | 0.15 |
| Aerial Application | 158 | 13 | 12 | 8.27 | 0.68 |
| Instructional | 339 | 31 | 52 | 5.52 | 0.50 |
| All Aircraft | 2170 | 431 | 767 | 7.96 | 1.58 |

* The accident rate per 100,000 flying hours is presented for the combination of personal flying and business flying and not for each category separately. The NTSB has previously stated its objections to presenting separate rates until exposure data are available which depict a more credible division of flying hours between the two categories.

Table 3 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL OPERATIONS
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 3233 | 591 | 1187 | 1170 | 29,640,000 | 10.90 | 1.99 |
| 1983 | 3077 | 556 | 1069 | 1062 | 28,673,000 | 10.73 | 1.94 |
| 1984 | 3016 | 545 | 1042 | 1021 | 29,099,000 | 10.35 | 1.87 |
| 1985 | 2738 | 498 | 955 | 944 | 28,322,000 | 9.66 | 1.75 |
| 1986 | 2582 | 474 | 967 | 878 | 27,073,000 | 9.54 | 1.75 |
| 1987 | 2494 | 447 | 838 | 823 | 26,972,000 | 9.24 | 1.65 |
| 1988 | 2386 | 460 | 800 | 792 | 27,446,000 | 8.69 | 1.68 |
| 1989 | 2230 | 431 | 768 | 765 | 27,920,000 | 7.97 | 1.53 |
| 1990 | 2214 | 442 | 766 | 761 | 28,510,000 | 7.76 | 1.55 |
| 1991 | 2170 | 431 | 781 | 767 | 27,226,000 | 7.96 | 1.58 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (3), 1983 (1), 1984 (3), 1985 (3), 1987 (1), 1988 (1), 1989 (5), 1990 (1), 1991(3)
Fatal - 1984 (2), 1985 (2), 1987 (1), 1989 (4), 1991 (2)

Figure 1 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL OPERATIONS

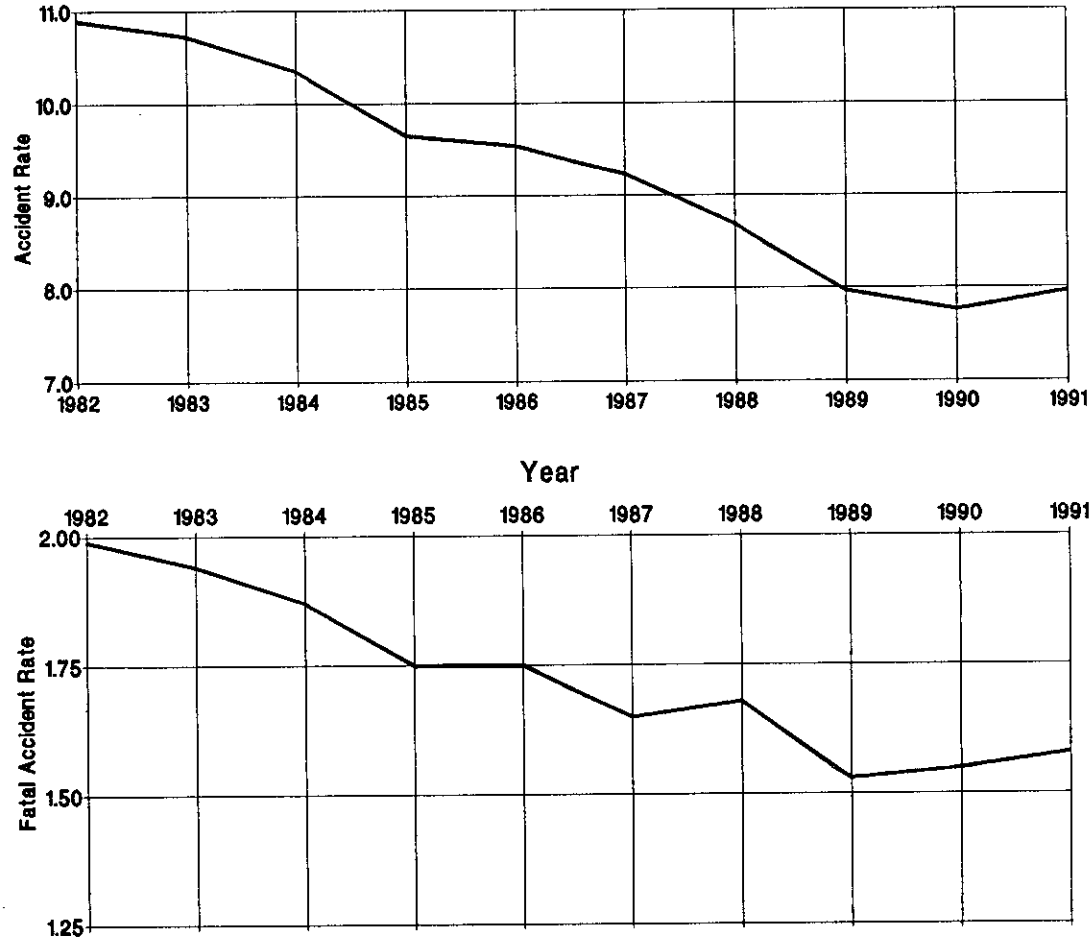

Table 4 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL FIXED WING AIRCRAFT
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 2886 | 540 | 1106 | 1095 | 27,800,000 | 10.37 | 1.94 |
| 1983 | 2735 | 505 | 997 | 992 | 26,800,000 | 10.20 | 1.88 |
| 1984 | 2702 | 498 | 972 | 953 | 27,400,000 | 9.85 | 1.81 |
| 1985 | 2465 | 455 | 897 | 888 | 26,300,000 | 9.36 | 1.72 |
| 1986 | 2301 | 427 | 903 | 807 | 25,100,000 | 9.17 | 1.70 |
| 1987 | 2248 | 412 | 787 | 771 | 25,200,000 | 8.92 | 1.63 |
| 1988 | 2110 | 419 | 745 | 737 | 25,000,000 | 8.44 | 1.68 |
| 1989 | 1998 | 396 | 718 | 714 | 25,900,000 | 7.69 | 1.51 |
| 1990 | 1954 | 408 | 725 | 721 | 26,600,000 | 7.34 | 1.53 |
| 1991 | 1944 | 395 | 728 | 721 | 24,700,000 | 7.86 | 1.59 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (2), 1983 (1), 1984 (3), 1985 (3), 1987 (1), 1988 (1), 1989 (5), 1990 (1), 1991(3)
Fatal - 1984 (2), 1985 (2), 1987 (1), 1989 (4), 1991 (2)

Figure 2 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL FIXED WING AIRCRAFT

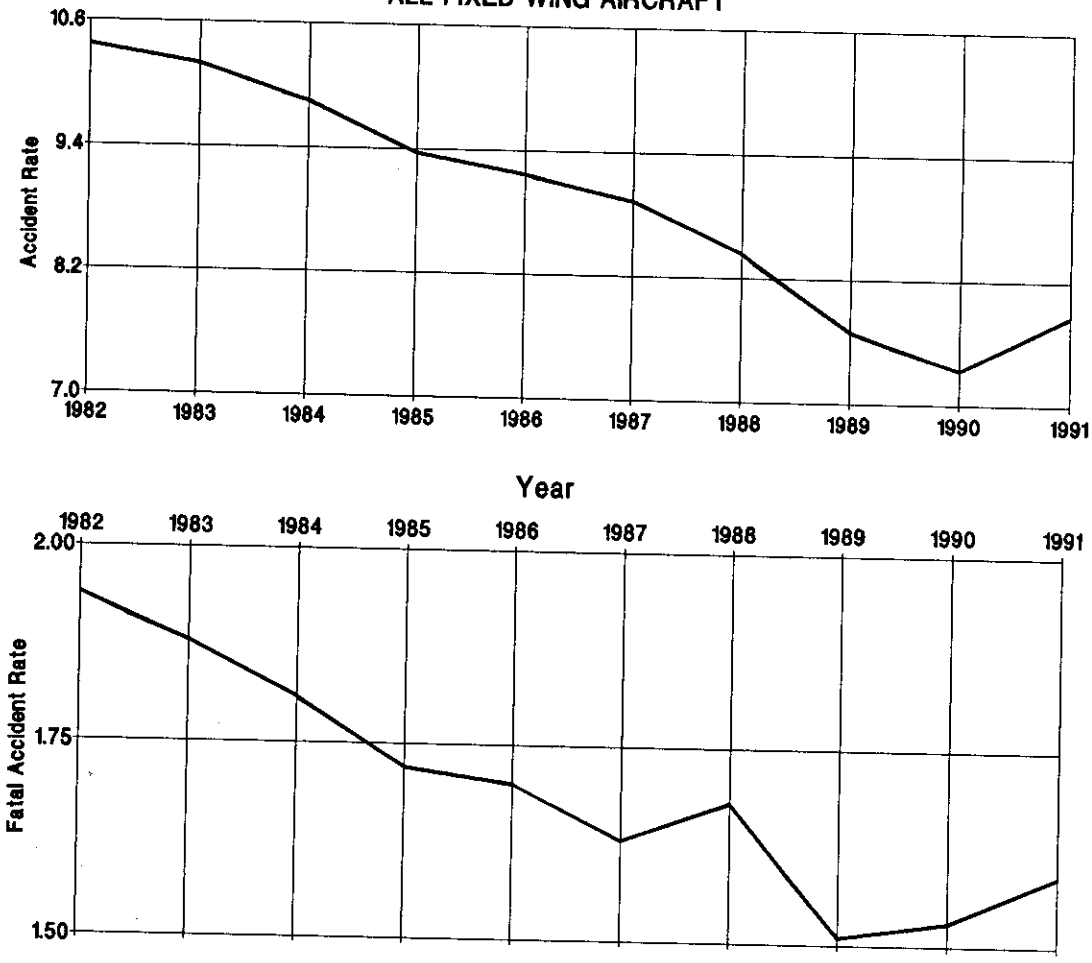

Table 5 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
FIXED WING AIRCRAFT - SINGLE RECIPROCATING ENGINE
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 2459 | 456 | 863 | 848 | 21,500,000 | 11.43 | 2.12 |
| 1983 | 2449 | 421 | 780 | 772 | 20,500,000 | 11.94 | 2.05 |
| 1984 | 2395 | 406 | 767 | 750 | 21,100,000 | 11.34 | 1.91 |
| 1985 | 2180 | 368 | 677 | 667 | 20,300,000 | 10.73 | 1.81 |
| 1986 | 2061 | 359 | 715 | 625 | 19,300,000 | 10.68 | 1.86 |
| 1987 | 2017 | 348 | 632 | 614 | 19,600,000 | 10.29 | 1.77 |
| 1988 | 1932 | 343 | 594 | 589 | 19,600,000 | 9.85 | 1.75 |
| 1989 | 1812 | 339 | 592 | 586 | 19,900,000 | 9.09 | 1.68 |
| 1990 | 1755 | 351 | 599 | 594 | 21,300,000 | 8.23 | 1.65 |
| 1991 | 1747 | 328 | 566 | 559 | 19,900,000 | 8.76 | 1.64 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1), 1983 (1), 1984 (3), 1985 (2), 1987 (1), 1988 (1), 1989 (4), 1990 (1), 1991(3)
Fatal - 1984 (2), 1985 (1), 1987 (1), 1989 (4), 1991 (2)

**Figure 3 - ACCIDENTS PER 100,000 HOURS FLOWN**
**FIXED WING AIRCRAFT - SINGLE RECIPROCATING ENGINE**

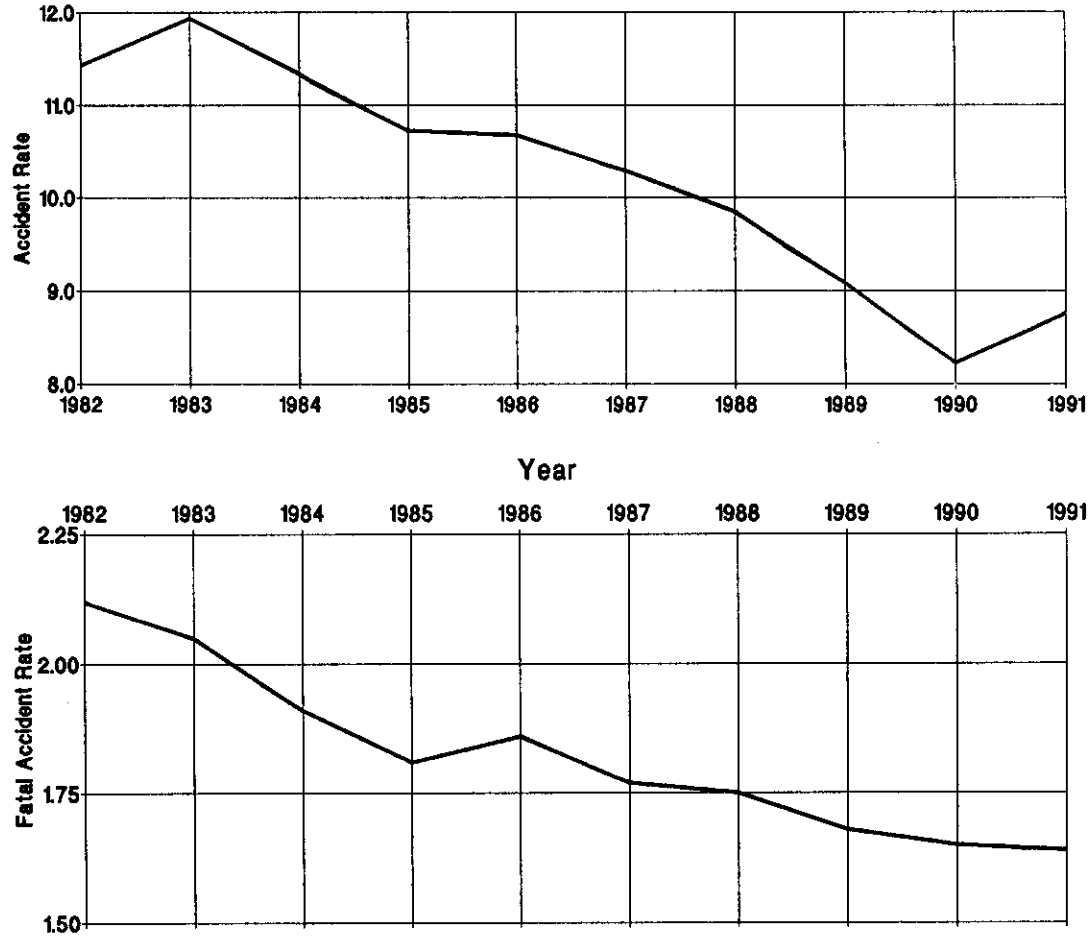

Table 6 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
FIXED WING AIRCRAFT - MULTIPLE RECIPROCATING ENGINE
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 343 | 88 | 254 | 247 | 3,800,000 | 9.00 | 2.32 |
| 1983 | 244 | 74 | 193 | 188 | 3,500,000 | 6.97 | 2.11 |
| 1984 | 259 | 76 | 168 | 166 | 3,600,000 | 7.19 | 2.11 |
| 1985 | 230 | 68 | 164 | 160 | 3,300,000 | 6.94 | 2.03 |
| 1986 | 190 | 54 | 122 | 121 | 3,200,000 | 5.94 | 1.69 |
| 1987 | 194 | 51 | 124 | 118 | 3,100,000 | 6.26 | 1.65 |
| 1988 | 151 | 63 | 124 | 119 | 2,700,000 | 5.59 | 2.33 |
| 1989 | 145 | 42 | 91 | 90 | 3,000,000 | 4.80 | 1.40 |
| 1990 | 144 | 35 | 78 | 77 | 2,800,000 | 5.14 | 1.25 |
| 1991 | 156 | 49 | 110 | 108 | 2,900,000 | 5.38 | 1.69 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1), 1985 (1), 1989 (1)
Fatal - 1985 (1)

Figure 4 - ACCIDENTS PER 100,000 HOURS FLOWN
FIXED WING AIRCRAFT - MULTIPLE RECIPROCATING ENGINE

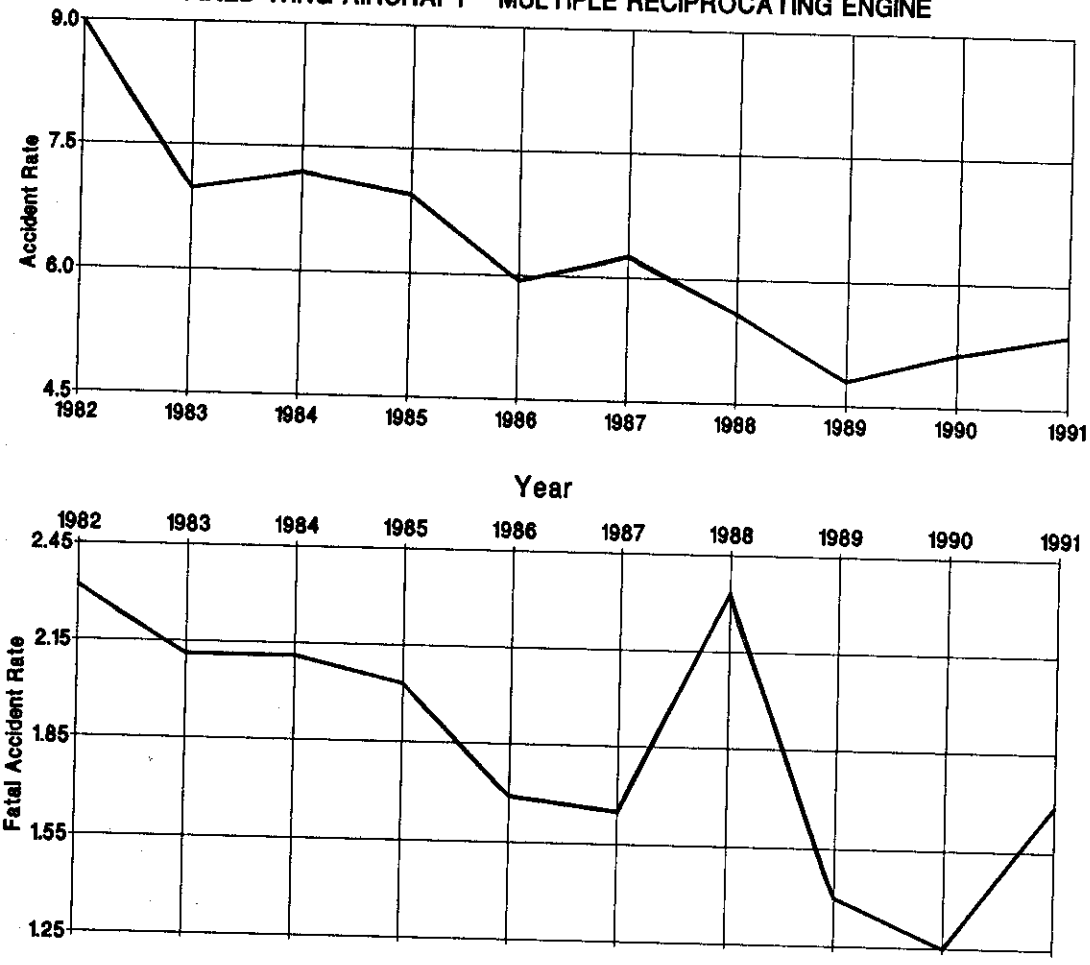

Table 7 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
FIXED WING AIRCRAFT - TURBOPROP
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000 Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 37 | 9 | 37 | 33 | 1,400,000 | 2.64 | 0.64 |
| 1983 | 33 | 11 | 27 | 26 | 1,400,000 | 2.36 | 0.79 |
| 1984 | 38 | 11 | 22 | 22 | 1,600,000 | 2.38 | 0.69 |
| 1985 | 46 | 17 | 55 | 51 | 1,418,000 | 3.24 | 1.20 |
| 1986 | 31 | 12 | 57 | 51 | 1,300,000 | 2.38 | 0.92 |
| 1987 | 33 | 10 | 28 | 27 | 1,300,000 | 2.54 | 0.77 |
| 1988 | 24 | 10 | 19 | 19 | 1,400,000 | 1.71 | 0.71 |
| 1989 | 35 | 15 | 37 | 34 | 1,600,000 | 2.19 | 0.94 |
| 1990 | 38 | 13 | 29 | 28 | 1,200,000 | 3.17 | 1.08 |
| 1991 | 36 | 12 | 23 | 22 | 900,000 | 4.00 | 1.33 |

Figure 5 - ACCIDENTS PER 100,000 HOURS FLOWN
FIXED WING AIRCRAFT - TURBOPROP

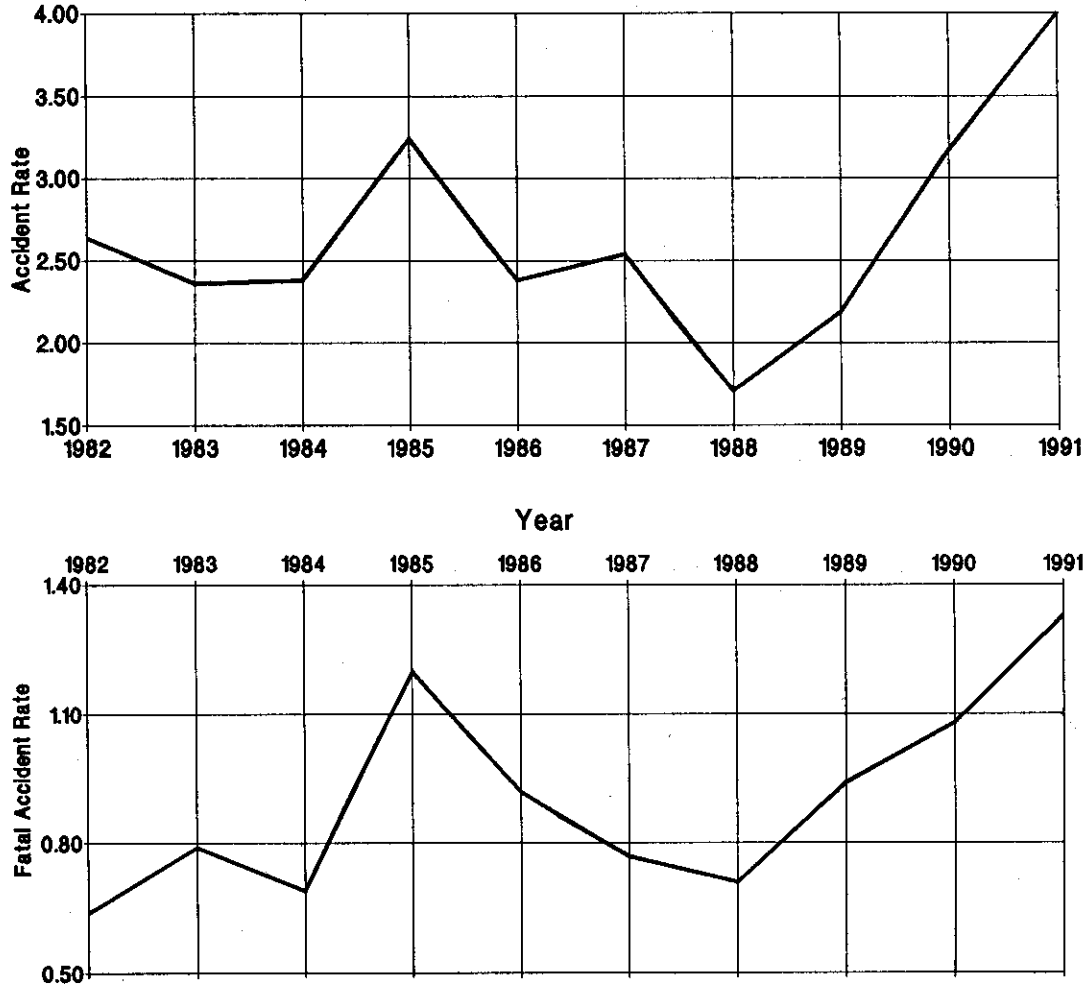

Table 8 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
FIXED WING AIRCRAFT - TURBOJET
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000 Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 9 | 1 | 4 | 4 | 1,300,000 | 0.69 | 0.08 |
| 1983 | 13 | 3 | 8 | 6 | 1,400,000 | 0.93 | 0.21 |
| 1984 | 13 | 5 | 15 | 15 | 1,200,000 | 1.08 | 0.42 |
| 1985 | 16 | 5 | 15 | 10 | 1,400,000 | 1.14 | 0.36 |
| 1986 | 13 | 3 | 10 | 10 | 1,400,000 | 0.93 | 0.21 |
| 1987 | 10 | 6 | 12 | 12 | 1,200,000 | 0.83 | 0.50 |
| 1988 | 7 | 4 | 10 | 10 | 1,400,000 | 0.50 | 0.29 |
| 1989 | 9 | 2 | 4 | 4 | 1,400,000 | 0.64 | 0.14 |
| 1990 | 18 | 10 | 22 | 22 | 1,300,000 | 1.38 | 0.77 |
| 1991 | 10 | 7 | 32 | 32 | 1,000,000 | 1.00 | 0.70 |

Figure 6 - ACCIDENTS PER 100,000 HOURS FLOWN
FIXED WING AIRCRAFT - TURBOJET

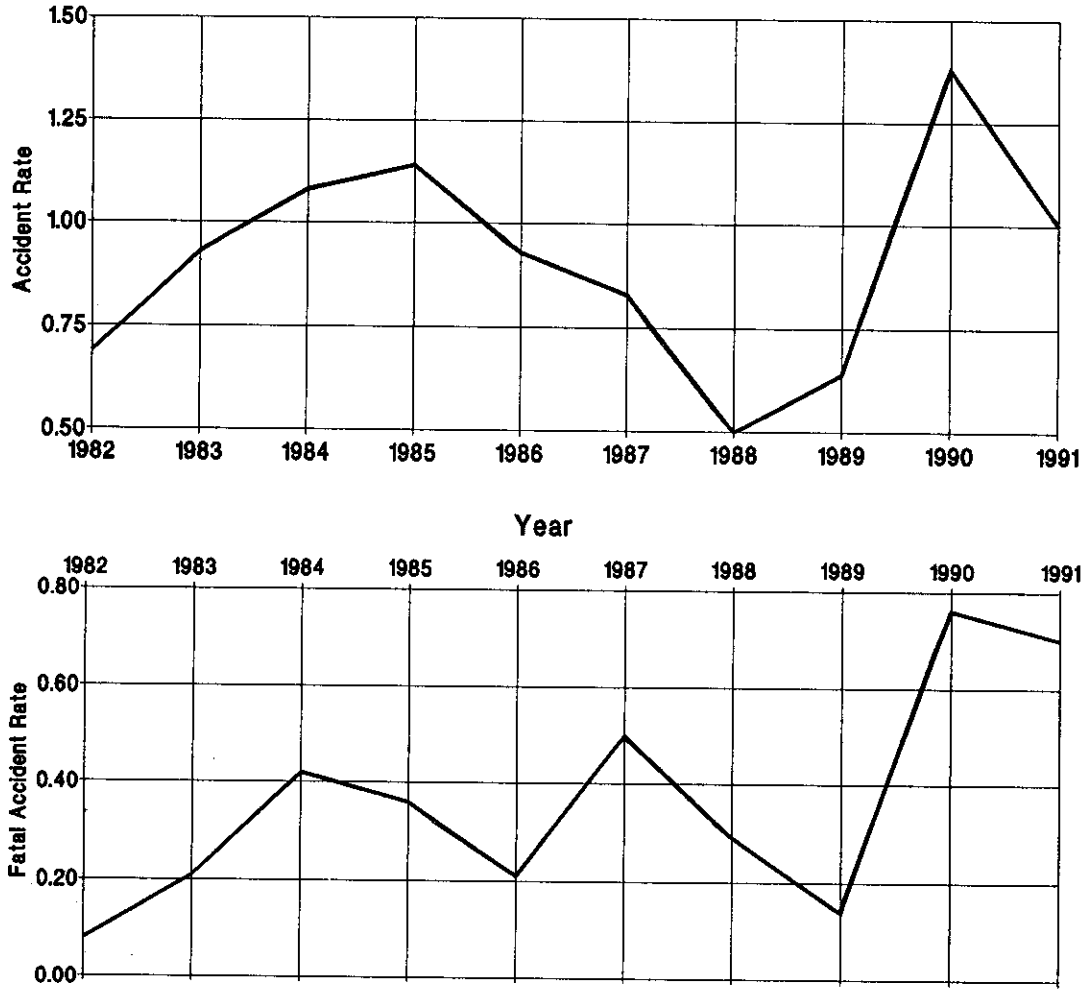

Table 9 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL ROTORCRAFT
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 255 | 41 | 66 | 62 | 1,600,000 | 15.88 | 2.56 |
| 1983 | 234 | 35 | 55 | 53 | 1,700,000 | 13.76 | 2.06 |
| 1984 | 224 | 38 | 61 | 59 | 1,500,000 | 14.93 | 2.53 |
| 1985 | 205 | 36 | 50 | 47 | 1,700,000 | 12.06 | 2.12 |
| 1986 | 190 | 39 | 81 | 59 | 1,600,000 | 11.88 | 2.44 |
| 1987 | 180 | 28 | 44 | 44 | 1,300,000 | 13.85 | 2.15 |
| 1988 | 179 | 21 | 27 | 27 | 1,800,000 | 9.94 | 1.17 |
| 1989 | 186 | 30 | 44 | 41 | 1,700,000 | 10.94 | 1.76 |
| 1990 | 194 | 25 | 28 | 27 | 1,600,000 | 12.13 | 1.56 |
| 1991 | 166 | 29 | 47 | 40 | 2,000,000 | 8.30 | 1.45 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1)
Fatal - None

## Figure 7 - ACCIDENTS PER 100,000 HOURS FLOWN ALL ROTORCRAFT

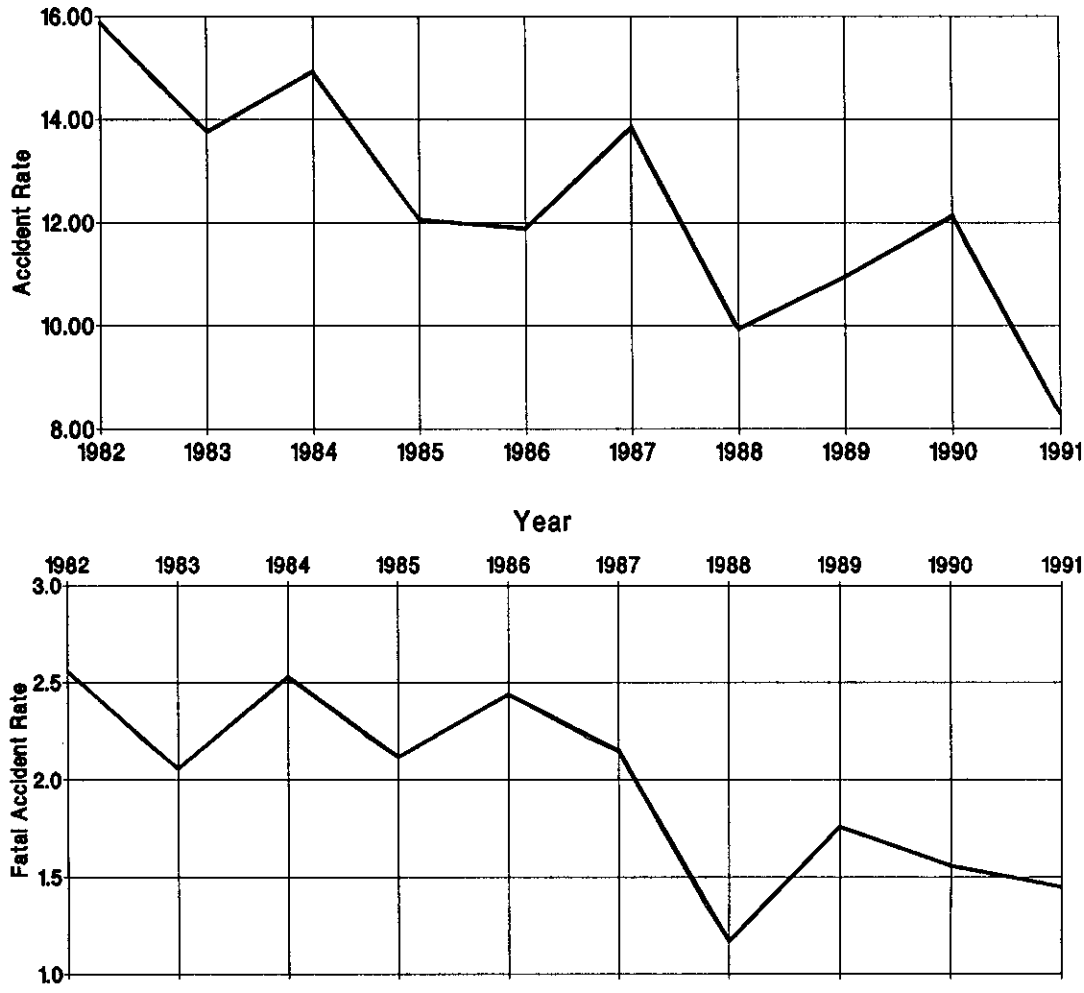

Table 10 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ROTORCRAFT - RECIPROCATING ENGINE(S)
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 157 | 20 | 24 | 24 | 600,000 | 26.00 | 3.33 |
| 1983 | 139 | 18 | 22 | 22 | 600,000 | 23.17 | 3.00 |
| 1984 | 128 | 22 | 29 | 28 | 500,000 | 25.60 | 4.40 |
| 1985 | 118 | 12 | 14 | 13 | 600,000 | 19.67 | 2.00 |
| 1986 | 118 | 21 | 24 | 22 | 789,000 | 14.96 | 2.66 |
| 1987 | 117 | 18 | 25 | 25 | 600,000 | 19.50 | 3.00 |
| 1988 | 118 | 17 | 21 | 21 | 600,000 | 19.67 | 2.83 |
| 1989 | 121 | 14 | 18 | 17 | 600,000 | 20.17 | 2.33 |
| 1990 | 134 | 16 | 19 | 19 | 700,000 | 19.14 | 2.29 |
| 1991 | 125 | 19 | 23 | 23 | 500,000 | 25.00 | 3.80 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1)
Fatal - None

Figure 8 - ACCIDENTS PER 100,000 HOURS FLOWN
ROTORCRAFT - RECIPROCATING ENGINE(S)

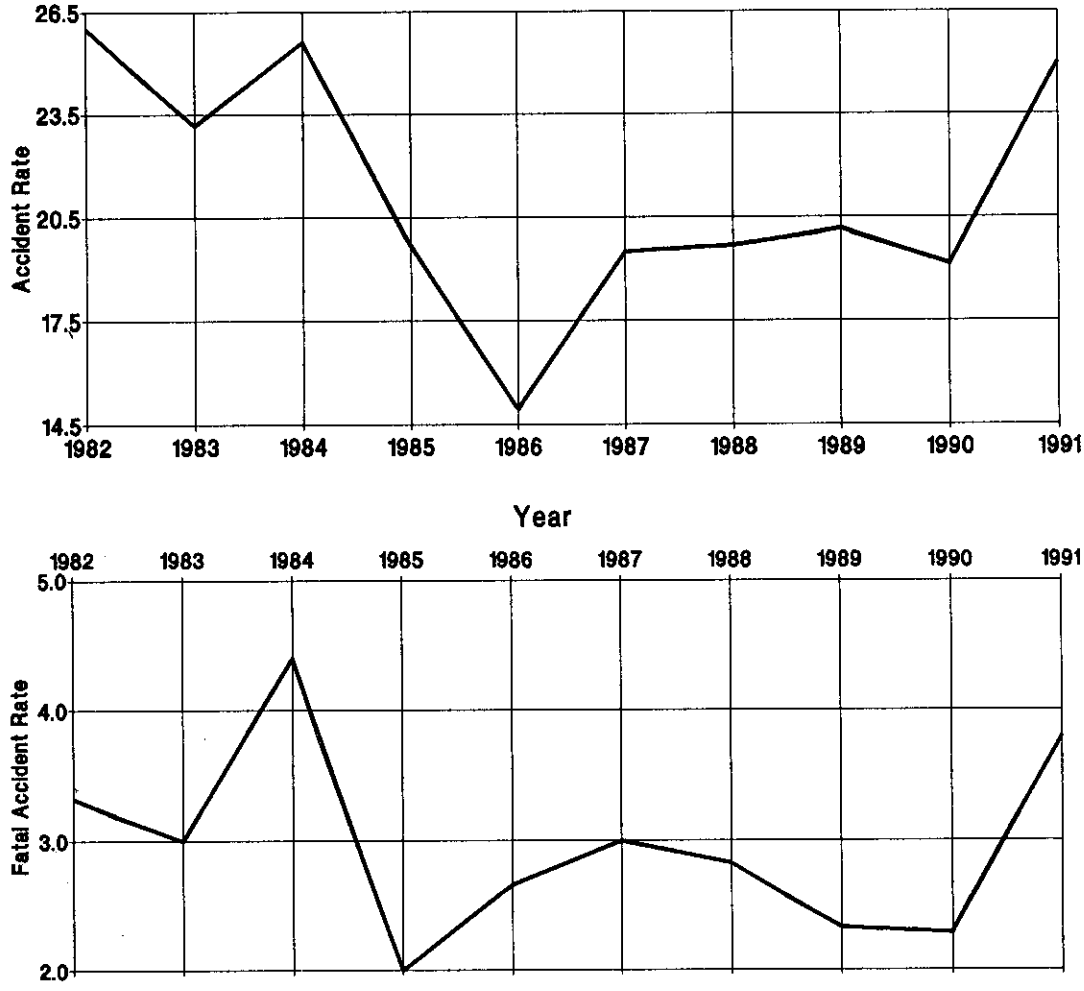

Table 11 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ROTORCRAFT - TURBINE POWERED
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000 Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 98 | 21 | 42 | 38 | 1,000,000 | 9.80 | 2.10 |
| 1983 | 95 | 17 | 33 | 31 | 1,100,000 | 8.64 | 1.55 |
| 1984 | 96 | 16 | 32 | 31 | 900,000 | 10.67 | 1.78 |
| 1985 | 87 | 24 | 36 | 34 | 1,100,000 | 7.91 | 2.18 |
| 1986 | 72 | 18 | 57 | 37 | 800,000 | 9.00 | 2.25 |
| 1987 | 63 | 10 | 19 | 19 | 600,000 | 10.50 | 1.67 |
| 1988 | 61 | 4 | 6 | 6 | 1,300,000 | 4.69 | 0.31 |
| 1989 | 65 | 16 | 26 | 24 | 1,000,000 | 6.50 | 1.60 |
| 1990 | 61 | 9 | 9 | 8 | 800,000 | 7.63 | 1.13 |
| 1991 | 41 | 10 | 24 | 17 | 1,600,000 | 2.56 | 0.63 |

Figure 9 - ACCIDENTS PER 100,000 HOURS FLOWN
ROTORCRAFT - TURBINE POWERED

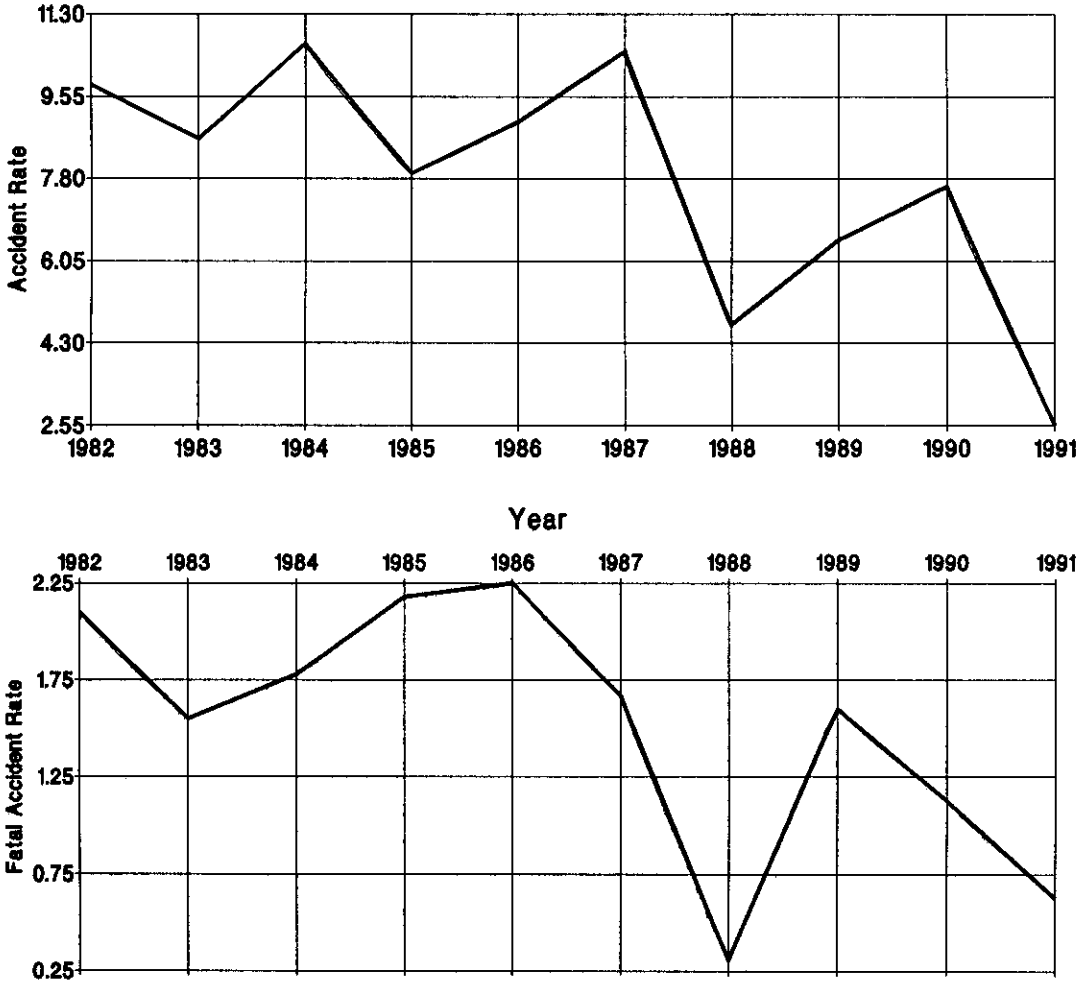

Table 12 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
PERSONAL AND BUSINESS FLYING COMBINED
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Hours Flown | Accident Rate per 100,000* Aircraft Hours Flown | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | | Total | Fatal |
| 1982 | 2185 | 469 | 975 | 961 | 16,584,000 | 13.17 | 2.82 |
| 1983 | 2166 | 450 | 889 | 884 | 15,676,000 | 13.81 | 2.87 |
| 1984 | 2158 | 442 | 870 | 865 | 16,537,000 | 13.04 | 2.67 |
| 1985 | 2001 | 391 | 762 | 751 | 13,784,000 | 14.50 | 2.83 |
| 1986 | 1836 | 387 | 821 | 722 | 14,768,000 | 12.43 | 2.62 |
| 1987 | 1772 | 351 | 669 | 665 | 15,237,000 | 11.62 | 2.30 |
| 1988 | 1678 | 373 | 673 | 663 | 14,609,000 | 11.49 | 2.55 |
| 1989 | 1514 | 315 | 595 | 586 | 13,867,000 | 10.89 | 2.24 |
| 1990 | 1514 | 334 | 584 | 577 | 13,693,000 | 11.05 | 2.44 |
| 1991 | 1524 | 349 | 631 | 627 | 13,839,000 | 11.01 | 2.52 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1984 (3), 1985 (2), 1987 (1), 1989 (4), 1990 (1), 1991 (3)
Fatal - 1984 (2), 1985 (1), 1987 (1), 1989 (4), 1991 (2)

Figure 10 - ACCIDENTS PER 100,000 HOURS FLOWN
PERSONAL AND BUSINESS FLYING COMBINED

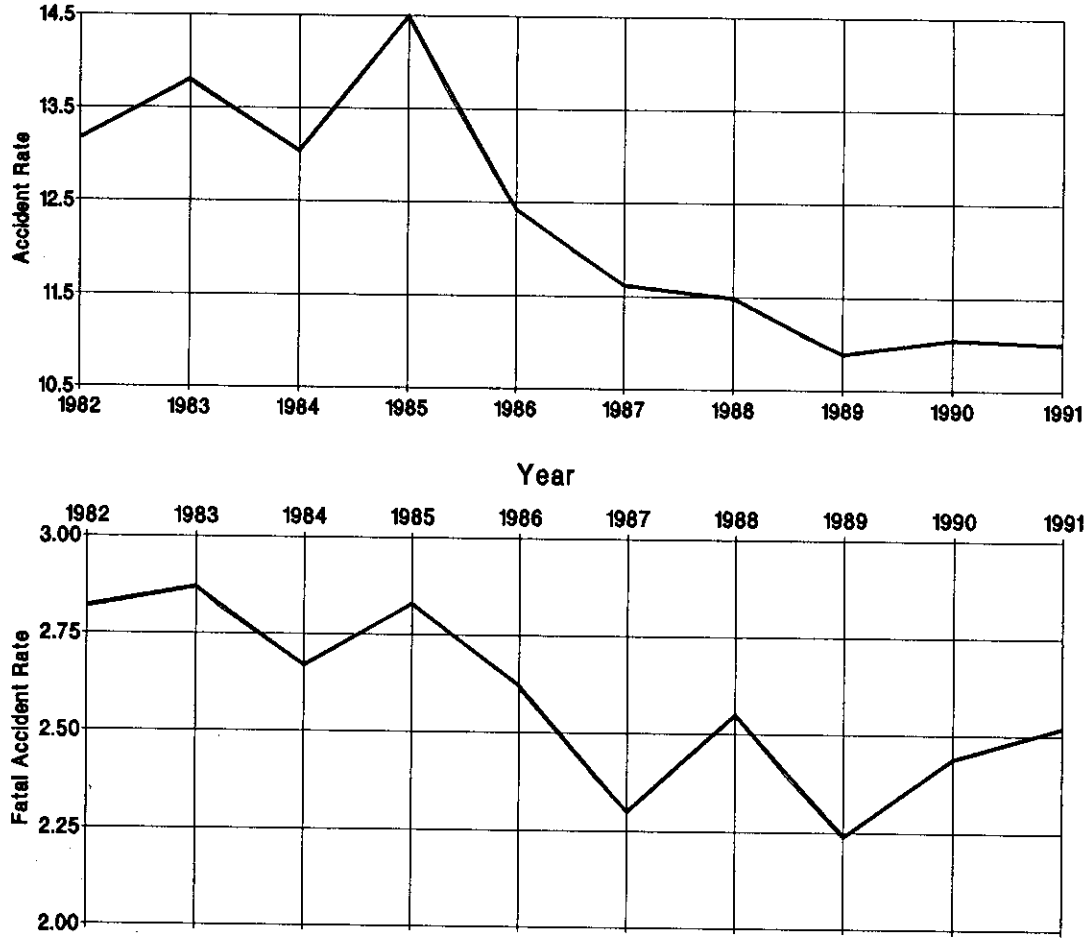

Table 14 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
AERIAL APPLICATION FLYING
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000 Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 272 | 17 | 18 | 15 | 2,058,000 | 13.22 | 0.83 |
| 1983 | 254 | 15 | 15 | 15 | 1,774,000 | 14.32 | 0.85 |
| 1984 | 245 | 20 | 21 | 20 | 2,022,000 | 12.12 | 0.99 |
| 1985 | 167 | 9 | 9 | 9 | 2,002,000 | 8.34 | 0.45 |
| 1986 | 193 | 19 | 22 | 20 | 1,833,000 | 10.53 | 1.04 |
| 1987 | 175 | 11 | 11 | 10 | 1,538,000 | 11.38 | 0.72 |
| 1988 | 170 | 12 | 13 | 13 | 1,842,000 | 9.23 | 0.65 |
| 1989 | 158 | 24 | 25 | 24 | 1,868,000 | 8.46 | 1.28 |
| 1990 | 152 | 16 | 17 | 17 | 1,872,000 | 8.12 | 0.85 |
| 1991 | 158 | 13 | 13 | 12 | 1,911,000 | 8.27 | 0.68 |

Figure 12 - ACCIDENTS PER 100,000 HOURS FLOWN
AERIAL APPLICATION

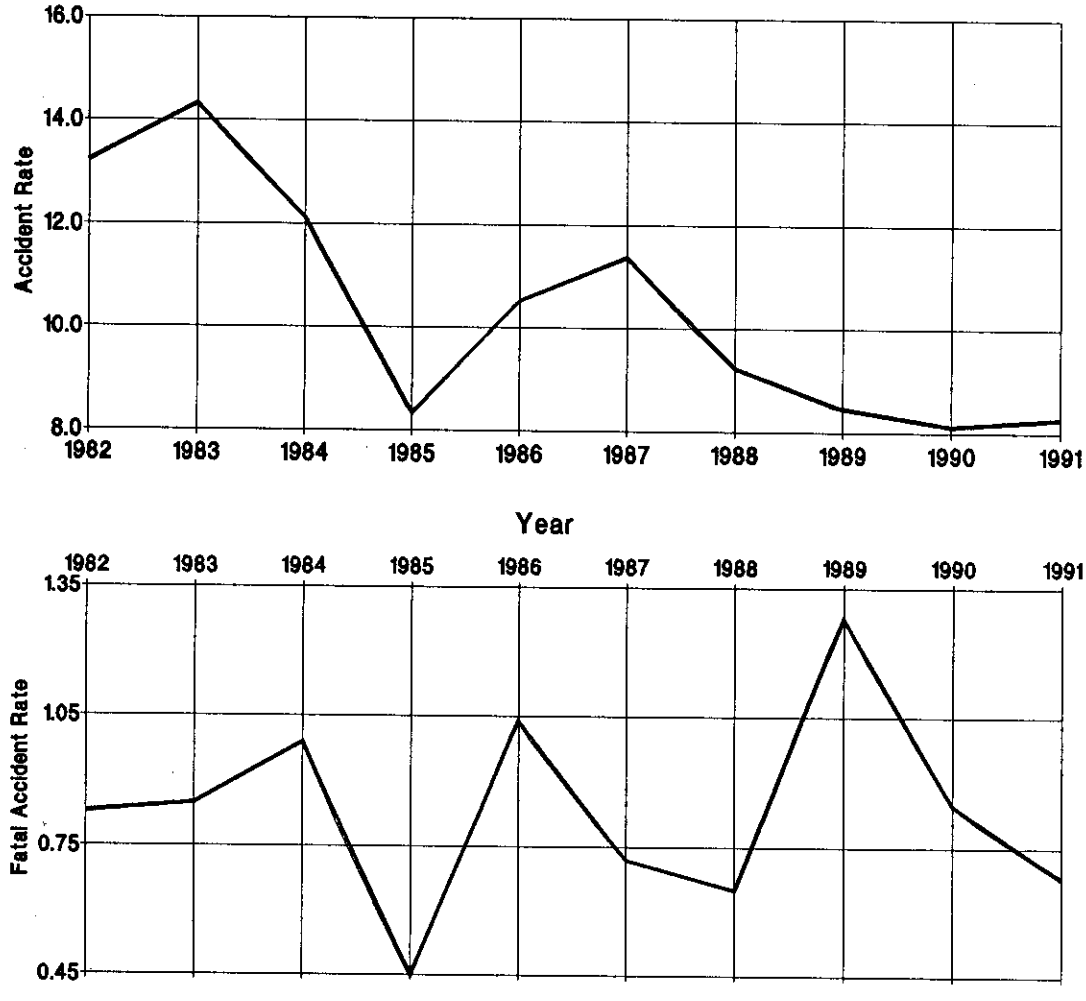

Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
INSTRUCTIONAL FLYING
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | | Accident Rate per 100,000* Aircraft Hours Flown | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category | Hours Flown | Total | Fatal |
| 1982 | 411 | 22 | 38 | 36 | 4,393,000 | 8.30 | 0.45 |
| 1983 | 379 | 26 | 41 | 40 | 5,820,000 | 6.51 | 0.45 |
| 1984 | 354 | 25 | 54 | 37 | 5,694,000 | 6.21 | 0.44 |
| 1985 | 314 | 27 | 52 | 40 | 3,938,000 | 7.97 | 0.69 |
| 1986 | 314 | 23 | 41 | 37 | 4,677,000 | 6.71 | 0.49 |
| 1987 | 342 | 33 | 72 | 61 | 4,529,000 | 7.55 | 0.73 |
| 1988 | 336 | 32 | 49 | 47 | 4,917,000 | 6.81 | 0.65 |
| 1989 | 306 | 28 | 50 | 43 | 5,993,000 | 5.11 | 0.47 |
| 1990 | 314 | 33 | 62 | 56 | 7,244,000 | 4.33 | 0.46 |
| 1991 | 339 | 31 | 63 | 52 | 6,141,000 | 5.52 | 0.50 |

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1), 1988 (1)
Fatal - None

## Figure 13 - ACCIDENTS PER 100,000 HOURS FLOWN INSTRUCTIONAL

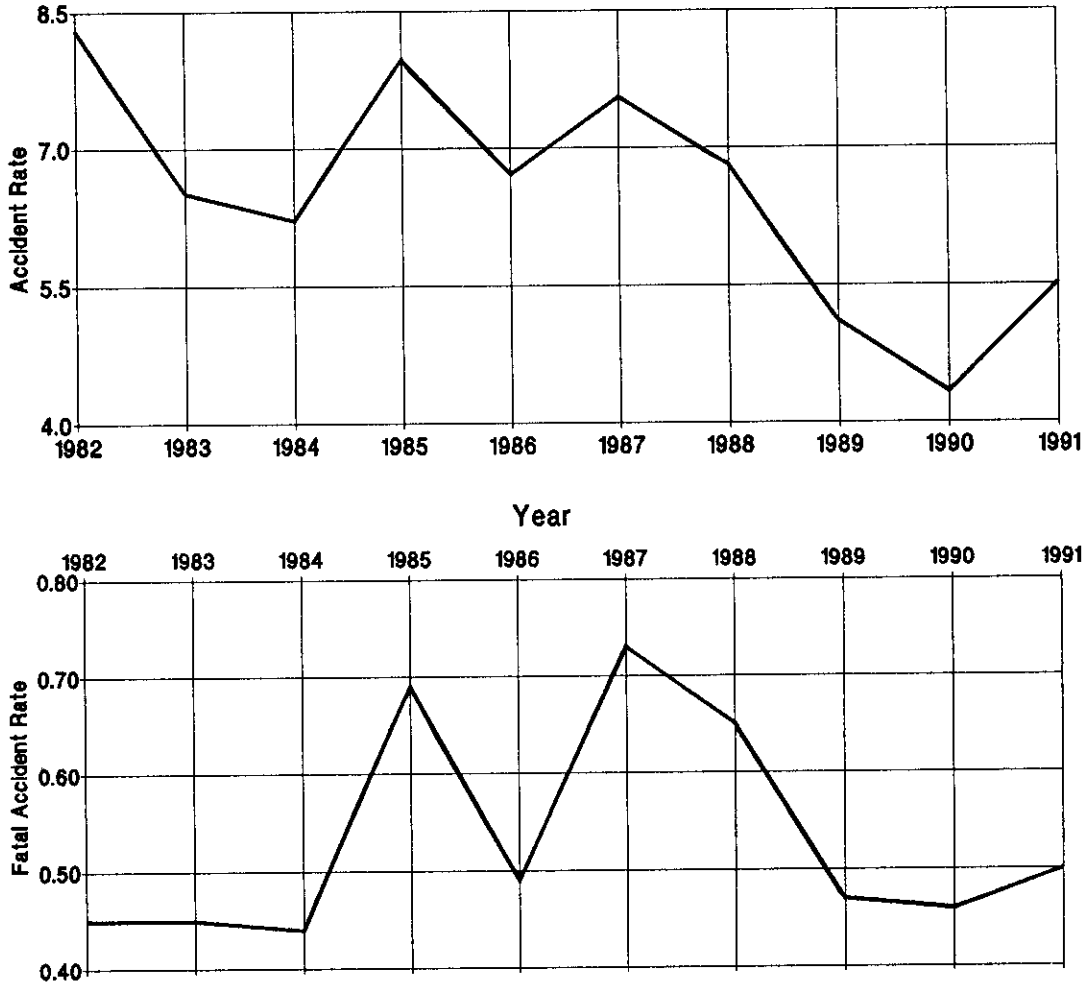

Table 16 - ACCIDENTS, FATAL ACCIDENTS AND FATALITIES
GLIDERS
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | |
|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category |
| 1982 | 51 | 6 | 6 | 5 |
| 1983 | 69 | 11 | 11 | 11 |
| 1984 | 54 | 10 | 10 | 9 |
| 1985 | 43 | 5 | 6 | 6 |
| 1986 | 68 | 9 | 10 | 10 |
| 1987 | 36 | 4 | 4 | 4 |
| 1988 | 44 | 12 | 13 | 13 |
| 1989 | 26 | 3 | 3 | 3 |
| 1990 | 40 | 5 | 5 | 5 |
| 1991 | 42 | 5 | 5 | 5 |

Table 17 - ACCIDENTS, FATAL ACCIDENTS AND FATALITIES
BALLOONS
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | |
|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category |
| 1982 | 29 | 2 | 7 | 7 |
| 1983 | 29 | 2 | 3 | 3 |
| 1984 | 33 | 0 | 0 | 0 |
| 1985 | 24 | 1 | 1 | 1 |
| 1986 | 23 | 1 | 2 | 2 |
| 1987 | 27 | 3 | 3 | 3 |
| 1988 | 25 | 0 | 0 | 0 |
| 1989 | 21 | 3 | 6 | 6 |
| 1990 | 26 | 4 | 8 | 8 |
| 1991 | 16 | 2 | 2 | 0 |

Table 18 - ACCIDENTS, FATAL ACCIDENTS AND FATALITIES
PERSONAL FLYING
1982 - 1991

| Year | Accidents* | Fatal Accidents* | Fatalities | |
|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category |
| 1982 | 1906 | 398 | 826 | 809 |
| 1983 | 1893 | 398 | 775 | 770 |
| 1984 | 1909 | 365 | 711 | 704 |
| 1985 | 1741 | 327 | 642 | 635 |
| 1986 | 1641 | 328 | 682 | 589 |
| 1987 | 1590 | 303 | 566 | 564 |
| 1988 | 1507 | 324 | 585 | 577 |
| 1989 | 1366 | 274 | 509 | 501 |
| 1990 | 1366 | 294 | 504 | 499 |
| 1991 | 1375 | 300 | 547 | 543 |

* The yearly accident counts include suicide and sabotage accidents as follows :
Total - 1984 (3), 1985 (2), 1987 (1), 1989 (4), 1990 (1), 1991 (3)
Fatal - 1984 (2), 1985 (1), 1987 (1), 1989 (4), 1991 (2)

Table 19 - ACCIDENTS, FATAL ACCIDENTS AND FATALITIES
BUSINESS FLYING
1982 - 1991

| Year | Accidents | Fatal Accidents | Fatalities | |
|---|---|---|---|---|
| | | | Total | Aboard Aircraft In This Category |
| 1982 | 292 | 74 | 157 | 156 |
| 1983 | 276 | 52 | 114 | 114 |
| 1984 | 251 | 78 | 161 | 161 |
| 1985 | 261 | 64 | 120 | 116 |
| 1986 | 195 | 59 | 139 | 133 |
| 1987 | 184 | 49 | 107 | 101 |
| 1988 | 172 | 49 | 88 | 86 |
| 1989 | 149 | 42 | 90 | 85 |
| 1990 | 149 | 40 | 80 | 78 |
| 1991 | 148 | 49 | 84 | 84 |

Table 20 - MOST PREVALENT FIRST OCCURRENCES
ALL ACCIDENTS
1991 AND 1986 - 1990

| Type of Occurrence | 1991 | | 1986 - 1990 | |
|---|---|---|---|---|
| | No. | Percent | Mean | Percent |
| Loss of control - in flight | 330 | 15.0 | 335.6 | 13.9 |
| Loss of engine power(total) - non-mechanical | 236 | 10.7 | 293.4 | 12.2 |
| Loss of control - on ground | 230 | 10.4 | 277.2 | 11.5 |
| In flight collision with object | 147 | 6.7 | 186.6 | 7.7 |
| In flight encounter with weather | 126 | 5.7 | 153.6 | 6.4 |
| Loss of engine power | 163 | 7.4 | 145.2 | 6.0 |
| Airframe/component/system failure/malfunction | 108 | 4.9 | 126.2 | 5.2 |
| In flight collision with terrain/water | 127 | 5.8 | 121.2 | 5.0 |
| Loss of engine power(total) - mech failure/malf | 114 | 5.2 | 114.6 | 4.8 |
| Hard landing | 95 | 4.3 | 106.2 | 4.4 |
| Loss of engine power(partial) - mech failure/malf | 55 | 2.5 | 65.6 | 2.7 |
| On ground collision with object | 65 | 3.0 | 63.6 | 2.6 |
| Overrun | 47 | 2.1 | 60.6 | 2.5 |
| Loss of engine power(partial) - non-mechanical | 64 | 2.9 | 51.4 | 2.1 |
| Midair collision | 39 | 1.8 | 41.6 | 1.7 |
| On ground collision with terrain/water | 27 | 1.2 | 33.0 | 1.4 |
| Miscellaneous/other | 36 | 1.6 | 30.4 | 1.3 |
| Undershoot | 17 | 0.8 | 30.0 | 1.2 |
| Nose over | 27 | 1.2 | 25.2 | 1.0 |
| (All other types) | 150 | 6.8 | 148.4 | 6.2 |
| Number of Aircraft | 2203 | 100.0 | 2409.8 | 100.0 |

Table 21 - MOST PREVALENT FIRST PHASES OF OPERATION
ALL ACCIDENTS
1991 AND 1986 - 1990

| Phase of Operation | 1991 No. | 1991 Percent | 1986 - 1990 Mean | 1986 - 1990 Percent |
|---|---|---|---|---|
| Landing | 469 | 21.3 | 578.2 | 24.0 |
| Takeoff | 476 | 21.6 | 501.4 | 20.8 |
| Cruise | 374 | 17.0 | 411.4 | 17.1 |
| Maneuvering | 326 | 14.8 | 328.8 | 13.6 |
| Approach | 285 | 12.9 | 313.6 | 13.0 |
| Climb | 87 | 3.9 | 72.6 | 3.0 |
| Descent | 66 | 3.0 | 71.2 | 3.0 |
| Taxi | 42 | 1.9 | 63.2 | 2.6 |
| Standing | 27 | 1.2 | 34.2 | 1.4 |
| Other | 23 | 1.0 | 25.2 | 1.0 |
| Not reported | 19 | 0.9 | 9.8 | 0.4 |
| Number of Aircraft | 2203 | 100.0 | 2409.8 | 100.0 |

Table 22 - BROAD CAUSE/FACTOR ASSIGNMENTS
ALL ACCIDENTS
1991 AND 1986 - 1990

| Broad Cause/Factor | 1991 No. | 1991 Percent | 1986 - 1990 Mean | 1986 - 1990 Percent |
|---|---|---|---|---|
| Pilot | 1777 | 80.7 | 1999.6 | 83.0 |
| Terrain/Runway Condition | 412 | 18.7 | 632.4 | 26.2 |
| Weather | 429 | 19.5 | 593.2 | 24.6 |
| Propulsion System and Controls | 465 | 21.1 | 562.6 | 23.3 |
| Object (tree, wires, etc) | 132 | 6.0 | 412.4 | 17.1 |
| Other Person (Not Aboard) | 198 | 9.0 | 216.6 | 9.0 |
| Light Conditions | 106 | 4.8 | 174.0 | 7.2 |
| Systems/Equipment/Instruments | 112 | 5.1 | 109.6 | 4.5 |
| Landing Gear | 62 | 2.8 | 104.6 | 4.3 |
| Airframe | 32 | 1.5 | 49.8 | 2.1 |
| Flight Control System | 32 | 1.5 | 40.8 | 1.7 |
| Airport/Airways Facilities, Aids | 5 | 0.2 | 21.2 | 0.9 |
| Other Person (Aboard) | 17 | 0.8 | 14.2 | 0.6 |
| Number of Aircraft | 2203 | | 2409.8 | |

Table 23 - PERSONS BY ROLE AND DEGREE OF INJURY
ALL ACCIDENTS
1991

| Role of Person | Degree of Injury | | | | Total |
|---|---|---|---|---|---|
| | Fatal | Serious | Minor | None | |
| Pilot | 410 | 234 | 333 | 1225 | 2202 |
| Copilot | 19 | 5 | 9 | 25 | 58 |
| Dual student | 18 | 17 | 24 | 95 | 154 |
| Check pilot | 1 | 1 | 0 | 17 | 19 |
| Cabin attendants | 0 | 0 | 0 | 4 | 4 |
| Other crew | 7 | 2 | 2 | 7 | 18 |
| Passenger | 312 | 168 | 265 | 884 | 1629 |
| Total aboard | 767 | 427 | 633 | 2257 | 4084 |
| Other aircraft* | 8 | 0 | 1 | 3 | 12 |
| Other ground | 6 | 2 | 12 | 3 | 23 |
| Grand total | 781 | 429 | 646 | 2263 | 4119 |
| Percent | 19.0 | 10.4 | 15.7 | 54.9 | |

* Injuries carried opposite Other aircraft are injuries occurring in aircraft that are not part of this tabulation, but which were involved in collisions with aircraft which are a part of this tabulation.

Table 24 - PERSONS ABOARD BY KIND OF FLYING AND DEGREE OF INJURY
ALL ACCIDENTS
1991

| Kind of Flying | Degree of Injury | | | | Total |
|---|---|---|---|---|---|
| | Fatal | Serious | Minor | None | |
| Personal | 543 | 310 | 434 | 1405 | 2692 |
| Business | 84 | 24 | 30 | 182 | 320 |
| Corporate/Executive | 17 | 2 | 0 | 14 | 33 |
| Aerial application | 12 | 17 | 26 | 104 | 159 |
| Instructional | 52 | 36 | 83 | 375 | 546 |
| Other | 59 | 38 | 60 | 177 | 334 |
| Total | 767 | 427 | 633 | 2257 | 4084 |
| Percent | 18.8 | 10.5 | 15.5 | 55.3 | |

Table 25 - PERSONS ABOARD BY TYPE OF AIRCRAFT AND DEGREE OF INJURY
ALL ACCIDENTS
1991

| Type of Aircraft | Degree of Injury | | | | |
|---|---|---|---|---|---|
| | Fatal | Serious | Minor | None | Total |
| All Fixed Wing | 721 | 370 | 562 | 2042 | 3695 |
| Fixed Wing Single Recip.Engine | 559 | 334 | 510 | 1749 | 3152 |
| Fixed Wing Multi Recip. Engine | 108 | 33 | 50 | 222 | 413 |
| Fixed Wing Turboprop | 22 | 2 | 2 | 67 | 93 |
| Fixed Wing Turbojet | 32 | 1 | 0 | 4 | 37 |
| All Rotorcraft | 40 | 33 | 56 | 153 | 282 |
| Rotorcraft, Reciprocating Engine | 23 | 18 | 41 | 113 | 195 |
| Rotorcraft, Turbine Engine | 17 | 15 | 15 | 40 | 87 |
| All Gliders | 5 | 12 | 6 | 30 | 53 |
| All Balloons | 0 | 10 | 9 | 32 | 51 |
| Other | 1 | 2 | 0 | 0 | 3 |
| Total | 767 | 427 | 633 | 2257 | 4084 |
| Percent | 18.8 | 10.5 | 15.5 | 55.3 | |

Table 26 - AIRCRAFT BY STATE AND KIND OF FLYING
ALL ACCIDENTS
1991

| State | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Alabama | 18 | 0 | 1 | 3 | 3 | 3 | 28 | 1.3 |
| Alaska | 88 | 28 | 0 | 8 | 0 | 5 | 129 | 5.9 |
| Arizona | 50 | 1 | 0 | 21 | 5 | 5 | 82 | 3.7 |
| Arkansas | 24 | 0 | 0 | 2 | 22 | 3 | 51 | 2.3 |
| California | 184 | 13 | 3 | 42 | 22 | 16 | 280 | 12.7 |
| Colorado | 47 | 7 | 0 | 16 | 1 | 4 | 75 | 3.4 |
| Connecticut | 8 | 1 | 0 | 2 | 0 | 1 | 12 | 0.5 |
| Delaware | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 0.2 |
| Florida | 86 | 3 | 0 | 34 | 9 | 16 | 148 | 6.7 |
| Georgia | 36 | 4 | 2 | 6 | 7 | 2 | 57 | 2.6 |
| Hawaii | 4 | 2 | 0 | 4 | 0 | 1 | 11 | 0.5 |
| Idaho | 19 | 0 | 0 | 1 | 4 | 3 | 27 | 1.2 |
| Illinois | 35 | 2 | 0 | 12 | 2 | 5 | 56 | 2.5 |
| Indiana | 19 | 6 | 0 | 5 | 0 | 2 | 32 | 1.5 |
| Iowa | 14 | 4 | 0 | 2 | 0 | 2 | 22 | 1.0 |
| Kansas | 14 | 1 | 0 | 6 | 4 | 1 | 26 | 1.2 |
| Kentucky | 5 | 2 | 0 | 0 | 0 | 1 | 8 | 0.4 |
| Louisiana | 7 | 1 | 0 | 5 | 9 | 3 | 25 | 1.1 |
| Maine | 14 | 1 | 0 | 1 | 0 | 2 | 18 | 0.8 |
| Maryland | 14 | 0 | 0 | 3 | 1 | 4 | 22 | 1.0 |
| Massachusetts | 20 | 0 | 0 | 0 | 1 | 1 | 22 | 1.0 |
| Michigan | 42 | 4 | 0 | 14 | 1 | 1 | 62 | 2.8 |
| Minnesota | 29 | 5 | 0 | 12 | 7 | 2 | 55 | 2.5 |
| Mississippi | 10 | 1 | 0 | 3 | 10 | 1 | 25 | 1.1 |
| Missouri | 20 | 4 | 0 | 7 | 1 | 1 | 33 | 1.5 |
| Montana | 18 | 1 | 0 | 3 | 1 | 2 | 25 | 1.1 |
| Nebraska | 15 | 2 | 0 | 2 | 6 | 0 | 25 | 1.1 |
| Nevada | 23 | 1 | 0 | 1 | 0 | 1 | 26 | 1.2 |
| New Hampshire | 10 | 1 | 0 | 3 | 0 | 1 | 15 | 0.7 |
| New Jersey | 20 | 2 | 1 | 5 | 0 | 1 | 29 | 1.3 |
| New Mexico | 20 | 5 | 0 | 3 | 2 | 3 | 33 | 1.5 |
| New York | 39 | 4 | 0 | 7 | 0 | 1 | 51 | 2.3 |
| North Carolina | 39 | 3 | 0 | 2 | 3 | 4 | 51 | 2.3 |
| North Dakota | 3 | 0 | 0 | 5 | 7 | 0 | 15 | 0.7 |
| Ohio | 31 | 2 | 0 | 11 | 0 | 4 | 48 | 2.2 |
| Oklahoma | 15 | 1 | 0 | 6 | 5 | 3 | 30 | 1.4 |
| Oregon | 36 | 2 | 0 | 8 | 3 | 1 | 50 | 2.3 |
| Pennsylvania | 28 | 1 | 2 | 11 | 1 | 2 | 45 | 2.0 |
| Puerto Rico | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 0.2 |
| Rhode Island | 7 | 0 | 0 | 1 | 0 | 0 | 8 | 0.4 |
| South Carolina | 10 | 2 | 0 | 3 | 2 | 3 | 20 | 0.9 |
| South Dakota | 10 | 1 | 0 | 0 | 2 | 0 | 13 | 0.6 |
| Tennessee | 16 | 3 | 0 | 4 | 0 | 0 | 23 | 1.0 |
| Texas | 60 | 14 | 1 | 24 | 9 | 15 | 123 | 5.6 |
| Utah | 25 | 0 | 0 | 3 | 0 | 1 | 29 | 1.3 |
| Vermont | 7 | 0 | 0 | 2 | 0 | 0 | 9 | 0.4 |
| Virginia | 27 | 1 | 0 | 2 | 1 | 2 | 33 | 1.5 |
| Virgin Islands | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Washington | 51 | 4 | 0 | 17 | 5 | 7 | 84 | 3.8 |
| West Virginia | 9 | 1 | 0 | 1 | 0 | 1 | 12 | 0.5 |
| Wisconsin | 29 | 4 | 0 | 6 | 2 | 2 | 43 | 2.0 |
| Wyoming | 16 | 1 | 0 | 0 | 1 | 1 | 19 | 0.9 |
| Gulf of Mexico | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0.1 |
| Caribbean | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 |
| Pacific Ocean | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 |
| Other foreign | 4 | 3 | 1 | 2 | 0 | 5 | 15 | 0.7 |
| Atlantic Ocean | 4 | 0 | 0 | 1 | 0 | 1 | 6 | 0.3 |
| Unknown | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 0.2 |
| Aircraft Number - | 1389 | 149 | 11 | 343 | 159 | 152 | 2203 | |
| Percent - | 63.1 | 6.8 | 0.5 | 15.6 | 7.2 | 6.9 | | |

Table 27 - AIRCRAFT BY FIRST OCCURRENCE AND TYPE OF AIRCRAFT
ALL ACCIDENTS
1991

| Type of First Occurrence | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abrupt maneuver | 9 | 8 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 10 | 0.5 |
| Altitude deviation, uncontrolled | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Airframe/component/system failure/malfunction | 84 | 65 | 15 | 4 | 0 | 22 | 14 | 8 | 1 | 0 | 1 | 108 | 4.9 |
| Dragged wing, rotor, pod, or float | 16 | 16 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 20 | 0.9 |
| Fire/explosion | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Fire | 14 | 10 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0.6 |
| Forced landing | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 12 | 0.5 |
| Gear collapsed | 7 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.3 |
| Main gear collapsed | 11 | 8 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0.5 |
| Nose gear collapsed | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Complete gear collapsed | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Gear not extended | 8 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0.4 |
| Hard landing | 73 | 66 | 6 | 1 | 0 | 14 | 9 | 5 | 0 | 8 | 0 | 95 | 4.3 |
| In flight collision w/obj. | 127 | 117 | 3 | 7 | 0 | 11 | 9 | 2 | 5 | 4 | 0 | 147 | 6.7 |
| In flight collision w/ter. | 102 | 89 | 9 | 2 | 2 | 20 | 17 | 3 | 5 | 0 | 0 | 127 | 5.8 |
| In flight encounter w/wx. | 116 | 100 | 13 | 2 | 1 | 2 | 1 | 1 | 6 | 1 | 1 | 126 | 5.7 |
| Loss of control - in flight | 284 | 269 | 11 | 3 | 1 | 36 | 31 | 5 | 8 | 1 | 1 | 330 | 15.0 |
| Loss of control - on ground | 226 | 215 | 10 | 1 | 0 | 3 | 2 | 1 | 1 | 0 | 0 | 230 | 10.4 |
| Midair collision | 35 | 30 | 1 | 3 | 1 | 2 | 0 | 2 | 2 | 0 | 0 | 39 | 1.8 |
| Near collision between aircraft | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Nose down | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Nose over | 26 | 25 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 27 | 1.2 |
| On ground collision w/obj. | 63 | 59 | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 65 | 3.0 |
| On ground collision w/ter. | 26 | 24 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 27 | 1.2 |
| On ground encounter w/wx. | 15 | 14 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0.7 |
| Overrun | 46 | 41 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 47 | 2.1 |
| Loss of power | 151 | 133 | 18 | 0 | 0 | 12 | 6 | 6 | 0 | 0 | 0 | 163 | 7.4 |
| Loss of power(total) - mech failure/malfunction | 108 | 98 | 8 | 2 | 0 | 6 | 4 | 2 | 0 | 0 | 0 | 114 | 5.2 |
| Loss of power(partial) - mech failure/malfuction | 48 | 42 | 6 | 0 | 0 | 6 | 5 | 1 | 1 | 0 | 0 | 55 | 2.5 |
| Loss of power(total) - non-mechanical | 224 | 204 | 18 | 1 | 1 | 12 | 8 | 4 | 0 | 0 | 0 | 236 | 10.7 |
| Loss of power(partial) - non-mechanical | 59 | 54 | 5 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 64 | 2.9 |
| Propeller blast or jet exhaust/suction | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Propeller/rotor contact | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.2 |
| Roll over | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 0.1 |
| Undershoot | 13 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 17 | 0.8 |
| Undetermined | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Vortex turbulence encountered | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Missing aircraft | 5 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.2 |
| Miscellaneous/other | 27 | 22 | 5 | 0 | 0 | 4 | 3 | 1 | 3 | 2 | 0 | 36 | 1.6 |
| Not reported | 25 | 17 | 5 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 27 | 1.2 |
| Other | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Aircraft Number - | 1975 | 1773 | 156 | 36 | 10 | 166 | 125 | 41 | 43 | 16 | 3 | 2203 | |
| Aircraft Percent - | 89.7 | 80.5 | 7.1 | 1.6 | 0.5 | 7.5 | 5.7 | 1.9 | 2.0 | 0.7 | 0.1 | | |

Table 28 - AIRCRAFT BY FIRST OCCURRENCE AND KIND OF FLYING
ALL ACCIDENTS
1991

| Type of First Occurrence | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Abrupt maneuver | 5 | 0 | 0 | 2 | 2 | 1 | 10 | 0.5 |
| Altitude deviation,uncontrolled | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Airframe/component/system failure/malfunction | 63 | 11 | 0 | 13 | 12 | 9 | 108 | 4.9 |
| Dragged wing, rotor, pod, or float | 11 | 0 | 0 | 2 | 5 | 2 | 20 | 0.9 |
| Fire/explosion | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Fire | 8 | 2 | 0 | 0 | 1 | 3 | 14 | 0.6 |
| Forced landing | 9 | 1 | 0 | 1 | 1 | 0 | 12 | 0.5 |
| Gear collapsed | 6 | 0 | 0 | 1 | 0 | 0 | 7 | 0.3 |
| Main gear collapsed | 5 | 3 | 0 | 1 | 2 | 0 | 11 | 0.5 |
| Nose gear collapsed | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Complete gear collapsed | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Gear not extended | 6 | 1 | 0 | 1 | 0 | 0 | 8 | 0.4 |
| Hard landing | 45 | 9 | 0 | 34 | 0 | 7 | 95 | 4.3 |
| In flight collision with object | 87 | 9 | 1 | 12 | 28 | 10 | 147 | 6.7 |
| In flight collision with terrain | 80 | 11 | 1 | 17 | 12 | 6 | 127 | 5.8 |
| In flight encounter with weather | 99 | 13 | 2 | 8 | 1 | 3 | 126 | 5.7 |
| Loss of control - in flight | 220 | 18 | 0 | 54 | 13 | 25 | 330 | 15.0 |
| Loss of control - on ground | 138 | 17 | 0 | 59 | 6 | 10 | 230 | 10.4 |
| Midair collision | 18 | 2 | 1 | 7 | 2 | 9 | 39 | 1.8 |
| Near collision between aircraft | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Nose down | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.0 |
| Nose over | 21 | 1 | 0 | 2 | 2 | 1 | 27 | 1.2 |
| On ground collision with object | 41 | 6 | 0 | 12 | 5 | 1 | 65 | 3.0 |
| On ground collision with terrain | 19 | 3 | 0 | 0 | 3 | 2 | 27 | 1.2 |
| On ground encounter with weather | 9 | 2 | 0 | 3 | 0 | 1 | 15 | 0.7 |
| Overrun | 38 | 1 | 0 | 5 | 3 | 0 | 47 | 2.1 |
| Loss of power | 90 | 7 | 3 | 30 | 21 | 12 | 163 | 7.4 |
| Loss of power(total) - mech failure/malfunction | 73 | 8 | 0 | 10 | 18 | 5 | 114 | 5.2 |
| Loss of power(partial) - mech failure/malfunction | 35 | 2 | 0 | 5 | 7 | 6 | 55 | 2.5 |
| Loss of power(total) - non-mechanical | 153 | 16 | 2 | 36 | 9 | 20 | 236 | 10.7 |
| Loss of power(partial) - non-mechanical | 50 | 0 | 0 | 7 | 4 | 3 | 64 | 2.9 |
| Propeller blast or jet exhaust/suction | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Propeller/rotor contact | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 0.2 |
| Roll over | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0.1 |
| Undershoot | 11 | 0 | 0 | 5 | 0 | 1 | 17 | 0.8 |
| Undetermined | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0.1 |
| Vortex turbulence encountered | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0.1 |
| Missing aircraft | 3 | 0 | 0 | 0 | 0 | 2 | 5 | 0.2 |
| Miscellaneous/other | 22 | 1 | 0 | 8 | 0 | 5 | 36 | 1.6 |
| Not reported | 13 | 3 | 1 | 2 | 1 | 7 | 27 | 1.2 |
| Other | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Aircraft | | | | | | | | |
| Number - | 1389 | 149 | 11 | 343 | 159 | 152 | 2203 | |
| Percent - | 63.1 | 6.8 | 0.5 | 15.6 | 7.2 | 6.9 | | |

Table 29 - AIRCRAFT BY FIRST PHASE OF OPERATION AND TYPE OF AIRCRAFT
ALL ACCIDENTS
1991

| Phase of Operation | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standing | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Standing - pre-flight | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.1 |
| Standing - starting engine(s) | 7 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.3 |
| Standing - engine(s) operating | 13 | 11 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 14 | 0.6 |
| Standing - idling rotors | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Taxi | 6 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.3 |
| Taxi - to takeoff | 16 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0.7 |
| Taxi - from landing | 18 | 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0.8 |
| Taxi - aerial | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 0.1 |
| Takeoff | 41 | 31 | 9 | 0 | 1 | 8 | 8 | 0 | 1 | 0 | 0 | 50 | 2.3 |
| Takeoff - ground run | 89 | 85 | 4 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 92 | 4.2 |
| Takeoff - initial climb | 285 | 260 | 23 | 2 | 0 | 17 | 12 | 5 | 4 | 1 | 2 | 309 | 14.0 |
| Climb | 44 | 40 | 3 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 46 | 2.1 |
| Climb - to cruise | 39 | 33 | 5 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 41 | 1.9 |
| Cruise | 177 | 159 | 16 | 2 | 0 | 17 | 7 | 10 | 0 | 1 | 1 | 196 | 8.9 |
| Cruise - normal | 167 | 152 | 12 | 3 | 0 | 9 | 7 | 2 | 0 | 1 | 0 | 177 | 8.0 |
| Cruise - holding(IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 |
| Descent | 14 | 14 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 17 | 0.8 |
| Descent - normal | 32 | 28 | 3 | 1 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 35 | 1.6 |
| Descent - emergency | 5 | 5 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 8 | 0.4 |
| Descent - uncontrolled | 5 | 4 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 0.3 |
| Approach | 35 | 29 | 5 | 1 | 0 | 7 | 5 | 2 | 3 | 3 | 0 | 48 | 2.2 |
| Approach - VFR pattern - downwind | 20 | 17 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 21 | 1.0 |
| Approach - VFR pattern - base turn | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.3 |
| Approach - VFR pattern - base to final | 23 | 20 | 2 | 1 | 0 | 2 | 2 | 0 | 3 | 0 | 0 | 28 | 1.3 |
| Approach - VFR pattern - final approach | 86 | 81 | 5 | 0 | 0 | 4 | 2 | 2 | 10 | 0 | 0 | 100 | 4.5 |
| Approach - go-around (VFR) | 51 | 45 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 2.3 |
| Approach - IAF to FAF/ outer marker (IFR) | 7 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.3 |
| Approach - FAF/outer marker to threshold (IFR) | 15 | 7 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0.7 |
| Approach - circling(IFR) | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.1 |
| Approach - missed approach (IFR) | 5 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.2 |
| Landing | 16 | 15 | 1 | 0 | 0 | 6 | 5 | 1 | 2 | 2 | 0 | 26 | 1.2 |
| Landing - flare/ touchdown | 161 | 148 | 9 | 4 | 0 | 21 | 15 | 6 | 4 | 7 | 0 | 193 | 8.8 |
| Landing - roll | 234 | 209 | 20 | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 235 | 10.7 |
| Maneuvering | 174 | 166 | 4 | 2 | 2 | 18 | 15 | 3 | 5 | 0 | 0 | 197 | 8.9 |
| Maneuvering - aerial application | 67 | 58 | 0 | 8 | 1 | 17 | 15 | 2 | 0 | 0 | 0 | 84 | 3.8 |
| Maneuvering - turn to reverse direction | 21 | 19 | 1 | 1 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 25 | 1.1 |
| Maneuvering - turn to landing area (emergency) | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0.1 |
| Hover | 0 | 0 | 0 | 0 | 0 | 17 | 14 | 3 | 0 | 0 | 0 | 17 | 0.8 |
| Other | 53 | 52 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 57 | 2.6 |
| Unknown | 13 | 12 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 15 | 0.7 |
| Not reported | 18 | 10 | 5 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 19 | 0.9 |
| Aircraft Number - | 1975 | 1773 | 156 | 36 | 10 | 166 | 125 | 41 | 43 | 16 | 3 | 2203 | |
| Aircraft Percent - | 89.7 | 80.5 | 7.1 | 1.6 | 0.5 | 7.5 | 5.7 | 1.9 | 2.0 | 0.7 | 0.1 | | |

Table 30 - AIRCRAFT BY FIRST PHASE OF OPERATION AND KIND OF FLYING
ALL ACCIDENTS
1991

| Phase of Operation | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Standing | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.1 |
| Standing - pre-flight | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0.1 |
| Standing - starting engine(s) | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0.3 |
| Standing - engine(s) operating | 8 | 1 | 0 | 3 | 0 | 2 | 14 | 0.6 |
| Standing - idling rotors | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.0 |
| Taxi | 4 | 1 | 0 | 1 | 0 | 0 | 6 | 0.3 |
| Taxi - to takeoff | 11 | 2 | 0 | 3 | 0 | 0 | 16 | 0.7 |
| Taxi - from landing | 10 | 2 | 0 | 3 | 0 | 3 | 18 | 0.8 |
| Taxi - aerial | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Takeoff | 28 | 3 | 0 | 10 | 6 | 3 | 50 | 2.3 |
| Takeoff - ground run | 61 | 5 | 0 | 13 | 11 | 2 | 92 | 4.2 |
| Takeoff - initial climb | 227 | 12 | 1 | 31 | 22 | 16 | 309 | 14.0 |
| Climb | 34 | 1 | 1 | 6 | 0 | 4 | 46 | 2.1 |
| Climb - to cruise | 34 | 3 | 0 | 2 | 0 | 2 | 41 | 1.9 |
| Cruise | 128 | 22 | 1 | 19 | 12 | 14 | 196 | 8.9 |
| Cruise - normal | 124 | 13 | 0 | 19 | 4 | 17 | 177 | 8.0 |
| Cruise - holding(IFR) | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.0 |
| Descent | 12 | 0 | 0 | 2 | 1 | 2 | 17 | 0.8 |
| Descent - normal | 19 | 5 | 1 | 6 | 0 | 4 | 35 | 1.6 |
| Descent - emergency | 7 | 0 | 0 | 0 | 0 | 1 | 8 | 0.4 |
| Descent - uncontrolled | 1 | 2 | 0 | 2 | 1 | 0 | 6 | 0.3 |
| Approach | 32 | 3 | 1 | 9 | 0 | 3 | 48 | 2.2 |
| Approach - VFR pattern - downwind | 16 | 1 | 0 | 4 | 0 | 0 | 21 | 1.0 |
| Approach - VFR pattern - base turn | 5 | 0 | 0 | 2 | 0 | 0 | 7 | 0.3 |
| Approach - VFR pattern - base to final | 23 | 1 | 0 | 4 | 0 | 0 | 28 | 1.3 |
| Approach - VFR pattern - final approach | 82 | 2 | 2 | 9 | 1 | 4 | 100 | 4.5 |
| Approach - go-around (VFR) | 29 | 1 | 0 | 20 | 0 | 1 | 51 | 2.3 |
| Approach - IAF to FAF/outer marker (IFR) | 4 | 2 | 0 | 1 | 0 | 0 | 7 | 0.3 |
| Approach - FAF/outer marker to threshold (IFR) | 7 | 6 | 2 | 0 | 0 | 0 | 15 | 0.7 |
| Approach - circling(IFR) | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0.1 |
| Approach - missed approach (IFR) | 3 | 1 | 0 | 1 | 0 | 0 | 5 | 0.2 |
| Landing | 11 | 0 | 0 | 12 | 1 | 2 | 26 | 1.2 |
| Landing - flare/touchdown | 105 | 13 | 1 | 60 | 3 | 11 | 193 | 8.8 |
| Landing - roll | 152 | 21 | 0 | 49 | 6 | 7 | 235 | 10.7 |
| Maneuvering | 121 | 14 | 0 | 29 | 3 | 30 | 197 | 8.9 |
| Maneuvering - aerial application | 2 | 2 | 0 | 0 | 77 | 3 | 84 | 3.8 |
| Maneuvering - turn to reverse direction | 8 | 2 | 0 | 3 | 8 | 4 | 25 | 1.1 |
| Maneuvering - turn to landing area (emergency) | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 0.1 |
| Hover | 7 | 0 | 0 | 6 | 1 | 3 | 17 | 0.8 |
| Other | 44 | 2 | 0 | 8 | 0 | 3 | 57 | 2.6 |
| Unknown | 10 | 0 | 0 | 1 | 0 | 4 | 15 | 0.7 |
| Not reported | 6 | 3 | 1 | 1 | 1 | 7 | 19 | 0.9 |
| Aircraft | | | | | | | | |
| Number - | 1389 | 149 | 11 | 343 | 159 | 152 | 2203 | |
| Percent - | 63.1 | 6.8 | 0.5 | 15.6 | 7.2 | 6.9 | | |

Table 31 - AIRCRAFT BY BROAD CAUSE/FACTOR AND KIND OF FLYING
ALL ACCIDENTS
1991

| Broad Cause: | Type of Aircraft | | | | | | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | No. | Pct |
| **Aircraft** | 467 | 409 | 47 | 9 | 2 | 46 | 33 | 13 | 0 | 1 | 1 | 515 | 23.4 |
| Propulsion System and Controls | 348 | 308 | 33 | 5 | 2 | 29 | 20 | 9 | 0 | 0 | 0 | 377 | 17.1 |
| Flight Control System | 18 | 17 | 1 | 0 | 0 | 5 | 4 | 1 | 0 | 0 | 1 | 24 | 1.1 |
| Airframe | 16 | 15 | 1 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 19 | 0.9 |
| Landing Gear | 40 | 30 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 1.8 |
| Systems/Equipment/ Instruments | 50 | 43 | 7 | 0 | 0 | 9 | 6 | 3 | 0 | 1 | 0 | 60 | 2.7 |
| **Environment** | 88 | 80 | 6 | 2 | 0 | 9 | 8 | 1 | 5 | 2 | 0 | 104 | 4.7 |
| Weather | 30 | 28 | 2 | 0 | 0 | 1 | 1 | 0 | 3 | 2 | 0 | 36 | 1.6 |
| Object (trees,wires,etc) | 27 | 23 | 2 | 2 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 31 | 1.4 |
| Terrain/Runway Condition | 33 | 30 | 2 | 1 | 0 | 4 | 3 | 1 | 3 | 0 | 0 | 40 | 1.8 |
| **Personnel** | 1607 | 1442 | 130 | 28 | 7 | 133 | 100 | 33 | 40 | 14 | 2 | 1796 | 81.5 |
| Pilot | 1510 | 1362 | 119 | 22 | 7 | 124 | 93 | 31 | 40 | 12 | 2 | 1688 | 76.6 |
| Others (Aboard) | 11 | 9 | 2 | 0 | 0 | 4 | 2 | 2 | 0 | 1 | 0 | 16 | 0.7 |
| Others (Not Aboard) | 120 | 101 | 13 | 6 | 0 | 9 | 4 | 5 | 2 | 2 | 0 | 133 | 6.0 |
| **Broad Factor:** | | | | | | | | | | | | | |
| **Aircraft** | 185 | 150 | 29 | 3 | 3 | 14 | 9 | 5 | 3 | 1 | 0 | 203 | 9.2 |
| Propulsion System and Controls | 94 | 81 | 13 | 0 | 0 | 7 | 4 | 3 | 1 | 0 | 0 | 102 | 4.6 |
| Flight Control System | 9 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0.4 |
| Airframe | 13 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0.6 |
| Landing Gear | 23 | 17 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 1.0 |
| Systems/Equipment/ | 47 | 35 | 7 | 3 | 2 | 6 | 4 | 2 | 0 | 1 | 0 | 54 | 2.5 |
| **Environment** | 726 | 664 | 47 | 10 | 5 | 48 | 32 | 16 | 17 | 6 | 1 | 798 | 36.2 |
| Weather | 361 | 330 | 24 | 4 | 3 | 16 | 12 | 4 | 12 | 4 | 1 | 394 | 17.9 |
| Light Conditions | 98 | 81 | 11 | 5 | 1 | 8 | 5 | 3 | 0 | 0 | 0 | 106 | 4.8 |
| Object (trees,wires,etc) | 85 | 80 | 4 | 0 | 1 | 10 | 6 | 4 | 4 | 2 | 0 | 101 | 4.6 |
| Airport/Airways Facilities, Aids | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.2 |
| Terrain/Runway Condition | 346 | 317 | 20 | 7 | 2 | 22 | 15 | 7 | 3 | 2 | 0 | 373 | 16.9 |
| **Personnel** | 727 | 651 | 63 | 10 | 3 | 61 | 46 | 15 | 17 | 5 | 3 | 813 | 36.9 |
| Pilot | 671 | 606 | 53 | 9 | 3 | 56 | 43 | 13 | 16 | 4 | 3 | 750 | 34.0 |
| Others (Aboard) | 3 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 0.2 |
| Others (Not Aboard) | 81 | 66 | 11 | 2 | 2 | 7 | 2 | 5 | 1 | 2 | 0 | 91 | 4.1 |
| **Either Broad Cause or Factor:** | | | | | | | | | | | | | |
| **Aircraft** | 613 | 528 | 69 | 12 | 4 | 58 | 40 | 18 | 3 | 1 | 1 | 676 | 30.7 |
| Propulsion System and Controls | 428 | 378 | 43 | 5 | 2 | 36 | 24 | 12 | 1 | 0 | 0 | 465 | 21.1 |
| Flight Control System | 26 | 24 | 2 | 0 | 0 | 5 | 4 | 1 | 0 | 0 | 1 | 32 | 1.5 |
| Airframe | 29 | 24 | 5 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 32 | 1.5 |
| Landing Gear | 62 | 46 | 11 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 2.8 |
| Systems/Equipment/ Instruments | 96 | 77 | 14 | 3 | 2 | 15 | 10 | 5 | 0 | 1 | 0 | 112 | 5.1 |
| **Environment** | 801 | 733 | 52 | 11 | 5 | 56 | 39 | 17 | 22 | 7 | 1 | 887 | 40.3 |
| Weather | 390 | 357 | 26 | 4 | 3 | 17 | 13 | 4 | 15 | 6 | 1 | 429 | 19.5 |
| Light Conditions | 98 | 81 | 11 | 5 | 1 | 8 | 5 | 3 | 0 | 0 | 0 | 106 | 4.8 |
| Object(trees,wires,etc) | 112 | 103 | 6 | 2 | 1 | 14 | 10 | 4 | 4 | 2 | 0 | 132 | 6.0 |
| Airport/Airways Facilities, Aids | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.2 |
| Terrain/Runway Condition | 378 | 347 | 22 | 7 | 2 | 26 | 18 | 8 | 6 | 2 | 0 | 412 | 18.7 |
| **Personnel** | 1688 | 1518 | 135 | 28 | 7 | 145 | 109 | 36 | 41 | 14 | 3 | 1891 | 85.8 |
| Pilot | 1583 | 1430 | 123 | 23 | 7 | 137 | 103 | 34 | 41 | 13 | 3 | 1777 | 80.7 |
| Others (Aboard) | 12 | 10 | 2 | 0 | 0 | 4 | 2 | 2 | 0 | 1 | 0 | 17 | 0.8 |
| Others (Not Aboard) | 179 | 148 | 23 | 6 | 2 | 15 | 6 | 9 | 2 | 2 | 0 | 198 | 9.0 |
| **Aircraft** | | | | | | | | | | | | | |
| Number - | 1975 | 1773 | 156 | 36 | 10 | 166 | 125 | 41 | 43 | 16 | 3 | 2203 | |
| Percent - | 89.7 | 80.5 | 7.1 | 1.6 | 0.5 | 7.5 | 5.7 | 1.9 | 2.0 | 0.7 | 0.1 | | |

Table 32 - AIRCRAFT BY BROAD CAUSE/FACTOR AND KIND OF FLYING
ALL ACCIDENTS
1991

| Broad Cause: | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Aircraft | 310 | 37 | 3 | 63 | 50 | 52 | 515 | 23.4 |
| Propulsion System and Controls | 236 | 21 | 3 | 46 | 35 | 36 | 377 | 17.1 |
| Flight Control System | 12 | 0 | 0 | 2 | 3 | 7 | 24 | 1.1 |
| Airframe | 10 | 1 | 0 | 1 | 3 | 4 | 19 | 0.9 |
| Landing Gear | 16 | 11 | 0 | 7 | 5 | 1 | 40 | 1.8 |
| Systems/Equipment/Instruments | 38 | 5 | 0 | 3 | 9 | 5 | 60 | 2.7 |
| Environment | 70 | 10 | 1 | 18 | 2 | 3 | 104 | 4.7 |
| Weather | 25 | 5 | 0 | 6 | 0 | 0 | 36 | 1.6 |
| Object (trees, wires, etc.) | 20 | 2 | 1 | 6 | 0 | 2 | 31 | 1.4 |
| Terrain/Runway Condition | 27 | 3 | 1 | 6 | 2 | 1 | 40 | 1.8 |
| Personnel | 1163 | 113 | 10 | 293 | 103 | 114 | 1796 | 81.5 |
| Pilot | 1101 | 104 | 10 | 277 | 96 | 100 | 1688 | 76.6 |
| Others (Aboard) | 6 | 1 | 0 | 1 | 0 | 8 | 16 | 0.7 |
| Others (Not Aboard) | 72 | 12 | 1 | 25 | 6 | 17 | 133 | 6.0 |
| **Broad Factor:** | | | | | | | | |
| Aircraft | 137 | 17 | 1 | 20 | 14 | 14 | 203 | 9.2 |
| Propulsion System and Controls | 73 | 6 | 0 | 5 | 9 | 9 | 102 | 4.6 |
| Flight Control System | 8 | 1 | 0 | 0 | 0 | 0 | 9 | 0.4 |
| Airframe | 9 | 2 | 0 | 1 | 1 | 0 | 13 | 0.6 |
| Landing Gear | 11 | 2 | 0 | 8 | 0 | 2 | 23 | 1.0 |
| Systems/Equipment/Instruments | 34 | 8 | 1 | 6 | 4 | 1 | 54 | 2.5 |
| Environment | 522 | 72 | 6 | 94 | 57 | 47 | 798 | 36.2 |
| Weather | 273 | 43 | 4 | 48 | 10 | 16 | 394 | 17.9 |
| Light Conditions | 70 | 14 | 3 | 7 | 6 | 6 | 106 | 4.8 |
| Object (trees, wires, etc.) | 71 | 2 | 0 | 12 | 9 | 7 | 101 | 4.6 |
| Airport/Airways Facilities, Aids | 3 | 0 | 1 | 1 | 0 | 0 | 5 | 0.2 |
| Terrain/Runway Condition | 231 | 31 | 3 | 43 | 38 | 27 | 373 | 16.9 |
| Personnel | 510 | 61 | 4 | 155 | 37 | 46 | 813 | 36.9 |
| Pilot | 473 | 53 | 4 | 144 | 35 | 41 | 750 | 34.0 |
| Others (Aboard) | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 0.2 |
| Others (Not Aboard) | 58 | 11 | 0 | 12 | 3 | 7 | 91 | 4.1 |
| **Either Broad Cause or Factor:** | | | | | | | | |
| Aircraft | 423 | 50 | 4 | 77 | 59 | 63 | 676 | 30.7 |
| Propulsion System and Controls | 302 | 26 | 3 | 49 | 42 | 43 | 465 | 21.1 |
| Flight Control System | 19 | 1 | 0 | 2 | 3 | 7 | 32 | 1.5 |
| Airframe | 19 | 3 | 0 | 2 | 4 | 4 | 32 | 1.5 |
| Landing Gear | 27 | 12 | 0 | 15 | 5 | 3 | 62 | 2.8 |
| Systems/Equipment/Instruments | 70 | 13 | 1 | 9 | 13 | 6 | 112 | 5.1 |
| Environment | 584 | 80 | 6 | 108 | 59 | 50 | 887 | 40.3 |
| Weather | 298 | 47 | 4 | 54 | 10 | 16 | 429 | 19.5 |
| Light Conditions | 70 | 14 | 3 | 7 | 6 | 6 | 106 | 4.8 |
| Object (trees, wires, etc.) | 91 | 4 | 1 | 18 | 9 | 9 | 132 | 6.0 |
| Airport/Airways Facilities, Aids | 3 | 0 | 1 | 1 | 0 | 0 | 5 | 0.2 |
| Terrain/Runway Condition | 258 | 34 | 3 | 49 | 40 | 28 | 412 | 18.7 |
| Personnel | 1212 | 124 | 10 | 308 | 114 | 123 | 1891 | 85.8 |
| Pilot | 1149 | 112 | 10 | 292 | 106 | 108 | 1777 | 80.7 |
| Others (Aboard) | 7 | 1 | 0 | 1 | 0 | 8 | 17 | 0.8 |
| Others (Not Aboard) | 114 | 19 | 1 | 32 | 9 | 23 | 198 | 9.0 |
| Aircraft | | | | | | | | |
| Number - | 1389 | 149 | 11 | 343 | 159 | 152 | 2203 | |
| Percent - | 63.1 | 6.8 | 0.5 | 15.6 | 7.2 | 6.9 | | |

Table 33 - AIRCRAFT BY KIND OF FLYING AND TYPE OF AIRCRAFT
ALL ACCIDENTS
1991

| Kind of Flying | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Personal | 1293 | 1183 | 102 | 5 | 3 | 46 | 42 | 4 | 35 | 12 | 3 | 1389 | 63.1 |
| Business | 132 | 99 | 22 | 9 | 2 | 14 | 5 | 9 | 1 | 2 | 0 | 149 | 6.8 |
| Corporate/Executive | 10 | 2 | 5 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 11 | 0.5 |
| Instructional | 301 | 281 | 15 | 5 | 0 | 36 | 33 | 3 | 6 | 0 | 0 | 343 | 15.6 |
| Aerial Application | 130 | 118 | 0 | 11 | 1 | 29 | 25 | 4 | 0 | 0 | 0 | 159 | 7.2 |
| Other | 109 | 90 | 12 | 5 | 2 | 40 | 20 | 20 | 1 | 2 | 0 | 152 | 6.9 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 1975 | 1773 | 156 | 36 | 10 | 166 | 125 | 41 | 43 | 16 | 3 | 2203 | |
| Percent - | 89.7 | 80.5 | 7.1 | 1.6 | 0.5 | 7.5 | 5.7 | 1.9 | 2.0 | 0.7 | 0.1 | | |

Table 34 - PILOTS BY TOTAL TIME AND TIME IN TYPE
ALL ACCIDENTS
1991

| Total time (hours) | Time in type (hours): 0-49 | 50-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10000 or more | Not reptd | Pilots No. | Pilots Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 49 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 119 | 5.4 |
| 50 - 99 | 60 | 55 | 0 | 0 | 0 | 0 | 0 | 11 | 126 | 5.7 |
| 100 - 499 | 196 | 105 | 213 | 0 | 0 | 0 | 0 | 74 | 588 | 26.7 |
| 500 - 999 | 84 | 38 | 123 | 49 | 0 | 0 | 0 | 41 | 335 | 15.2 |
| 1000 - 4999 | 86 | 65 | 168 | 107 | 124 | 0 | 0 | 83 | 633 | 28.7 |
| 5000 - 9999 | 18 | 9 | 38 | 22 | 68 | 16 | 0 | 30 | 201 | 9.1 |
| 10000 or more | 13 | 5 | 23 | 15 | 40 | 19 | 0 | 24 | 139 | 6.3 |
| Not reported | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 60 | 62 | 2.8 |
| Pilots | | | | | | | | | | |
| Number - | 566 | 277 | 565 | 193 | 233 | 35 | 0 | 334 | 2203 | |
| Percent - | 25.4 | 12.6 | 25.6 | 8.8 | 10.6 | 1.6 | .0 | 15.3 | | |

Table 35 - PILOTS BY AGE AND KIND OF FLYING
ALL ACCIDENTS
1991

| Pilot age | Kind of Flying | | | | | | Pilots | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| 15 - 19 | 8 | 0 | 0 | 16 | 0 | 3 | 27 | 1.2 |
| 20 - 24 | 69 | 8 | 0 | 72 | 2 | 4 | 155 | 7.0 |
| 25 - 29 | 91 | 10 | 3 | 56 | 15 | 23 | 198 | 9.0 |
| 30 - 34 | 113 | 17 | 0 | 44 | 17 | 13 | 204 | 9.3 |
| 35 - 39 | 155 | 16 | 2 | 43 | 25 | 12 | 253 | 11.5 |
| 40 - 44 | 188 | 25 | 2 | 28 | 39 | 28 | 310 | 14.1 |
| 45 - 49 | 208 | 22 | 1 | 26 | 27 | 24 | 308 | 14.0 |
| 50 - 54 | 152 | 17 | 0 | 15 | 14 | 17 | 215 | 9.8 |
| 55 - 59 | 132 | 10 | 1 | 14 | 10 | 6 | 173 | 7.9 |
| 60 - 64 | 100 | 8 | 0 | 9 | 5 | 7 | 129 | 5.9 |
| 65 - 69 | 79 | 8 | 1 | 6 | 3 | 4 | 101 | 4.6 |
| 70 or older | 64 | 4 | 0 | 5 | 0 | 1 | 74 | 3.4 |
| Not reported | 30 | 4 | 1 | 9 | 2 | 10 | 56 | 2.5 |
| Pilots | | | | | | | | |
| Number - | 1389 | 149 | 11 | 343 | 159 | 152 | 2203 | |
| Percent - | 61.1 | 6.8 | 0.5 | 15.6 | 7.2 | 6.9 | | |

Table 36 - MOST PREVALENT FIRST OCCURRENCES
FATAL ACCIDENTS
1991 AND 1986 - 1990

| Type of Occurrence | 1991 | | 1986 - 1990 | |
|---|---|---|---|---|
| | No. | Percent | Mean | Percent |
| Loss of control - in flight | 125 | 28.7 | 125.4 | 27.2 |
| In flight encounter with weather | 55 | 12.6 | 79.6 | 17.2 |
| In flight collision with object | 50 | 11.5 | 53.0 | 11.5 |
| In flight collision with terrain/water | 52 | 11.9 | 50.4 | 10.9 |
| Airframe/component/system failure/malfunction | 23 | 5.3 | 24.6 | 5.3 |
| Loss of engine power(total) - non-mechanical | 26 | 6.0 | 24.4 | 5.3 |
| Midair collision | 16 | 3.7 | 23.2 | 5.0 |
| Loss of engine power | 18 | 4.1 | 16.4 | 3.6 |
| Loss of engine power(total) - mech failure/malf | 15 | 3.4 | 9.8 | 2.1 |
| Abrupt maneuver | 6 | 1.4 | 9.2 | 2.0 |
| Loss of engine power(partial) - mech failure/malf | 3 | 0.7 | 8.6 | 1.9 |
| Loss of engine power(partial) - non-mechanical | 12 | 2.8 | 5.6 | 1.2 |
| Miscellaneous/other | 8 | 1.8 | 5.4 | 1.2 |
| Missing aircraft | 5 | 1.1 | 5.2 | 1.1 |
| (All other types) | 22 | 5.0 | 21.0 | 4.5 |
| Number of Aircraft | 436 | 100.0 | 461.8 | 100.0 |

Table 37 - MOST PREVALENT FIRST PHASES OF OPERATION
FATAL ACCIDENTS
1991 AND 1986 - 1990

| | 1991 | | 1986 - 1990 | |
|---|---|---|---|---|
| Phase of Operation | No. | Percent | Mean | Percent |
| Maneuvering | 117 | 26.8 | 130.2 | 28.2 |
| Cruise | 94 | 21.5 | 102.2 | 22.1 |
| Takeoff | 75 | 17.2 | 75.2 | 16.3 |
| Approach | 71 | 16.3 | 72.2 | 15.6 |
| Climb | 28 | 6.4 | 26.0 | 5.6 |
| Other | 18 | 4.1 | 19.6 | 4.2 |
| Descent | 15 | 3.4 | 18.8 | 4.1 |
| Landing | 6 | 1.4 | 9.8 | 2.1 |
| Not reported | 9 | 2.1 | 3.6 | 0.8 |
| Standing | 3 | 0.7 | 2.6 | 0.6 |
| Taxi | 0 | 0.0 | 1.6 | 0.3 |
| Number of Aircraft | 436 | 100.0 | 461.8 | 100.0 |

Table 38 - BROAD CAUSE/FACTOR ASSIGNMENTS
FATAL ACCIDENTS
1991 AND 1986 - 1990

| | 1991 | | 1986 - 1990 | |
|---|---|---|---|---|
| Broad Cause/Factor | No. | Percent | Mean | Percent |
| Pilot | 393 | 90.1 | 413.2 | 89.5 |
| Weather | 102 | 23.4 | 153.6 | 33.3 |
| Terrain/Runway Condition | 51 | 11.7 | 79.4 | 17.2 |
| Light Conditions | 48 | 11.0 | 74.4 | 16.1 |
| Object (tree, wires, etc) | 28 | 6.4 | 64.2 | 13.9 |
| Propulsion System and Controls | 50 | 11.5 | 58.6 | 12.7 |
| Other Person (Not Aboard) | 36 | 8.3 | 49.8 | 10.8 |
| Systems/Equipment/Instruments | 26 | 6.0 | 21.4 | 4.6 |
| Airframe | 8 | 1.8 | 19.2 | 4.2 |
| Flight Control System | 11 | 2.5 | 11.6 | 2.5 |
| Airport/Airways Facilities, Aids | 0 | 0.0 | 5.6 | 1.2 |
| Other Person (Aboard) | 2 | 0.5 | 2.8 | 0.6 |
| Landing Gear | 1 | 0.2 | 1.6 | 0.3 |
| Number of Aircraft | 436 | | 461.8 | |

Table 39 - AIRCRAFT BY FIRST OCCURRENCE AND TYPE OF AIRCRAFT
FATAL ACCIDENTS
1991

| Type of First Occurrence | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abrupt maneuver | 6 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.4 |
| Airframe/component/ system failure/malf. | 20 | 14 | 6 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 23 | 5.3 |
| Dragged wing, rotor, pod, or float | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Forced landing | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0.5 |
| In flight collision w/obj. | 43 | 39 | 1 | 3 | 0 | 5 | 4 | 1 | 1 | 1 | 0 | 50 | 11.5 |
| In flight collision w/ter. | 49 | 40 | 8 | 0 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 52 | 11.9 |
| In flight encounter w/wx. | 54 | 45 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 55 | 12.6 |
| Loss of control - in flight | 113 | 99 | 10 | 3 | 1 | 10 | 5 | 5 | 2 | 0 | 0 | 125 | 28.7 |
| Loss of control - on ground | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Midair collision | 14 | 11 | 0 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 16 | 3.7 |
| On ground collision w/ter. | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Overrun | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Loss of power | 16 | 14 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 18 | 4.1 |
| Loss of power(total) - mech failure/malfunction | 14 | 11 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 15 | 3.4 |
| Loss of power(partial) - mech failure/malfunction | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Loss of power(total) - non-mechanical | 25 | 19 | 4 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 26 | 6.0 |
| Loss of power(partial) - non-mechanical | 12 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.8 |
| Propeller/rotor contact | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Roll over | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Undetermined | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Missing aircraft | 5 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Miscellaneous/other | 6 | 4 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 8 | 1.8 |
| Not reported | 10 | 5 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 2.3 |
| Aircraft Number - | 399 | 331 | 49 | 12 | 7 | 29 | 19 | 10 | 5 | 2 | 1 | 436 | |
| Aircraft Percent - | 91.5 | 75.9 | 11.2 | 2.8 | 1.6 | 6.7 | 4.4 | 2.3 | 1.1 | 0.5 | 0.2 | | |

Table 40 - AIRCRAFT BY FIRST OCCURRENCE AND KIND OF FLYING
FATAL ACCIDENTS
1991

| Type of First Occurrence | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Abrupt maneuver | 4 | 0 | 0 | 0 | 1 | 1 | 6 | 1.4 |
| Airframe/component/system failure/malfunction | 16 | 4 | 0 | 1 | 0 | 2 | 23 | 5.3 |
| Dragged wing, rotor, pod, or float | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Forced landing | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.5 |
| In flight collision with object | 31 | 6 | 0 | 4 | 7 | 2 | 50 | 11.5 |
| In flight collision with terrain | 41 | 7 | 0 | 2 | 0 | 2 | 52 | 11.9 |
| In flight encounter with weather | 43 | 8 | 1 | 2 | 0 | 1 | 55 | 12.6 |
| Loss of control - in flight | 86 | 13 | 0 | 14 | 2 | 10 | 125 | 28.7 |
| Loss of control - on ground | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0.5 |
| Midair collision | 5 | 1 | 1 | 3 | 2 | 4 | 16 | 3.7 |
| On ground collision with terrain | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Overrun | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Loss of power | 13 | 0 | 1 | 1 | 2 | 1 | 18 | 4.1 |
| Loss of power(total) - mech failure/malfunction | 11 | 2 | 0 | 1 | 0 | 1 | 15 | 3.4 |
| Loss of power(partial) - mech failure/malfunction | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0.7 |
| Loss of power(total) - non-mechanical | 18 | 4 | 0 | 0 | 0 | 4 | 26 | 6.0 |
| Loss of power(partial) - non-mechanical | 12 | 0 | 0 | 0 | 0 | 0 | 12 | 2.8 |
| Propeller/rotor contact | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.5 |
| Roll over | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.2 |
| Undetermined | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.2 |
| Missing aircraft | 3 | 0 | 0 | 0 | 0 | 2 | 5 | 1.1 |
| Miscellaneous/other | 6 | 1 | 0 | 0 | 0 | 1 | 8 | 1.8 |
| Not reported | 3 | 3 | 1 | 0 | 0 | 3 | 10 | 2.3 |
| Aircraft | | | | | | | | |
| Number - | 301 | 49 | 4 | 31 | 14 | 37 | 436 | |
| Percent - | 69.0 | 11.2 | 0.9 | 7.1 | 3.2 | 8.5 | | |

Table 41 - AIRCRAFT BY FIRST PHASE OF OPERATION AND TYPE OF AIRCRAFT
FATAL ACCIDENTS
1991

| Phase of Operation | Type of Aircraft | | | | | | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | No. | Pct |
| Standing - pre-flight | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Standing - engine(s) operating | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Takeoff | 12 | 5 | 6 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 14 | 3.2 |
| Takeoff - ground run | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Takeoff - initial climb | 49 | 43 | 5 | 1 | 0 | 8 | 5 | 3 | 1 | 0 | 0 | 58 | 13.3 |
| Climb | 15 | 13 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 3.4 |
| Climb - to cruise | 13 | 8 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 3.0 |
| Cruise | 50 | 41 | 8 | 1 | 0 | 5 | 3 | 2 | 0 | 0 | 1 | 56 | 12.8 |
| Cruise - normal | 34 | 29 | 4 | 1 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 37 | 8.5 |
| Descent | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0.9 |
| Descent - normal | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 1.1 |
| Descent - emergency | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Descent - uncontrolled | 3 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 0.9 |
| Approach | 13 | 10 | 2 | 1 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 16 | 3.7 |
| Approach - VFR pattern - downwind | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Approach - VFR pattern - base to turn | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Approach - VFR pattern - base to final | 8 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 9 | 2.1 |
| Approach - VFR pattern - final approach | 15 | 15 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 16 | 3.7 |
| Approach - go-around (VFR) | 7 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.6 |
| Approach - IAF to FAF/ outer marker (IFR) | 5 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Approach - FAF/outer marker to threshold (IFR) | 6 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.4 |
| Approach - circling(IFR) | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Approach - missed approach (IFR) | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Landing | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Landing - flare/touchdown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.2 |
| Landing - roll | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Maneuvering | 91 | 85 | 4 | 1 | 1 | 3 | 2 | 1 | 1 | 0 | 0 | 95 | 21.8 |
| Maneuvering - aerial application | 11 | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.5 |
| Maneuvering - turn to reverse direction | 9 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2.1 |
| Maneuvering - turn to landing area (emergency) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Hover | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0.2 |
| Other | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10 | 2.3 |
| Unknown | 12 | 11 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 13 | 3.0 |
| Not reported | 9 | 4 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2.1 |
| Aircraft Number - | 399 | 331 | 49 | 12 | 7 | 29 | 19 | 10 | 5 | 2 | 1 | 436 | |
| Aircraft Percent - | 91.5 | 75.9 | 11.2 | 2.8 | 1.6 | 6.7 | 4.4 | 2.3 | 1.1 | 0.5 | 0.2 | | |

Table 42 - AIRCRAFT BY FIRST PHASE OF OPERATION AND KIND OF FLYING
FATAL ACCIDENTS
1991

| Phase of Operation | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Standing - pre-flight | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Standing - engine(s) operating | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.5 |
| Takeoff | 11 | 2 | 0 | 0 | 0 | 1 | 14 | 3.2 |
| Takeoff - ground run | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Takeoff - initial climb | 47 | 3 | 0 | 2 | 2 | 4 | 58 | 13.3 |
| Climb | 11 | 1 | 1 | 1 | 0 | 1 | 15 | 3.4 |
| Climb - to cruise | 11 | 2 | 0 | 0 | 0 | 0 | 13 | 3.0 |
| Cruise | 40 | 10 | 0 | 4 | 0 | 2 | 56 | 12.8 |
| Cruise - normal | 26 | 6 | 0 | 1 | 0 | 4 | 37 | 8.5 |
| Descent | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 0.9 |
| Descent - normal | 3 | 2 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Descent - emergency | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Descent - uncontrolled | 1 | 2 | 0 | 1 | 0 | 0 | 4 | 0.9 |
| Approach | 11 | 0 | 1 | 3 | 0 | 1 | 16 | 3.7 |
| Approach - VFR pattern - downwind | 4 | 0 | 0 | 1 | 0 | 0 | 5 | 1.1 |
| Approach - VFR pattern - base turn | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Approach - VFR pattern - base to final | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 2.1 |
| Approach - VFR pattern - final approach | 14 | 1 | 1 | 0 | 0 | 0 | 16 | 3.7 |
| Approach - go-around (VFR) | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 1.6 |
| Approach - IAF to FAF/outer marker (IFR) | 2 | 2 | 0 | 1 | 0 | 0 | 5 | 1.1 |
| Approach - FAF/outer marker to threshold (IFR) | 2 | 4 | 0 | 0 | 0 | 0 | 6 | 1.4 |
| Approach - circling(IFR) | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Approach - missed approach (IFR) | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Landing | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Landing - flare/touchdown | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Landing - roll | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Maneuvering | 62 | 7 | 0 | 13 | 0 | 13 | 95 | 21.8 |
| Maneuvering - aerial application | 1 | 0 | 0 | 0 | 10 | 0 | 11 | 2.5 |
| Maneuvering - turn to reverse direction | 4 | 1 | 0 | 1 | 2 | 1 | 9 | 2.1 |
| Maneuvering - turn to landing area (emergency) | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Hover | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.2 |
| Other | 6 | 1 | 0 | 1 | 0 | 2 | 10 | 2.3 |
| Unknown | 9 | 0 | 0 | 1 | 0 | 3 | 13 | 3.0 |
| Not reported | 2 | 3 | 1 | 0 | 0 | 3 | 9 | 2.1 |
| Aircraft | | | | | | | | |
| Number - | 301 | 49 | 4 | 31 | 14 | 37 | 436 | |
| Percent - | 69.0 | 11.2 | 0.9 | 7.1 | 3.2 | 8.5 | | |

Table 43 - AIRCRAFT BY BROAD CAUSE/FACTOR AND TYPE OF AIRCRAFT
FATAL ACCIDENTS
1991

| Broad Cause: | Type of Aircraft | | | | | | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | No. | Pct |
| Aircraft | 43 | 35 | 7 | 0 | 1 | 5 | 3 | 2 | 0 | 0 | 0 | 48 | 11.0 |
| Propulsion System and Controls | 25 | 20 | 4 | 0 | 1 | 4 | 2 | 2 | 0 | 0 | 0 | 29 | 6.7 |
| Flight Control System | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.4 |
| Airframe | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.9 |
| Systems/Equipment/ Instruments | 7 | 5 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 8 | 1.8 |
| Environment | 12 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 13 | 3.0 |
| Weather | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Object (trees,wires,etc) | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.4 |
| Terrain/Runway Condition | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 0.7 |
| Personnel | 356 | 299 | 42 | 10 | 5 | 27 | 17 | 10 | 5 | 2 | 1 | 391 | 89.7 |
| Pilot | 346 | 290 | 42 | 9 | 5 | 26 | 16 | 10 | 5 | 1 | 1 | 379 | 86.9 |
| Others (Aboard) | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Others (Not Aboard) | 13 | 12 | 0 | 1 | 0 | 3 | 1 | 2 | 0 | 2 | 0 | 18 | 4.1 |
| **Broad Factor:** | | | | | | | | | | | | | |
| Aircraft | 47 | 33 | 10 | 2 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 49 | 11.2 |
| Propulsion System and Controls | 23 | 18 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 5.3 |
| Flight Control System | 5 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Airframe | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.9 |
| Landing Gear | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Systems/Equipment/ Instruments | 18 | 10 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 4.1 |
| Environment | 139 | 118 | 15 | 2 | 4 | 10 | 4 | 6 | 2 | 1 | 0 | 152 | 34.9 |
| Weather | 92 | 77 | 12 | 1 | 2 | 3 | 0 | 3 | 2 | 0 | 0 | 97 | 22.2 |
| Light Conditions | 45 | 35 | 7 | 2 | 1 | 3 | 1 | 2 | 0 | 0 | 0 | 48 | 11.0 |
| Object (trees,wires,etc) | 16 | 15 | 0 | 0 | 1 | 4 | 2 | 2 | 1 | 1 | 0 | 22 | 5.0 |
| Terrain/Runway Condition | 45 | 40 | 3 | 0 | 2 | 2 | 1 | 1 | 0 | 1 | 0 | 48 | 11.0 |
| Personnel | 193 | 162 | 24 | 5 | 2 | 13 | 8 | 5 | 3 | 2 | 1 | 212 | 48.6 |
| Pilot | 184 | 156 | 21 | 5 | 2 | 12 | 8 | 4 | 3 | 1 | 1 | 201 | 46.1 |
| Others (Not Aboard) | 20 | 13 | 4 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 0 | 23 | 5.3 |
| **Either Broad Cause or Factor:** | | | | | | | | | | | | | |
| Aircraft | 82 | 63 | 15 | 2 | 2 | 6 | 3 | 3 | 1 | 0 | 0 | 89 | 20.4 |
| Propulsion System and Controls | 46 | 36 | 9 | 0 | 1 | 4 | 2 | 2 | 0 | 0 | 0 | 50 | 11.5 |
| Flight Control System | 11 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.5 |
| Airframe | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.8 |
| Landing Gear | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Systems/Equipment/ Instruments | 25 | 15 | 6 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 26 | 6.0 |
| Environment | 148 | 127 | 15 | 2 | 4 | 10 | 4 | 6 | 2 | 1 | 0 | 161 | 36.9 |
| Weather | 97 | 82 | 12 | 1 | 2 | 3 | 0 | 3 | 2 | 0 | 0 | 102 | 23.4 |
| Light Conditions | 45 | 35 | 7 | 2 | 1 | 3 | 1 | 2 | 0 | 0 | 0 | 48 | 11.0 |
| Object (trees,wires,etc) | 22 | 21 | 0 | 0 | 1 | 4 | 2 | 2 | 1 | 1 | 0 | 28 | 6.4 |
| Terrain/Runway Condition | 47 | 42 | 3 | 0 | 2 | 3 | 2 | 1 | 0 | 1 | 0 | 51 | 11.7 |
| Personnel | 364 | 305 | 44 | 10 | 5 | 28 | 18 | 10 | 5 | 2 | 1 | 400 | 91.7 |
| Pilot | 357 | 299 | 44 | 9 | 5 | 28 | 18 | 10 | 5 | 2 | 1 | 393 | 90.1 |
| Others (Aboard) | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Others (Not Aboard) | 30 | 23 | 4 | 1 | 2 | 4 | 1 | 3 | 0 | 2 | 0 | 36 | 8.3 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 399 | 331 | 49 | 12 | 7 | 29 | 19 | 10 | 5 | 2 | 1 | 436 | |
| Percent - | 91.5 | 75.9 | 11.2 | 2.8 | 1.6 | 6.7 | 4.4 | 2.3 | 1.1 | 0.5 | 0.2 | | |

Table 44 - AIRCRAFT BY BROAD CAUSE/FACTOR AND KIND OF FLYING
FATAL ACCIDENTS
1991

| Broad Cause: | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Aircraft | 33 | 6 | 1 | 2 | 1 | 5 | 48 | 11.0 |
| Propulsion System and Controls | 20 | 3 | 1 | 1 | 0 | 4 | 29 | 6.7 |
| Flight Control System | 5 | 0 | 0 | 0 | 1 | 0 | 6 | 1.4 |
| Airframe | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 0.9 |
| Systems/Equipment/Instruments | 5 | 3 | 0 | 0 | 0 | 0 | 8 | 1.8 |
| Environment | 11 | 0 | 0 | 2 | 0 | 0 | 13 | 3.0 |
| Weather | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Object (trees, wires, etc.) | 5 | 0 | 0 | 1 | 0 | 0 | 6 | 1.4 |
| Terrain/Runway Condition | 2 | 0 | 0 | 1 | 0 | 0 | 3 | 0.7 |
| Personnel | 275 | 41 | 3 | 30 | 12 | 30 | 391 | 89.7 |
| Pilot | 270 | 40 | 3 | 27 | 11 | 28 | 379 | 86.9 |
| Others (Aboard) | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Others (Not Aboard) | 6 | 2 | 1 | 3 | 0 | 6 | 18 | 4.1 |
| **Broad Factor:** | | | | | | | | |
| Aircraft | 37 | 6 | 0 | 2 | 0 | 4 | 49 | 11.2 |
| Propulsion System and Controls | 17 | 2 | 0 | 1 | 0 | 3 | 23 | 5.3 |
| Flight Control System | 4 | 1 | 0 | 0 | 0 | 0 | 5 | 1.1 |
| Airframe | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 0.9 |
| Landing Gear | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Systems/Equipment/Instruments | 12 | 4 | 0 | 2 | 0 | 0 | 18 | 4.1 |
| Environment | 105 | 28 | 1 | 7 | 2 | 9 | 152 | 34.9 |
| Weather | 65 | 24 | 1 | 4 | 0 | 3 | 97 | 22.2 |
| Light Conditions | 34 | 9 | 0 | 2 | 1 | 2 | 48 | 11.0 |
| Object (trees, wires, etc.) | 17 | 1 | 0 | 1 | 1 | 2 | 22 | 5.0 |
| Terrain/Runway Condition | 35 | 5 | 1 | 3 | 0 | 4 | 48 | 11.0 |
| Personnel | 156 | 25 | 1 | 15 | 3 | 12 | 212 | 48.6 |
| Pilot | 148 | 22 | 1 | 15 | 3 | 12 | 201 | 46.1 |
| Others (Not Aboard) | 17 | 5 | 0 | 0 | 0 | 1 | 23 | 5.3 |
| **Either Broad Cause of Factor:** | | | | | | | | |
| Aircraft | 65 | 10 | 1 | 4 | 1 | 8 | 89 | 20.4 |
| Propulsion System and Controls | 36 | 5 | 1 | 2 | 0 | 6 | 50 | 11.5 |
| Flight Control System | 9 | 1 | 0 | 0 | 1 | 0 | 11 | 2.5 |
| Airframe | 6 | 1 | 0 | 0 | 0 | 1 | 8 | 1.8 |
| Landing Gear | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Systems/Equipment/Instruments | 17 | 7 | 0 | 2 | 0 | 0 | 26 | 6.0 |
| Environment | 113 | 28 | 1 | 8 | 2 | 9 | 161 | 36.9 |
| Weather | 70 | 24 | 1 | 4 | 0 | 3 | 102 | 23.4 |
| Light Conditions | 34 | 9 | 0 | 2 | 1 | 2 | 48 | 11.0 |
| Object (trees, wires, etc.) | 22 | 1 | 0 | 2 | 1 | 2 | 28 | 6.4 |
| Terrain/Runway Condition | 37 | 5 | 1 | 4 | 0 | 4 | 51 | 11.7 |
| Personnel | 282 | 42 | 3 | 30 | 13 | 30 | 400 | 91.7 |
| Pilot | 280 | 41 | 3 | 28 | 12 | 29 | 393 | 90.1 |
| Others (Aboard) | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 |
| Others (Not Aboard) | 20 | 5 | 1 | 3 | 0 | 7 | 36 | 8.3 |
| Aircraft | | | | | | | | |
| Number - | 301 | 49 | 4 | 31 | 14 | 37 | 436 | |
| Percent - | 69.0 | 11.2 | 0.9 | 7.1 | 3.2 | 8.5 | | |

Table 45 - AIRCRAFT BY KIND OF FLYING AND TYPE OF AIRCRAFT
FATAL ACCIDENTS
1991

| Kind of Flying | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Personal | 280 | 238 | 37 | 2 | 3 | 13 | 10 | 3 | 5 | 2 | 1 | 301 | 69.0 |
| Business | 48 | 34 | 9 | 4 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 49 | 11.2 |
| Corporate/Executive | 3 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 0.9 |
| Instructional | 28 | 25 | 2 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 31 | 7.1 |
| Aerial Application | 13 | 9 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 14 | 3.2 |
| Other | 27 | 24 | 1 | 1 | 1 | 10 | 5 | 5 | 0 | 0 | 0 | 37 | 8.5 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 399 | 331 | 49 | 12 | 7 | 29 | 19 | 10 | 5 | 2 | 1 | 436 | |
| Percent - | 91.5 | 75.9 | 11.2 | 2.8 | 1.6 | 6.7 | 4.4 | 2.3 | 1.1 | 0.5 | 0.2 | | |

Table 46 - PILOTS BY TOTAL TIME AND TIME IN TYPE
FATAL ACCIDENTS
1991

| Total time (hours) | Time in type (hours): 0-49 | 50-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10000 or more | Not reptd | Pilots: No. | Pilots: Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 49 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 2.1 |
| 50 - 99 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 3 | 20 | 4.6 |
| 100 - 499 | 33 | 12 | 34 | 0 | 0 | 0 | 0 | 32 | 111 | 25.5 |
| 500 - 999 | 16 | 8 | 23 | 8 | 0 | 0 | 0 | 24 | 79 | 18.1 |
| 1000 - 4999 | 13 | 8 | 22 | 21 | 13 | 0 | 0 | 49 | 126 | 28.9 |
| 5000 - 9999 | 2 | 0 | 4 | 5 | 9 | 1 | 0 | 20 | 41 | 9.4 |
| 10000 or more | 5 | 0 | 2 | 2 | 5 | 0 | 0 | 16 | 30 | 6.9 |
| Not reported | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 4.6 |
| Pilots | | | | | | | | | | |
| Number - | 83 | 37 | 85 | 36 | 27 | 1 | 0 | 167 | 436 | |
| Percent - | 19.0 | 8.5 | 19.5 | 8.3 | 6.2 | 0.2 | .0 | 38.3 | | |

Table 47 - PILOTS BY AGE AND KIND OF FLYING
FATAL ACCIDENTS
1991

| Pilot age | Kind of Flying: Personal | Business | Corp/ Exec. | Inst ruct. | Aer. App. | Other | Pilots: No. | Pilots: Percent |
|---|---|---|---|---|---|---|---|---|
| 15 - 19 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 0.7 |
| 20 - 24 | 19 | 3 | 0 | 5 | 0 | 0 | 27 | 6.2 |
| 25 - 29 | 17 | 2 | 1 | 5 | 2 | 1 | 28 | 6.4 |
| 30 - 34 | 16 | 2 | 0 | 8 | 3 | 3 | 32 | 7.3 |
| 35 - 39 | 29 | 6 | 0 | 4 | 3 | 1 | 43 | 9.9 |
| 40 - 44 | 39 | 7 | 1 | 2 | 2 | 6 | 57 | 13.1 |
| 45 - 49 | 53 | 10 | 0 | 1 | 3 | 7 | 74 | 17.0 |
| 50 - 54 | 28 | 6 | 0 | 4 | 0 | 7 | 45 | 10.3 |
| 55 - 59 | 36 | 3 | 1 | 0 | 1 | 3 | 44 | 10.1 |
| 60 - 64 | 20 | 4 | 0 | 1 | 0 | 2 | 27 | 6.2 |
| 65 - 69 | 22 | 1 | 0 | 0 | 0 | 1 | 24 | 5.5 |
| 70 or older | 16 | 2 | 0 | 1 | 0 | 1 | 20 | 4.6 |
| Not reported | 5 | 3 | 1 | 0 | 0 | 3 | 12 | 2.8 |
| Pilots | | | | | | | | |
| Number - | 301 | 49 | 4 | 31 | 14 | 37 | 436 | |
| Percent - | 69.0 | 11.2 | 0.9 | 7.1 | 3.2 | 8.5 | | |

Table 48 - AIRCRAFT BY FIRST OCCURRENCE AND TYPE OF AIRCRAFT
SERIOUS INJURY ACCIDENTS
1991

| Type of First Occurrence | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Altitude deviation, uncontrolled | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Airframe/component/system failure/malfunction | 8 | 6 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 11 | 4.2 |
| Dragged wing, rotor, pod, or float | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Fire/explosion | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Fire | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Forced landing | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 1.5 |
| Gear not extended | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Hard landing | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 7 | 2.7 |
| In flight collision w/obj. | 19 | 17 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 22 | 8.3 |
| In flight collision w/ter. | 9 | 8 | 0 | 0 | 1 | 3 | 2 | 1 | 2 | 0 | 0 | 14 | 5.3 |
| In flight encounter w/wx. | 17 | 14 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 6.8 |
| Loss of control - in flight | 47 | 47 | 0 | 0 | 0 | 5 | 5 | 0 | 1 | 1 | 1 | 55 | 20.8 |
| Loss of control - on ground | 6 | 5 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 7 | 2.7 |
| Midair collision | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 1.5 |
| On ground collision w/obj. | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| On ground collision w/ter. | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Overrun | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 1.1 |
| Loss of power | 28 | 23 | 5 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 30 | 11.4 |
| Loss of power(total) - mech failure/malfunction | 19 | 17 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 7.2 |
| Loss of power(partial) - mech failure/malfunction | 8 | 6 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 3.4 |
| Loss of power(total) - non-mechanical | 34 | 31 | 3 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 36 | 13.6 |
| Loss of power(partial) - non-mechanical | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Propeller/rotor contact | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Roll over | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Undershoot | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Miscellaneous/other | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 1.5 |
| Not reported | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Aircraft Number - | 225 | 204 | 18 | 2 | 1 | 18 | 13 | 5 | 10 | 9 | 2 | 264 | |
| Aircraft Percent - | 85.2 | 77.3 | 6.8 | 0.8 | 0.4 | 6.8 | 4.9 | 1.9 | 3.8 | 3.4 | 0.8 | | |

Table 49 - AIRCRAFT BY FIRST OCCURRENCE AND KIND OF FLYING
SERIOUS INJURY ACCIDENTS
1991

| Type of First Occurrence | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Altitude deviation,uncontrolled | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Airframe/component/system failure/malfunction | 8 | 1 | 0 | 0 | 1 | 1 | 11 | 4.2 |
| Dragged wing, rotor, pod, or float | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Fire/explosion | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Fire | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Forced landing | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Gear not extended | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Hard landing | 2 | 2 | 0 | 1 | 0 | 2 | 7 | 2.7 |
| In flight collision with object | 14 | 1 | 0 | 2 | 4 | 1 | 22 | 8.3 |
| In flight collision with terrain | 9 | 1 | 0 | 1 | 2 | 1 | 14 | 5.3 |
| In flight encounter with weather | 15 | 0 | 0 | 2 | 0 | 1 | 18 | 6.8 |
| Loss of control - in flight | 40 | 3 | 0 | 5 | 2 | 5 | 55 | 20.8 |
| Loss of control - on ground | 3 | 1 | 0 | 1 | 0 | 2 | 7 | 2.7 |
| Midair collision | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 1.5 |
| On ground collision with object | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 1.1 |
| On ground collision with terrain | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Overrun | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Loss of power | 16 | 1 | 0 | 3 | 7 | 3 | 30 | 11.4 |
| Loss of power(total) - mech failure/malfunction | 15 | 0 | 0 | 2 | 0 | 2 | 19 | 7.2 |
| Loss of power(partial) - mech failure/malfunction | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 3.4 |
| Loss of power(total) - non-mechanical | 25 | 0 | 2 | 5 | 0 | 4 | 36 | 13.6 |
| Loss of power(partial) - non-mechanical | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 1.5 |
| Propeller/rotor contact | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Roll over | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.4 |
| Undershoot | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Miscellaneous/other | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Not reported | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Aircraft | | | | | | | | |
| Number - | 186 | 12 | 2 | 25 | 16 | 23 | 264 | |
| Percent - | 70.5 | 4.5 | 0.8 | 9.5 | 6.1 | 8.7 | | |

Table 50 - AIRCRAFT BY FIRST PHASE OF OPERATION AND TYPE OF AIRCRAFT
SERIOUS INJURY ACCIDENTS
1991

| Phase of Operation | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standing - pre-flight | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Standing - starting engine(s) | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Standing - engine(s) operating | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0.8 |
| Taxi | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Taxi - from landing | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Takeoff | 4 | 4 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 6 | 2.3 |
| Takeoff - ground run | 7 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 3.0 |
| Takeoff - initial climb | 57 | 52 | 4 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 62 | 23.5 |
| Climb | 10 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 3.8 |
| Climb - to cruise | 4 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 1.9 |
| Cruise | 22 | 19 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 23 | 8.7 |
| Cruise - normal | 23 | 20 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 8.7 |
| Descent | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.9 |
| Descent - normal | 5 | 4 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 2.3 |
| Descent - emergency | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0.8 |
| Approach | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 5 | 1.9 |
| Approach - VFR pattern downwind | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Approach - VFR pattern base to turn | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Approach - VFR pattern base to final | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 4 | 1.5 |
| Approach - VFR pattern - final approach | 9 | 8 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 13 | 4.9 |
| Approach - go-around (VFR) | 8 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 3.0 |
| Approach - IAF to FAF/ outer marker (IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Approach - FAF/outer marker to threshold (IFR) | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Approach - circling(IFR) | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Approach - missed approach (IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Landing | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 6 | 2.3 |
| Landing - flare/ touchdown | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 7 | 2.7 |
| Maneuvering | 27 | 27 | 0 | 0 | 0 | 3 | 2 | 1 | 1 | 0 | 0 | 31 | 11.7 |
| Maneuvering - aerial application | 10 | 9 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 11 | 4.2 |
| Maneuvering - turn to reverse direction | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Hover | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Other | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Aircraft Number - | 225 | 204 | 18 | 2 | 1 | 18 | 13 | 5 | 10 | 9 | 2 | 264 | |
| Aircraft Percent - | 85.2 | 77.3 | 6.8 | 0.8 | 0.4 | 6.8 | 4.9 | 1.9 | 3.8 | 3.4 | 0.8 | | |

Table 51 - AIRCRAFT BY FIRST PHASE OF OPERATION AND KIND OF FLYING
SERIOUS INJURY ACCIDENTS
1991

| Phase of Operation | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Standing - pre-flight | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Standing - starting engine(s) | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Standing - engine(s) operating | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0.8 |
| Taxi | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Taxi - from landing | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0.8 |
| Takeoff | 4 | 0 | 0 | 2 | 0 | 0 | 6 | 2.3 |
| Takeoff - ground run | 6 | 1 | 0 | 0 | 0 | 1 | 8 | 3.0 |
| Takeoff - initial climb | 52 | 1 | 0 | 5 | 1 | 3 | 62 | 23.5 |
| Climb | 8 | 0 | 0 | 1 | 0 | 1 | 10 | 3.8 |
| Climb - to cruise | 3 | 0 | 0 | 1 | 0 | 1 | 5 | 1.9 |
| Cruise | 18 | 1 | 1 | 1 | 2 | 0 | 23 | 8.7 |
| Cruise - normal | 15 | 0 | 0 | 3 | 0 | 5 | 23 | 8.7 |
| Descent | 3 | 0 | 0 | 1 | 0 | 1 | 5 | 1.9 |
| Descent - normal | 3 | 0 | 1 | 1 | 0 | 1 | 6 | 2.3 |
| Descent - emergency | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Approach | 2 | 1 | 0 | 0 | 0 | 2 | 5 | 1.9 |
| Approach - VFR pattern - downwind | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 1.5 |
| Approach - VFR pattern - base turn | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Approach - VFR pattern - base to final | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 1.5 |
| Approach - VFR pattern - final approach | 11 | 0 | 0 | 1 | 0 | 1 | 13 | 4.9 |
| Approach - go-around (VFR) | 6 | 1 | 0 | 1 | 0 | 0 | 8 | 3.0 |
| Approach - IAF to FAF/outer marker (IFR) | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Approach - FAF/outer marker to threshold (IFR) | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Approach - circling(IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Approach - missed approach (IFR) | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Landing | 2 | 0 | 0 | 3 | 0 | 1 | 6 | 2.3 |
| Landing - flare/touchdown | 5 | 1 | 0 | 0 | 0 | 1 | 7 | 2.7 |
| Maneuvering | 20 | 3 | 0 | 4 | 1 | 3 | 31 | 11.7 |
| Maneuvering - aerial application | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 4.2 |
| Maneuvering - turn to reverse direction | 2 | 0 | 0 | 0 | 1 | 0 | 3 | 1.1 |
| Hover | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Unknown | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 |
| Other | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 1.1 |
| Aircraft | | | | | | | | |
| Number - | 186 | 12 | 2 | 25 | 16 | 23 | 264 | |
| Percent - | 70.5 | 4.5 | 0.8 | 9.5 | 6.1 | 8.7 | | |

Table 52 - AIRCRAFT BY KIND OF FLYING AND TYPE OF AIRCRAFT
SERIOUS INJURY ACCIDENTS
1991

| Kind of Flying | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Personal | 164 | 153 | 11 | 0 | 0 | 6 | 6 | 0 | 9 | 5 | 2 | 186 | 70.5 |
| Business | 9 | 8 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 12 | 4.5 |
| Corporate/Executive | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 |
| Instructional | 21 | 20 | 1 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 25 | 9.5 |
| Aerial Application | 14 | 13 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 16 | 6.1 |
| Other | 15 | 10 | 3 | 2 | 0 | 6 | 2 | 4 | 0 | 2 | 0 | 23 | 8.7 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 225 | 204 | 18 | 2 | 1 | 18 | 13 | 5 | 10 | 9 | 2 | 264 | |
| Percent - | 85.2 | 77.3 | 6.8 | 0.8 | 0.4 | 6.8 | 4.9 | 1.9 | 3.8 | 3.4 | 0.8 | | |

Table 53 - PILOTS BY TOTAL TIME AND TIME IN TYPE
SERIOUS INJURY ACCIDENTS
1991

| Total time (hours) | Time in type (hours): 0-49 | 50-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10000 or more | Not reptd | Pilots No. | Pilots Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 49 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 2.3 |
| 50 - 99 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 3.4 |
| 100 - 499 | 25 | 9 | 35 | 0 | 0 | 0 | 0 | 11 | 80 | 30.3 |
| 500 - 999 | 13 | 4 | 16 | 2 | 0 | 0 | 0 | 4 | 39 | 14.8 |
| 1000 - 4999 | 10 | 9 | 20 | 14 | 17 | 0 | 0 | 11 | 81 | 30.7 |
| 5000 - 9999 | 5 | 4 | 6 | 3 | 6 | 0 | 0 | 1 | 25 | 9.5 |
| 10000 or more | 0 | 2 | 6 | 2 | 3 | 4 | 0 | 1 | 18 | 6.8 |
| Not reported | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 2.3 |
| Pilots | | | | | | | | | | |
| Number - | 64 | 31 | 83 | 21 | 26 | 4 | 0 | 35 | 264 | |
| Percent - | 24.2 | 11.7 | 31.4 | 8.0 | 9.8 | 1.5 | .0 | 13.3 | | |

Table 54 - PILOTS BY AGE AND KIND OF FLYING
SERIOUS INJURY ACCIDENTS
1991

| Pilot age | Kind of Flying | | | | | | Pilots | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| 15 - 19 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.8 |
| 20 - 24 | 6 | 1 | 0 | 6 | 0 | 2 | 15 | 5.7 |
| 25 - 29 | 9 | 1 | 0 | 2 | 1 | 3 | 16 | 6.1 |
| 30 - 34 | 16 | 4 | 0 | 4 | 2 | 1 | 27 | 10.2 |
| 35 - 39 | 27 | 1 | 2 | 5 | 1 | 5 | 41 | 15.5 |
| 40 - 44 | 18 | 4 | 0 | 1 | 5 | 3 | 31 | 11.7 |
| 45 - 49 | 24 | 0 | 0 | 1 | 2 | 5 | 32 | 12.1 |
| 50 - 54 | 27 | 0 | 0 | 0 | 2 | 1 | 30 | 11.4 |
| 55 - 59 | 15 | 1 | 0 | 0 | 2 | 1 | 19 | 7.2 |
| 60 - 64 | 15 | 0 | 0 | 1 | 0 | 1 | 17 | 6.4 |
| 65 - 69 | 11 | 0 | 0 | 1 | 1 | 0 | 13 | 4.9 |
| 70 or older | 14 | 0 | 0 | 2 | 0 | 0 | 16 | 6.1 |
| Not reported | 3 | 0 | 0 | 1 | 0 | 1 | 5 | 1.9 |
| Pilots | | | | | | | | |
| Number - | 186 | 12 | 2 | 25 | 16 | 23 | 264 | |
| Percent - | 70.5 | 4.5 | 0.8 | 9.5 | 6.1 | 8.7 | | |

Table 55 - AIRCRAFT BY FIRST OCCURRENCE AND TYPE OF AIRCRAFT
PROPERTY DAMAGE ACCIDENTS
1991

| Type of First Occurrence | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abrupt maneuver | 3 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 0.3 |
| Altitude deviation, uncontrolled | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Airframe/component/ system/failure | 56 | 45 | 8 | 3 | 0 | 18 | 10 | 8 | 0 | 0 | 0 | 74 | 4.9 |
| Dragged wing, rotor, pod, or float | 14 | 14 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 18 | 1.2 |
| Fire | 10 | 6 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.7 |
| Forced landing | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0.4 |
| Gear collapsed | 7 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.5 |
| Main gear collapsed | 11 | 8 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0.7 |
| Nose gear collapsed | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Complete gear collapsed | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Gear not extended | 7 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.5 |
| Hard landing | 72 | 65 | 6 | 1 | 0 | 14 | 9 | 5 | 0 | 2 | 0 | 88 | 5.9 |
| In flight collision w/obj. | 65 | 61 | 1 | 3 | 0 | 5 | 4 | 1 | 3 | 2 | 0 | 75 | 5.0 |
| In flight collision w/ter. | 44 | 41 | 1 | 2 | 0 | 14 | 12 | 2 | 3 | 0 | 0 | 61 | 4.1 |
| In flight encounter w/wx. | 45 | 41 | 3 | 1 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 53 | 3.5 |
| Loss of control - in flight | 124 | 123 | 1 | 0 | 0 | 21 | 21 | 0 | 5 | 0 | 0 | 150 | 10.0 |
| Loss of control - on ground | 218 | 208 | 9 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 221 | 14.7 |
| Midair collision | 19 | 17 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 1.3 |
| Near collision between aircraft | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Nose down | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Nose over | 26 | 25 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 27 | 1.8 |
| On ground collision w/obj. | 60 | 56 | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 62 | 4.1 |
| On ground collision w/ter. | 25 | 23 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 1.7 |
| On ground encounter w/wx. | 15 | 14 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1.0 |
| Overrun | 42 | 37 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 2.8 |
| Loss of power | 107 | 96 | 11 | 0 | 0 | 8 | 4 | 4 | 0 | 0 | 0 | 115 | 7.7 |
| Loss of power(total) - mech failure/malfunction | 75 | 70 | 3 | 2 | 0 | 5 | 4 | 1 | 0 | 0 | 0 | 80 | 5.3 |
| Loss of power(partial) - mech failure/malfunction | 37 | 34 | 3 | 0 | 0 | 5 | 4 | 1 | 1 | 0 | 0 | 43 | 2.9 |
| Loss of power(total) - non-mechanical | 165 | 154 | 11 | 0 | 0 | 9 | 7 | 2 | 0 | 0 | 0 | 174 | 11.6 |
| Loss of power(partial) - non-mechanical | 43 | 40 | 3 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 48 | 3.2 |
| Propeller blast or jet exhaust/suction | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Roll over | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Undershoot | 12 | 10 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 16 | 1.1 |
| Undetermined | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Vortex turbulence encountered | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Miscellaneous/other | 19 | 16 | 3 | 0 | 0 | 3 | 2 | 1 | 2 | 0 | 0 | 24 | 1.6 |
| Not reported | 14 | 11 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 16 | 1.1 |
| Other | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Aircraft Number - | 1351 | 1238 | 89 | 22 | 2 | 119 | 93 | 26 | 28 | 5 | 0 | 1503 | |
| Aircraft Percent - | 89.9 | 82.4 | 5.9 | 1.5 | 0.1 | 7.9 | 6.2 | 1.7 | 1.9 | 0.3 | .0 | | |

Table 56 - AIRCRAFT BY FIRST OCCURRENCE AND KIND OF FLYING
PROPERTY DAMAGE ACCIDENTS
1991

| Type of First Occurrence | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Abrupt maneuver | 1 | 0 | 0 | 2 | 1 | 0 | 4 | 0.3 |
| Altitude deviation,uncontrolled | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Airframe/component/system failure/ malfunction | 39 | 6 | 0 | 12 | 11 | 6 | 74 | 4.9 |
| Dragged wing, rotor, pod, or float | 9 | 0 | 0 | 2 | 5 | 2 | 18 | 1.2 |
| Fire | 4 | 2 | 0 | 0 | 1 | 3 | 10 | 0.7 |
| Forced landing | 5 | 0 | 0 | 0 | 1 | 0 | 6 | 0.4 |
| Gear collapsed | 6 | 0 | 0 | 1 | 0 | 0 | 7 | 0.5 |
| Main gear collapsed | 5 | 3 | 0 | 1 | 2 | 0 | 11 | 0.7 |
| Nose gear collapsed | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Complete gear collapsed | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Gear not extended | 5 | 1 | 0 | 1 | 0 | 0 | 7 | 0.5 |
| Hard landing | 43 | 7 | 0 | 33 | 0 | 5 | 88 | 5.9 |
| In flight collision with object | 42 | 2 | 1 | 6 | 17 | 7 | 75 | 5.0 |
| In flight collision with terrain | 30 | 3 | 1 | 14 | 10 | 3 | 61 | 4.1 |
| In flight encounter with weather | 41 | 5 | 1 | 4 | 1 | 1 | 53 | 3.5 |
| Loss of control - in flight | 94 | 2 | 0 | 35 | 9 | 10 | 150 | 10.0 |
| Loss of control - on ground | 134 | 16 | 0 | 58 | 6 | 7 | 221 | 14.7 |
| Midair collision | 10 | 1 | 0 | 3 | 0 | 5 | 19 | 1.3 |
| Near collision between aircraft | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Nose down | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 |
| Nose over | 21 | 1 | 0 | 2 | 2 | 1 | 27 | 1.8 |
| On ground collision with object | 39 | 6 | 0 | 12 | 5 | 0 | 62 | 4.1 |
| On ground collision with terrain | 17 | 3 | 0 | 0 | 3 | 2 | 25 | 1.7 |
| On ground encounter with weather | 9 | 2 | 0 | 3 | 0 | 1 | 15 | 1.0 |
| Overrun | 33 | 1 | 0 | 5 | 3 | 0 | 42 | 2.8 |
| Loss of power | 61 | 6 | 2 | 26 | 12 | 8 | 115 | 7.7 |
| Loss of power(total) - mech failure/malfunction | 47 | 6 | 0 | 7 | 18 | 2 | 80 | 5.3 |
| Loss of power(partial) - mech failure/malfunction | 24 | 2 | 0 | 5 | 7 | 5 | 43 | 2.9 |
| Loss of power(total) - non-mechanical | 110 | 12 | 0 | 31 | 9 | 12 | 174 | 11.6 |
| Loss of power(partial) - non-mechanical | 35 | 0 | 0 | 6 | 4 | 3 | 48 | 3.2 |
| Propeller blast or jet exhaust/suction | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Roll over | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 |
| Undershoot | 10 | 0 | 0 | 5 | 0 | 1 | 16 | 1.1 |
| Undetermined | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 |
| Vortex turbulence encountered | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0.1 |
| Miscellaneous/other | 12 | 0 | 0 | 8 | 0 | 4 | 24 | 1.6 |
| Not reported | 9 | 0 | 0 | 2 | 1 | 4 | 16 | 1.1 |
| Other | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Aircraft | | | | | | | | |
| Number - | 902 | 88 | 5 | 287 | 129 | 92 | 1503 | |
| Percent - | 60.0 | 5.9 | 0.3 | 19.1 | 8.6 | 6.1 | | |

Table 57 - AIRCRAFT BY FIRST PHASE OF OPERATION AND TYPE OF AIRCRAFT
PROPERTY DAMAGE ACCIDENTS
1991

| Phase of Operation | Type of Aircraft | | | | | | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | No. | Pct |
| Standing | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Standing - pre-flight | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Standing - starting engine(s) | 5 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.3 |
| Standing - engine(s) operating | 10 | 8 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.7 |
| Standing - idling rotors | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Taxi | 5 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.3 |
| Taxi - to takeoff | 16 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 1.1 |
| Taxi - from landing | 16 | 15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 1.1 |
| Taxi - aerial | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 0.1 |
| Takeoff | 25 | 22 | 3 | 0 | 0 | 4 | 4 | 0 | 1 | 0 | 0 | 30 | 2.0 |
| Takeoff - ground run | 81 | 79 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 82 | 5.5 |
| Takeoff - initial climb | 179 | 165 | 14 | 0 | 0 | 8 | 7 | 1 | 2 | 0 | 0 | 189 | 12.6 |
| Climb | 19 | 18 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 21 | 1.4 |
| Climb - to cruise | 22 | 21 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 23 | 1.5 |
| Cruise | 105 | 99 | 5 | 1 | 0 | 11 | 4 | 7 | 0 | 1 | 0 | 117 | 7.8 |
| Cruise - normal | 110 | 103 | 6 | 1 | 0 | 6 | 5 | 1 | 0 | 1 | 0 | 117 | 7.8 |
| Cruise - holding(IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Descent | 6 | 6 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 8 | 0.5 |
| Descent - normal | 23 | 21 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 24 | 1.6 |
| Descent - emergency | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 4 | 0.3 |
| Descent - uncontrolled | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Approach | 21 | 18 | 3 | 0 | 0 | 2 | 2 | 0 | 3 | 1 | 0 | 27 | 1.8 |
| Approach - VFR pattern - downwind | 11 | 8 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 12 | 0.8 |
| Approach - VFR pattern - base turn | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.2 |
| Approach - VFR pattern - base to final | 13 | 11 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 15 | 1.0 |
| Approach - VFR pattern - final approach | 62 | 58 | 4 | 0 | 0 | 2 | 1 | 1 | 7 | 0 | 0 | 71 | 4.7 |
| Approach - go-around (VFR) | 36 | 34 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 2.4 |
| Approach - IAF to FAF/ outer marker (IFR) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Approach - FAF/outer marker to threshold (IFR) | 6 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.4 |
| Approach - missed approach (IFR) | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Landing | 12 | 11 | 1 | 0 | 0 | 6 | 5 | 1 | 1 | 0 | 0 | 19 | 1.3 |
| Landing - flare/touchdown | 159 | 146 | 9 | 4 | 0 | 21 | 15 | 6 | 3 | 2 | 0 | 185 | 12.3 |
| Landing - roll | 233 | 208 | 20 | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 234 | 15.6 |
| Maneuvering | 56 | 54 | 0 | 1 | 1 | 12 | 11 | 1 | 3 | 0 | 0 | 71 | 4.7 |
| Maneuvering - aerial application | 46 | 41 | 0 | 5 | 0 | 16 | 14 | 2 | 0 | 0 | 0 | 62 | 4.1 |
| Maneuvering - turn to reverse direction | 9 | 9 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 13 | 0.9 |
| Maneuvering - turn to landing area (emergency) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0.1 |
| Hover | 0 | 0 | 0 | 0 | 0 | 14 | 12 | 2 | 0 | 0 | 0 | 14 | 0.9 |
| Other | 41 | 40 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 44 | 2.9 |
| Unknown | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Not reported | 9 | 6 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 10 | 0.7 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 1351 | 1238 | 89 | 22 | 2 | 119 | 93 | 26 | 28 | 5 | 0 | 1503 | |
| Percent - | 89.9 | 82.4 | 5.9 | 1.5 | 0.1 | 7.9 | 6.2 | 1.7 | 1.9 | 0.3 | .0 | | |

Table 58 - AIRCRAFT BY FIRST PHASE OF OPERATION AND KIND OF FLYING
PROPERTY DAMAGE ACCIDENTS
1991

| Phase of Operation | Kind of Flying | | | | | | Aircraft | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| Standing | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0.1 |
| Standing - pre-flight | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Standing - starting engine(s) | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0.3 |
| Standing - engine(s) operating | 6 | 1 | 0 | 2 | 0 | 1 | 10 | 0.7 |
| Standing - idling rotors | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.1 |
| Taxi | 3 | 1 | 0 | 1 | 0 | 0 | 5 | 0.3 |
| Taxi - to takeoff | 11 | 2 | 0 | 3 | 0 | 0 | 16 | 1.1 |
| Taxi - from landing | 9 | 2 | 0 | 3 | 0 | 2 | 16 | 1.1 |
| Taxi - aerial | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.1 |
| Takeoff | 13 | 1 | 0 | 8 | 6 | 2 | 30 | 2.0 |
| Takeoff - ground run | 53 | 4 | 0 | 13 | 11 | 1 | 82 | 5.5 |
| Takeoff - initial climb | 128 | 8 | 1 | 24 | 19 | 9 | 189 | 12.6 |
| Climb | 15 | 0 | 0 | 4 | 0 | 2 | 21 | 1.4 |
| Climb - to cruise | 20 | 1 | 0 | 1 | 0 | 1 | 23 | 1.5 |
| Cruise | 70 | 11 | 0 | 14 | 10 | 12 | 117 | 7.8 |
| Cruise - normal | 83 | 7 | 0 | 15 | 4 | 8 | 117 | 7.8 |
| Cruise - holding(IFR) | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 |
| Descent | 6 | 0 | 0 | 1 | 1 | 0 | 8 | 0.5 |
| Descent - normal | 13 | 3 | 0 | 5 | 0 | 3 | 24 | 1.6 |
| Descent - emergency | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 0.3 |
| Descent - uncontrolled | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0.1 |
| Approach | 19 | 2 | 0 | 6 | 0 | 0 | 27 | 1.8 |
| Approach - VFR pattern - downwind | 9 | 0 | 0 | 3 | 0 | 0 | 12 | 0.8 |
| Approach - VFR pattern - base turn | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 0.2 |
| Approach - VFR pattern - base to final | 11 | 1 | 0 | 3 | 0 | 0 | 15 | 1.0 |
| Approach - VFR pattern - final approach | 57 | 1 | 1 | 8 | 1 | 3 | 71 | 4.7 |
| Approach - go-around (VFR) | 16 | 0 | 0 | 19 | 0 | 1 | 36 | 2.4 |
| Approach - IAF to FAF/outer marker (IFR) | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Approach - FAF/outer marker to threshold (IFR) | 3 | 1 | 2 | 0 | 0 | 0 | 6 | 0.4 |
| Approach - missed approach (IFR) | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 |
| Landing | 8 | 0 | 0 | 9 | 1 | 1 | 19 | 1.3 |
| Landing - flare/touchdown | 99 | 12 | 1 | 60 | 3 | 10 | 185 | 12.3 |
| Landing - roll | 151 | 21 | 0 | 49 | 6 | 7 | 234 | 15.6 |
| Maneuvering | 39 | 4 | 0 | 12 | 2 | 14 | 71 | 4.7 |
| Maneuvering - aerial application | 1 | 2 | 0 | 0 | 56 | 3 | 62 | 4.1 |
| Maneuvering - turn to reverse direction | 2 | 1 | 0 | 2 | 5 | 3 | 13 | 0.9 |
| Maneuvering - turn to landing area emergency | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0.1 |
| Hover | 5 | 0 | 0 | 6 | 1 | 2 | 14 | 0.9 |
| Other | 35 | 1 | 0 | 7 | 0 | 1 | 44 | 2.9 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.1 |
| Not reported | 4 | 0 | 0 | 1 | 1 | 4 | 10 | 0.7 |
| Aircraft | | | | | | | | |
| Number - | 902 | 88 | 5 | 287 | 129 | 92 | 1503 | |
| Percent - | 60.0 | 5.9 | 0.3 | 19.1 | 8.6 | 6.1 | | |

Table 59 - AIRCRAFT BY KIND OF FLYING AND TYPE OF AIRCRAFT
PROPERTY DAMAGE ACCIDENTS
1991

| Kind of Flying | Type of Aircraft: All Fixed Wing | Fixed Wing Singl Recip Engin | Fixed Wing Multi Recip Engin | Fixed Wing Turbo prop | Fixed Wing Turbo Jet | All Rotor craft | Rotor craft Recip Engin | Rotor craft Turb Engin | Glid ers | Bal loons | Oth | Aircraft No. | Aircraft Pct |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Personal | 849 | 792 | 54 | 3 | 0 | 27 | 26 | 1 | 21 | 5 | 0 | 902 | 60.0 |
| Business | 75 | 57 | 12 | 5 | 1 | 12 | 4 | 8 | 1 | 0 | 0 | 88 | 5.9 |
| Corporate/Executive | 5 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.3 |
| Instructional | 252 | 236 | 12 | 4 | 0 | 30 | 27 | 3 | 5 | 0 | 0 | 287 | 19.1 |
| Aerial Application | 103 | 96 | 0 | 7 | 0 | 26 | 23 | 3 | 0 | 0 | 0 | 129 | 8.6 |
| Other | 67 | 56 | 8 | 2 | 1 | 24 | 13 | 11 | 1 | 0 | 0 | 92 | 6.1 |
| Aircraft | | | | | | | | | | | | | |
| Number - | 1351 | 1238 | 89 | 22 | 2 | 119 | 93 | 26 | 28 | 5 | 0 | 1503 | |
| Percent - | 89.9 | 82.4 | 5.9 | 1.5 | 0.1 | 7.9 | 6.2 | 1.7 | 1.9 | 0.3 | .0 | | |

Table 60 - PILOTS BY TOTAL TIME AND TIME IN TYPE
PROPERTY DAMAGE ACCIDENTS
1991

| Total time (hours) | Time in type (hours): 0-49 | 50-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10000 or more | Not reptd | Pilots: No. | Pilots: Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 49 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 104 | 6.9 |
| 50 - 99 | 46 | 43 | 0 | 0 | 0 | 0 | 0 | 8 | 97 | 6.5 |
| 100 - 499 | 138 | 84 | 144 | 0 | 0 | 0 | 0 | 31 | 397 | 26.4 |
| 500 - 999 | 55 | 26 | 84 | 39 | 0 | 0 | 0 | 13 | 217 | 14.4 |
| 1000 - 4999 | 63 | 48 | 126 | 72 | 94 | 0 | 0 | 23 | 426 | 28.3 |
| 5000 - 9999 | 11 | 5 | 28 | 14 | 53 | 15 | 0 | 9 | 135 | 9.0 |
| 10000 or more | 8 | 3 | 15 | 11 | 32 | 15 | 0 | 7 | 91 | 6.1 |
| Not reported | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 35 | 36 | 2.4 |
| Pilots | | | | | | | | | | |
| Number - | 419 | 209 | 397 | 136 | 180 | 30 | 0 | 132 | 1503 | |
| Percent - | 27.9 | 13.9 | 26.4 | 9.0 | 12.0 | 2.0 | .0 | 8.8 | | |

Table 61 - PILOTS BY AGE AND KIND OF FLYING
PROPERTY DAMAGE ACCIDENTS
1991

| Pilot age | Kind of Flying | | | | | | Pilots | |
|---|---|---|---|---|---|---|---|---|
| | Personal | Business | Corp/ Exec. | Instruct. | Aer. App. | Other | No. | Percent |
| 15 - 19 | 6 | 0 | 0 | 15 | 0 | 1 | 22 | 1.5 |
| 20 - 24 | 44 | 4 | 0 | 61 | 2 | 2 | 113 | 7.5 |
| 25 - 29 | 65 | 7 | 2 | 49 | 12 | 19 | 154 | 10.2 |
| 30 - 34 | 81 | 11 | 0 | 32 | 12 | 9 | 145 | 9.6 |
| 35 - 39 | 99 | 9 | 0 | 34 | 21 | 6 | 169 | 11.2 |
| 40 - 44 | 131 | 14 | 1 | 25 | 32 | 19 | 222 | 14.8 |
| 45 - 49 | 131 | 12 | 1 | 24 | 22 | 12 | 202 | 13.4 |
| 50 - 54 | 97 | 11 | 0 | 11 | 12 | 9 | 140 | 9.3 |
| 55 - 59 | 81 | 6 | 0 | 14 | 7 | 2 | 110 | 7.3 |
| 60 - 64 | 65 | 4 | 0 | 7 | 5 | 4 | 85 | 5.7 |
| 65 - 69 | 46 | 7 | 1 | 5 | 2 | 3 | 64 | 4.3 |
| 70 or older | 34 | 2 | 0 | 2 | 0 | 0 | 38 | 2.5 |
| Not reported | 22 | 1 | 0 | 8 | 2 | 6 | 39 | 2.6 |
| Pilots | | | | | | | | |
| Number - | 902 | 88 | 5 | 287 | 129 | 92 | 1503 | |
| Percent - | 60.0 | 5.9 | 0.3 | 19.1 | 8.6 | 6.1 | | |

Table 62 - SUMMARY OF LOSSES
MIDAIR COLLISION ACCIDENTS
(One or Both Aircraft General Aviation)
1987 - 1991

| | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|
| **Accidents** | | | | | |
| Fatal | 13 | 9 | 12 | 12 | 11 |
| Involved Serious Injury | 1 | 2 | 1 | 0 | 2 |
| Involved Minor Injury | 1 | 2 | 2 | 1 | 4 |
| Involved No Injury | 10 | 6 | 3 | 8 | 4 |
| Total | 25 | 19 | 18 | 21 | 21 |
| **Fatalities** | | | | | |
| Passenger | 8 | 2 | 13 | 3 | 8 |
| Crew | 23 | 12 | 27 | 22 | 17 |
| Other Persons | 13 | 2 | 1 | 1 | 10 |
| Total | 44 | 16 | 41 | 26 | 35 |
| **Aircraft Damage*** | | | | | |
| Destroyed | 20 | 15 | 22 | 19 | 19 |
| Substantial | 16 | 15 | 9 | 16 | 16 |
| Minor | 6 | 5 | 3 | 4 | 4 |
| None | 1 | 1 | 1 | 0 | 0 |
| Total | 43 | 36 | 35 | 39 | 39 |

* Number of General Aviation Aircraft

Table 63 - ACCIDENTS BY TYPES OF OPERATIONS
MIDAIR COLLISION ACCIDENTS
1982 - 1991

| Year | Accidents | | Total | Number of Accidents Involving A General Aviation Aircraft AND | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Fatal | Fatalities | 121 | S135 | N135 | GA | US Mil | Forgn | NotReg |
| 1982 | 28 | 17 | 56 | 0 | 1 | 1 | 25 | 0 | 1 | 0 |
| 1983 | 12 | 7 | 22 | 0 | 0 | 1 | 10 | 0 | 1 | 0 |
| 1984 | 25 | 14 | 47 | 0 | 1 | 0 | 24 | 0 | 0 | 0 |
| 1985 | 23 | 13 | 35 | 0 | 0 | 0 | 19 | 2 | 1 | 1 |
| 1986 | 29 | 17 | 136 | 0 | 0 | 0 | 27 | 1 | 1 | 0 |
| 1987 | 25 | 13 | 44 | 0 | 3 | 2 | 18 | 2 | 0 | 0 |
| 1988 | 19 | 9 | 16 | 0 | 0 | 2 | 17 | 0 | 0 | 0 |
| 1989 | 18 | 12 | 41 | 0 | 0 | 1 | 17 | 0 | 0 | 0 |
| 1990 | 21 | 12 | 26 | 0 | 2 | 0 | 18 | 1 | 0 | 0 |
| 1991 | 21 | 11 | 35 | 0 | 0 | 1 | 19 | 0 | 0 | 1 |
| | 221 | 125 | 458 | 0 | 7 | 8 | 194 | 6 | 4 | 2 |

NOTE: 121 = 14 CFR 121, 125 or 127 Operation
S135 = Scheduled 14 CFR 135 Operation
N135 = Nonscheduled 14 CFR 135 Operation
GA = General Aviation Operation
US Mil = United States Military Operation
Forgn = Foreign Registered Aircraft Operation
Not Reg = Operation by Unregistered Aircraft

Table 64 - ACCIDENTS BY WEATHER AND VISIBILITY
MIDAIR COLLISION ACCIDENTS
1991

| | Accidents | |
|---|---|---|
| | No. | Percent |
| **Weather Conditions** | | |
| Visual Meteorological Conditions (VMC) | 21 | 100.0 |
| Instrument Meteorological Conditions (IMC) | 0 | .0 |
| Total | 21 | 100.0 |
| **Visibility** | | |
| Less than 5 Miles | 2 | 9.5 |
| Greater than, Equal to 5 Miles, Less Than 10 Miles | 5 | 23.8 |
| Greater than, Equal to 10 Miles, Less than 20 Miles | 7 | 33.3 |
| Greater than, Equal to 20 Miles | 7 | 33.3 |
| Total | 21 | 100.0 |

Table 65 - ACCIDENTS BY PHASES OF OPERATION
MIDAIR COLLISION ACCIDENTS
1991

| Phases of Operation | | Accidents* | |
|---|---|---|---|
| Aircraft | Aircraft 2 | No. | Percent |
| Takeoff - Inital Climb | Takeoff - Intial Climb | 1 | 4.8 |
| Takeoff - Initial Climb | Maneuvering - Aerial Application | 1 | 4.8 |
| Total (Either or Both Aircraft in Takeoff Phase) | | 2 | 9.5 |
| Climb | Approach | 1 | 4.8 |
| Climb to Cruise | Climb to Cruise | 1 | 4.8 |
| Total (Either or Both Aircraft in Climb Phase) | | 2 | 9.5 |
| Cruise | Cruise | 4 | 19.0 |
| Cruise | Descent | 1 | 4.8 |
| Cruise | Approach - VFR Pattern - Base to Final | 1 | 4.8 |
| Cruise - Normal | Cruise - Normal | 2 | 9.5 |
| Cruise - Normal | Maneuvering | 1 | 4.8 |
| Total (Either or Both Aircraft in Cruise Phase) | | 9 | 42.9 |
| Descent | Cruise | 1 | 4.8 |
| Total (Either or Both Aircraft in Descent Phase) | | 1 | 4.8 |
| Approach | Approach | 1 | 4.8 |
| Approach | Climb | 1 | 4.8 |
| Approach | Maneuvering | 1 | 4.8 |
| Approach - VFR Pattern - Final Approach | Approach - VFR Pattern - Final Approach | 2 | 9.5 |
| Approach - VFR Pattern - Base to Final | Cruise | 1 | 4.8 |
| Total (Either or Both Aircraft in Approach Phase) | | 6 | 28.6 |
| Landing - Flare/Touchdown | Landing - Flare/Touchdown | 1 | 4.8 |
| Total (Either or Both Aircraft in Landing Phase) | | 1 | 4.8 |
| Maneuvering | Maneuvering | 3 | 14.3 |
| Maneuvering | Cruise - Normal | 1 | 4.8 |
| Maneuvering | Approach | 1 | 4.8 |
| Maneuvering - Aerial Application | Takeoff - Initial Climb | 1 | 4.8 |
| Total (Either or Both Aircraft in Maneuvering Phase) | | 6 | 28.6 |
| Total Number of Midair Accidents | | 21 | |

* Midair collision accidents in this table are grouped according to the Phase of Operation of ONE of the involved aircraft. Column totals do not equal the total number of accidents since collisions between aircraft with different phases of operation are listed in both groupings.*

Table 66 - ACCIDENTS BY TYPE OF FLIGHT PLANS FILED
MIDAIR COLLISION ACCIDENTS
1991

| Types of Flight Plan Filed | Accidents* No. | Accidents* Percent |
|---|---|---|
| None and None | 19 | 90.5 |
| Total (Either or Both Aircraft with No Flight Plan Filed) | 19 | 90.5 |
| VFR and IFR | 1 | 4.8 |
| Total (Either or Both Aircraft with VFR Flight Plan Filed) | 1 | 4.8 |
| IFR and VFR | 1 | 4.8 |
| Total (Either or Both Aircraft with IFR Flight Plan Filed) | 1 | 4.8 |
| Total Number of Midair Accidents | 21 | |

* Midair collision accidents in this table are grouped according to the Type of Flight Plan filed by ONE of the involved aircraft. Column totals do not equal the total number of accidents since collisions between aircraft with different types of flight plans are listed in both groups.

Table 67 - ACCIDENTS BY TYPE OF AIRCRAFT
MIDAIR COLLISION ACCIDENTS
1991

| Type(s) of Aircraft | Accidents No. | Accidents Percent |
|---|---|---|
| Fixed Wing Single Engine Recip. and Fixed Wing Single Engine Recip. | 13 | 61.9 |
| Fixed Wing Single Engine Recip. and Fixed Wing Multiple Engine Recip. | 1 | 4.8 |
| Fixed Wing Single Engine Recip. and Fixed Wing Turboprop | 2 | 9.5 |
| Fixed Wing Single Engine Recip. and Rotorcraft Turbine Engine | 1 | 4.8 |
| Fixed Wing Multiple Engine Recip. and Rotorcraft Turbine Engine | 1 | 4.8 |
| Fixed Wing Multiple Engine Recip. and Fixed Wing Turbojet | 1 | 4.8 |
| Fixed Wing Multiple Engine Recip and Fixed Wing Turboprop | 1 | 4.8 |
| Total Fixed Wing (Either or Both Aircraft) | 20 | 95.2 |
| Rotorcraft, Turbine Engine and Fixed Wing Single Engine Recip. | 1 | 4.8 |
| Rotorcraft, Turbine Engine and Fixed Wing Multiple Engine Recip. | 1 | 4.8 |
| Total Rotorcraft (Either or Both Aircraft) | 2 | 9.5 |
| Glider and Glider | 1 | 4.8 |
| Total Glider (Either or Both Aircraft) | 1 | 4.8 |
| Total Number of Midair Accidents | 21 | |

* Midair collision accidents in this table are grouped according to the type of Aircraft of ONE of the involved aircraft. Column totals do not equal the total number of accidents since collisions between different types of aircraft are listed in both groupings.

Table 68 - ACCIDENTS BY KINDS OF FLYING
MIDAIR COLLISION ACCIDENTS
1991

| Kind(s) of Flying | Accidents* No. | Percent |
|---|---|---|
| Personal and Personal | 7 | 33.3 |
| Personal and Business | 1 | 4.8 |
| Personal and Instruction | 3 | 14.3 |
| Personal and Other | 2 | 9.5 |
| Total (Personal Flying by Either or Both Aircraft) | 13 | 61.9 |
| Business and Personal | 1 | 4.8 |
| Business and Instruction | 1 | 4.8 |
| Total (Business Flying By Either or Both Aircraft) | 2 | 9.5 |
| Corporate/Executive and Other | 1 | 4.8 |
| Total (Corporate/Executive by Either or Both Aircraft) | 1 | 4.8 |
| Aerial Application and Aerial Application | 1 | 4.8 |
| Total (Aerial Application by Either or Both Aircraft) | 1 | 4.8 |
| Instruction and Instruction | 1 | 4.8 |
| Instruction and Business | 1 | 4.8 |
| Instruction and Personal | 3 | 14.3 |
| Instruction and Other | 1 | 4.8 |
| Total (Instructional Flying by Either or Both Aircraft) | 6 | 28.6 |
| Other and Other | 3 | 14.3 |
| Other and Personal | 2 | 9.5 |
| Other and Corporate/Executive | 1 | 4.8 |
| Other and Instruction | 1 | 4.8 |
| Total (Other Kind of Flying by Either or Both Aircraft) | 7 | 33.3 |
| Total Number of Midair Accidents | 21 | |

* Midair collision accidents in this table are grouped according to the Kind of Flying of ONE of the involved aircraft. Column totals do not equal the total number of accidents since collisions between aircraft with different Kinds of Flying are listed in both groupings.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

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Member

## APPENDIX A -- EXPLANATORY NOTES

AIRCRAFT ACCIDENT: The accidents included in this report are the occurrences incident to flight in which, "as a result of the operation of an aircraft, any person (occupant or nonoccupant) receives fatal or serious injury or any aircraft receives substantial damage." The Board's definition of substantial damage as stated in 49 CFR 830.2 is:

(1) Except as provided in subparagraph (2) of this paragraph, substantial damage means damage or structural 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.

(2) Engine failure, damage limited to an engine, bent fairings or cowling, dented skin, small punctured holes in the skin of fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage".

CAUSES AND RELATED FACTORS: In determining probable cause(s) of an accident, all facts, conditions, and circumstances are considered. The objective is to ascertain those cause and effect relationships in the accident sequence about which something can be done to prevent recurrence of the type of accident under consideration. Accordingly, for statistical purposes, where two or more causes exist in an accident, each is recorded and no attempt is made to establish a primary cause. Therefore, in the cause and related factor table, the figures shown in the columns dealing with cause will exceed the total number of accidents. The term "factor" is used, in general, to denote those elements of an accident that further explain or supplement the probable cause(s); this provides a means for collecting essential items of information that could not be readily categorized elsewhere in the system.

COLLISION BETWEEN AIRCRAFT: Collisions between aircraft are so classified only when both aircraft are occupied. This includes collisions wherein both aircraft are airborne (midair); one is airborne, the other on the ground; and both are on the ground. A collision with a parked unoccupied aircraft is classified under the broad category of collision with objects.

FATAL INJURY: Any injury which results in death within 30 days of the accident.

INJURY INDEX: Injury index refers to the highest degree of personal injury sustained as a result of the accident.

KIND OF FLYING: The purpose for which the aircraft was being operated at the time of the accident. In this report, accident statistics are presented for five kinds of flying which are defined as follows:

Personal - Flying by individuals in their own or rented aircraft for pleasure, or personal transportation not in furtherance of their occupation or company business. This category includes practice flying (for the purpose of increasing or maintaining proficiency) not performed under supervision of an accredited instructor, and not part of an approved flight training program.

Business - The use of aircraft by pilots (not receiving direct salary or compensation for piloting) in connection with their occupation or in the furtherance of a private business.

Corporate/Executive - The use of aircraft owned or leased, and operated by a corporate or business firm for the transportation of personnel or cargo in furtherance of the corporation's or firm's business, and which are flown by professional pilots receiving a direct salary or compensation for piloting.

Aerial Application - The operation of aircraft for the purpose of dispensing any substance for plant nourishment, soil treatment, propagation of plant life, pest control, or fire control, including flying to and from the application site.

Instructional - Flying accomplished in supervised training under the direction of an accredited instructor.

PHASE OF OPERATION: The phase of the flight or operation is the particular phase of

flight in which the first occurrence or circumstance occurred. In the event that there was more than one occurrence in one operational phase, the same phase is recorded for each of those occurrences.

SERIOUS INJURY: 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) involves lacerations which cause severe hemorrhages, nerve, muscle, or tendon damage; 4) involves injury to any internal organ; or 5) involves second-or third-degree burns, or any burns affecting more than 5 percent of body surface. (49 CFR 830.2)

TYPE OF OCCURRENCE: "Occurrences" is the highest level of an accident classification mechanism known as the Sequence of Events. This concept was introduced in 1982 accident investigations to describe the circumstances in an accident. To describe an accident, up to five occurrences may be used. Typically each occurrence is further defined by one or more "findings" which, when presented chronologically depict the accident scenario from beginning to end in considerable detail. The findings are developed by NTSB analysts from a menu of words and phrases, and are the most detailed means of classifying an accident. The findings are also the vehicle used to describe the probable cause of, and related factors in an accident. The example below illustrates the relationship between occurrences and findings.

| | |
|---|---|
| Occurrence | IN FLIGHT COLLISION WITH TERRAIN |
| Phase of Operation | LANDING - FLARE/TOUCHDOWN |

Finding(s)

1. WHEELS UP LANDING - INADVERTENT - PILOT IN COMMAND
2. IMPROPER USE OF PROCEDURE, DIVERTED ATTENTION - PILOT IN COMMAND

TYPES OF WEATHER CONDITIONS: The types of weather conditions (VMC/IMC) are determined in accordance with the prescribed minima in Part 91 of the Federal Aviation Regulations. These minima pertain to the ceiling and visibility, in conjunction with the type of airspace, at the accident site. Type of weather conditions is based on surface weather as detemined from officially recognized sources. Weather conditions encountered in flight are not necessarily representative of the classifications VMC/IMC as carried under Type of Weather Conditions.

APPENDIX B

CAUSE/FACTOR ASSIGNMENTS

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **AIRCRAFT** | | |
| 1 engine | 3 | 1 |
| Accessory drive assy,drive gear | 6 | 5 |
| Aerial application equipment | 1 | 1 |
| Aircraft performance | 7 | 1 |
| Aircraft performance,climb capability | 10 | 6 |
| Aircraft performance,engine out capability | 1 | 0 |
| Aircraft performance,helicopter hover performance | 3 | 2 |
| Aircraft performance,hydroplaning condition | 2 | 0 |
| Aircraft performance,landing capability | 3 | 3 |
| Aircraft performance,takeoff capability | 3 | 3 |
| Anti-ice/de-ice system | 1 | 0 |
| Autopilot/flight director | 3 | 2 |
| Balloon equipment,heater system | 1 | 1 |
| Balloon equipment,suspension system | 1 | 0 |
| Carburetor heat control | 2 | 1 |
| Carburetor heat control,bellcrank | 1 | 1 |
| Carburetor heat control,linkage | 1 | 1 |
| Comm/nav equipment,glide slope receiver | 1 | 0 |
| Comm/nav equipment,transceiver | 1 | 0 |
| Compressor assembly,blade | 1 | 0 |
| Compressor assembly,impeller | 1 | 1 |
| Cooling system | 1 | 1 |
| Cooling system,baffle | 1 | 1 |
| Cooling system,cowling | 2 | 2 |
| Door | 4 | 3 |
| Door,cargo | 1 | 0 |
| Door,inspection | 1 | 1 |
| Door,interior crew | 2 | 1 |
| Door,service | 1 | 0 |
| Electrical system | 5 | 3 |
| Electrical system,alternator | 4 | 2 |
| Electrical system,battery | 3 | 2 |
| Electrical system,circuit breaker | 2 | 1 |
| Electrical system,electric wiring | 1 | 1 |
| Electrical system,generator | 1 | 0 |
| Eng assembly,crankshaft counterweights/vib damper | 2 | 2 |
| Engine accessories,engine starter | 2 | 0 |
| Engine assembly | 6 | 5 |
| Engine assembly,bearing | 8 | 7 |
| Engine assembly,blower/impeller | 2 | 2 |
| Engine assembly,camshaft | 2 | 2 |
| Engine assembly,connecting rod | 12 | 10 |
| Engine assembly,connecting rod bolt | 5 | 4 |
| Engine assembly,connecting rod cap | 2 | 2 |
| Engine assembly,crankcase | 1 | 0 |
| Engine assembly,crankshaft | 8 | 8 |
| Engine assembly,cylinder | 9 | 8 |
| Engine assembly,master rod | 1 | 1 |
| Engine assembly,other | 1 | 0 |
| Engine assembly,piston | 6 | 5 |
| Engine assembly,push rod | 1 | 1 |
| Engine assembly,ring | 2 | 1 |
| Engine assembly,rocker arm/tappet | 2 | 1 |
| Engine assembly,valve,exhaust | 26 | 22 |
| Engine assembly,valve,intake | 5 | 5 |
| Engine installation | 1 | 1 |
| Engine instruments,carb air temp gage | 1 | 0 |
| Engine instruments,fuel flow gage | 1 | 0 |
| Engine instruments,fuel quantity gage | 5 | 0 |
| Engine instruments,oil pressure gage | 1 | 0 |
| Engine instruments,oil temperature gage | 2 | 0 |
| Engine instruments,tachometer | 2 | 0 |
| Exhaust system,baffle | 1 | 0 |
| Exhaust system,clamp | 1 | 1 |
| Exhaust system,gasket | 1 | 0 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **AIRCRAFT** (continued) | | |
| Exhaust system,manifold | 1 | 1 |
| Exhaust system,muffler | 1 | 0 |
| Exhaust system,turbocharger | 2 | 2 |
| Exterior lights | 3 | 1 |
| External load sling/harness | 1 | 1 |
| Flight control surfaces/attachments | 3 | 3 |
| Flight control,aileron | 3 | 3 |
| Flight control,aileron attachment | 1 | 1 |
| Flight control,elevator | 3 | 3 |
| Flight control,flap | 1 | 0 |
| Flight control,gust lock | 1 | 1 |
| Flight control,rudder tab attachment | 1 | 0 |
| Flight control,ruddervator | 1 | 1 |
| Flight control,stabilator | 1 | 1 |
| Flight/nav instruments | 1 | 0 |
| Flight/nav instruments,airspeed indicator | 5 | 1 |
| Flight/nav instruments,attitude gyro | 1 | 0 |
| Flt control syst, elevator control cable/rod | 2 | 1 |
| Flt control syst, rudder | 1 | 0 |
| Flt control syst, rudder control attach points | 1 | 1 |
| Flt control syst, rudder control cable/rod | 1 | 1 |
| Flt control syst, wing flap control cable/rod | 1 | 1 |
| Flt control syst, yoke/control stick | 2 | 2 |
| Flt control syst,elevator control | 2 | 0 |
| Flt control syst,elevator tab control(trim) | 2 | 1 |
| Flt control syst,elevator trim indicator | 1 | 1 |
| Flt control syst,wing flap control | 1 | 0 |
| Fluid | 2 | 1 |
| Fluid,coolant | 1 | 1 |
| Fluid,fuel | 175 | 143 |
| Fluid,fuel grade | 3 | 0 |
| Fluid,hydraulic | 3 | 2 |
| Fluid,oil | 16 | 11 |
| Fluid,water | 1 | 1 |
| Fuel injection control/system | 1 | 1 |
| Fuel system | 24 | 16 |
| Fuel system,cap | 5 | 3 |
| Fuel system,carburetor | 26 | 22 |
| Fuel system,carburetor float | 2 | 1 |
| Fuel system,drain | 3 | 3 |
| Fuel system,electric boost pump | 4 | 2 |
| Fuel system,fuel quantity float/sensor | 6 | 2 |
| Fuel system,line | 13 | 12 |
| Fuel system,line fitting | 1 | 1 |
| Fuel system,nozzle | 1 | 1 |
| Fuel system,primer system | 2 | 1 |
| Fuel system,pump | 5 | 5 |
| Fuel system,screen | 4 | 3 |
| Fuel system,selector valve | 7 | 5 |
| Fuel system,tank | 6 | 5 |
| Fuel system,transfer pump | 1 | 1 |
| Fuel system,vapor return system | 1 | 1 |
| Fuel system,vent | 10 | 9 |
| Fuselage,crew compartment | 1 | 1 |
| Fuselage,seat | 1 | 1 |
| Hydraulic system | 1 | 1 |
| Hydraulic system,line | 2 | 2 |
| Hydraulic system,pump | 1 | 0 |
| Hydraulic system,reservoir | 1 | 0 |
| Hydraulic system,seal | 1 | 1 |
| Ignition system,ignition coil | 1 | 1 |
| Ignition system,ignition harness | 3 | 3 |
| Ignition system,ignition lead | 2 | 2 |
| Ignition system,ignition points | 2 | 1 |
| Ignition system,magneto | 10 | 6 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **AIRCRAFT** (continued) | | |
| Ignition system,magneto grounding lead (p-lead) | 1 | 1 |
| Ignition system,spark plug | 10 | 5 |
| Induction air control,air filter/screen | 4 | 4 |
| Induction air control,alternate air door | 1 | 1 |
| Induction air control,intake manifold | 1 | 1 |
| Induction air control,ram/induction air ducting | 1 | 1 |
| Induction air control/system | 4 | 4 |
| Instrument lights | 4 | 0 |
| Landing gear | 2 | 0 |
| Landing gear,axle | 1 | 1 |
| Landing gear,float assembly | 1 | 0 |
| Landing gear,gear lever | 1 | 0 |
| Landing gear,gear locking mechanism | 4 | 4 |
| Landing gear,main gear | 7 | 3 |
| Landing gear,main gear attachment | 3 | 2 |
| Landing gear,main gear shock absorbing strut | 2 | 2 |
| Landing gear,main gear spring | 3 | 2 |
| Landing gear,main gear strut | 3 | 1 |
| Landing gear,normal brake system | 12 | 10 |
| Landing gear,normal retraction/extension assembly | 4 | 1 |
| Landing gear,nose gear | 6 | 2 |
| Landing gear,nose gear assembly | 4 | 4 |
| Landing gear,nose gear attach point | 1 | 1 |
| Landing gear,parking brake | 1 | 1 |
| Landing gear,steering system | 5 | 3 |
| Landing gear,tailwheel assembly | 1 | 0 |
| Landing gear,tire | 2 | 2 |
| Landing gear,wheel | 2 | 2 |
| Landing light | 1 | 0 |
| Lubricating system | 2 | 2 |
| Lubricating system,oil cooler | 1 | 1 |
| Lubricating system,oil filler cap | 1 | 1 |
| Lubricating system,oil filter/screen | 4 | 2 |
| Lubricating system,oil hose | 2 | 2 |
| Lubricating system,oil line | 7 | 7 |
| Lubricating system,oil port/passage, internal | 1 | 1 |
| Lubricating system,oil regulator | 1 | 1 |
| Lubricating system,oil scavenge pump | 1 | 0 |
| Lubricating system,oil seal | 2 | 2 |
| Misc eqpt/furnishings | 1 | 1 |
| Misc eqpt/furnishings,parachute/drag chute | 5 | 5 |
| Misc rotorcraft | 1 | 1 |
| Misc rotorcraft,tail boom | 2 | 2 |
| Miscellaneous | 1 | 0 |
| Mixture control | 1 | 0 |
| Mixture control,cable | 1 | 1 |
| Pitot/static system | 4 | 1 |
| Powerplant | 33 | 21 |
| Propeller governor control | 1 | 0 |
| Propeller governor control,linkage | 1 | 1 |
| Propeller system/accessories | 3 | 2 |
| Propeller system/accessories,blade | 10 | 9 |
| Propeller system/accessories,counterweight | 2 | 2 |
| Propeller system/accessories,feathering system | 1 | 0 |
| Propeller system/accessories,hub | 1 | 1 |
| Propeller system/accessories,pitch change mech | 4 | 2 |
| Propeller system/accessories,prop blade retention | 1 | 1 |
| Ram/induction air | 1 | 1 |
| Rotor drive system,clutch assembly | 2 | 2 |
| Rotor drive system,engine to transmission drive | 1 | 0 |
| Rotor drive system,freewheeling sprag unit | 1 | 0 |
| Rotor drive system,main rotor drive belt | 2 | 2 |
| Rotor drive system,main rotor driving pulley | 1 | 1 |
| Rotor drive system,tail rotor drive shaft | 1 | 1 |
| Rotor drive system,tail rotor drive shaft bearing | 1 | 1 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **AIRCRAFT** (continued) | | |
| Rotor drive system,tail rotor drive shaft coupling | 1 | 1 |
| Rotor system | 2 | 1 |
| Rotor system,tail rotor blade | 3 | 3 |
| Rotor system,tail rotor hub retaining nut | 1 | 1 |
| Rotorcraft flight control system,cyclic trim | 1 | 1 |
| Rotorcraft flight control system,primary servo | 1 | 1 |
| Rotorcraft flight control,cyclic control | 2 | 2 |
| Rotorcraft flight control,tail rotor cable | 1 | 1 |
| Single engine aircraft | 1 | 1 |
| Spray/dusting equipment | 1 | 0 |
| Stabilizer | 1 | 0 |
| Throttle/power lever,bellcrank | 1 | 1 |
| Throttle/power lever,cable | 2 | 2 |
| Throttle/power lever,linkage | 4 | 4 |
| Throttle/power lever,push/pull rod | 1 | 1 |
| Turbine assembly,turbine wheel | 1 | 1 |
| Turboshaft engine | 1 | 1 |
| Turboshaft engine,power output shaft | 1 | 1 |
| Vacuum system | 1 | 0 |
| Warning system(other) | 1 | 0 |
| Window,cabin | 1 | 0 |
| Window,flight compartment window/windshield | 6 | 4 |
| Wing | 8 | 4 |
| Wing,bracing strut | 1 | 1 |
| Wing,canard | 1 | 1 |
| Wing,skin | 1 | 0 |
| Wing,spar | 1 | 1 |
| Wing,wing attachment fitting | 2 | 1 |
| **FACILITY** | | |
| Aircraft manuals,system information | 1 | 0 |
| Airport facilities,runway edge lights | 4 | 0 |
| Airport facilities,runway/landing area condition | 26 | 3 |
| Airport facilities,taxiway marking | 1 | 0 |
| Fuel | 1 | 0 |
| **ENVIRONMENT** | | |
| Aircraft moving on ground | 2 | 0 |
| Airport facility | 5 | 3 |
| Animal(s) | 9 | 9 |
| Below approach minimums | 1 | 0 |
| Bright night | 1 | 0 |
| Building(nonresidential) | 4 | 0 |
| Carburetor icing conditions | 29 | 7 |
| Clouds | 25 | 0 |
| Crosswind | 90 | 3 |
| Dark night | 78 | 0 |
| Dawn | 1 | 0 |
| Downdraft | 32 | 9 |
| Drizzle | 4 | 0 |
| Dusk | 6 | 0 |
| Electrical tower | 1 | 0 |
| Fence | 13 | 3 |
| Fence post | 1 | 0 |
| Fog | 46 | 0 |
| Gusts | 63 | 4 |
| Guy wire | 1 | 0 |
| Haze/smoke | 2 | 0 |
| High density altitude | 51 | 0 |
| High wind | 21 | 3 |
| Icing conditions | 21 | 2 |
| Lightning | 1 | 0 |
| Low ceiling | 53 | 2 |
| Microburst/dry | 1 | 1 |
| Mountain wave | 1 | 0 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **ENVIRONMENT** (continued) | | |
| Night | 11 | 0 |
| No thermal lift | 5 | 0 |
| Obscuration | 16 | 0 |
| Other | 4 | 2 |
| Pole | 1 | 0 |
| Rain | 18 | 0 |
| Residence | 2 | 0 |
| Sign | 3 | 0 |
| Snow | 11 | 0 |
| Submerged object | 2 | 1 |
| Sunglare | 9 | 0 |
| Tailwind | 41 | 1 |
| Temperature extremes | 4 | 1 |
| Terrain condition | 389 | 37 |
| Thermal lift | 1 | 0 |
| Thunderstorm | 7 | 1 |
| Tower, unmarked | 1 | 0 |
| Tree(s) | 50 | 8 |
| Turbulence | 19 | 1 |
| Turbulence in clouds | 1 | 0 |
| Turbulence (thunderstorms) | 1 | 0 |
| Turbulence, clear air | 1 | 0 |
| Unfavorable wind | 40 | 4 |
| Updraft | 3 | 0 |
| Utility pole | 2 | 1 |
| Vehicle | 5 | 2 |
| Wall/barricade | 1 | 0 |
| Whiteout | 3 | 0 |
| Windshear | 8 | 4 |
| Wire, static | 9 | 0 |
| Wire, static (marked) | 1 | 0 |
| Wire, transmission | 19 | 2 |
| **FLIGHT CREW** | | |
| ARTCC service | 1 | 1 |
| Abort | 8 | 8 |
| Aborted landing | 3 | 2 |
| Aborted takeoff | 22 | 18 |
| Adequate rotor rpm | 3 | 1 |
| Aerobatics | 10 | 4 |
| Aileron | 1 | 1 |
| Aircraft control | 101 | 93 |
| Aircraft preflight | 76 | 66 |
| Aircraft service | 3 | 3 |
| Aircraft unattended/engine(s) running | 3 | 3 |
| Aircraft weight and balance | 23 | 12 |
| Airplane handling | 19 | 17 |
| Airspeed | 142 | 124 |
| Airspeed (Vle) | 1 | 0 |
| Airspeed (Vlof) | 4 | 4 |
| Airspeed (Vmc) | 7 | 6 |
| Airspeed (Vr) | 1 | 1 |
| Airspeed (Vref) | 8 | 4 |
| Airspeed (Vs) | 38 | 37 |
| Airspeed (Vso) | 9 | 9 |
| Airspeed (Vxse) | 1 | 0 |
| All available runway | 8 | 2 |
| Altimeter setting | 1 | 1 |
| Altitude | 93 | 65 |
| Anti-ice/de-ice system | 1 | 1 |
| Anxiety/apprenhension | 8 | 1 |
| Attempted | 1 | 1 |
| Autopilot | 2 | 1 |
| Autorotation | 6 | 3 |
| Became lost/disoriented | 21 | 8 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **FLIGHT CREW** (continued) | | |
| Brakes (normal) | 16 | 13 |
| Buzzing | 7 | 6 |
| Carburetor heat | 41 | 38 |
| Carburetor heat control | 1 | 1 |
| Checklist | 11 | 6 |
| Clearance | 98 | 91 |
| Climb | 5 | 5 |
| Collective | 8 | 8 |
| Communications | 2 | 0 |
| Compensation for wind conditions | 84 | 67 |
| Complacency | 5 | 2 |
| Control interference | 6 | 6 |
| Correcting lenses not worn | 1 | 0 |
| Crew/group briefing | 2 | 1 |
| Crew/group coordination | 1 | 1 |
| Cyclic | 5 | 5 |
| Decision height | 1 | 1 |
| Descent | 13 | 8 |
| Design stress limits of aircraft | 17 | 15 |
| Directional control | 230 | 212 |
| Distance | 15 | 12 |
| Diverted attention | 35 | 15 |
| Electrical system | 2 | 1 |
| Elevator | 4 | 4 |
| Elevator trim | 2 | 1 |
| Emergency procedure | 29 | 19 |
| Emotional reaction | 1 | 0 |
| Equipment, other | 1 | 1 |
| Experience | 3 | 0 |
| Fatigue | 2 | 0 |
| Fatigue (flight schedule) | 1 | 0 |
| Fatigue (lack of sleep) | 2 | 1 |
| Flare | 75 | 61 |
| Flight advisories | 1 | 0 |
| Flight and navigation instruments | 1 | 0 |
| Flight controls | 30 | 27 |
| Flight into known adverse weather | 38 | 25 |
| Flight manuals | 1 | 0 |
| Flight to alternate destination | 3 | 2 |
| Fluid, fuel | 1 | 1 |
| Fuel boost pump selector position | 7 | 5 |
| Fuel consumption calculations | 41 | 38 |
| Fuel supply | 33 | 28 |
| Fuel tank selector position | 35 | 30 |
| Gear down and locked | 4 | 2 |
| Gear extension | 11 | 9 |
| Gear retraction | 7 | 5 |
| Go-around | 38 | 28 |
| Ground loop/swerve | 21 | 16 |
| Hazardous weather advisory | 7 | 2 |
| IFR procedure | 11 | 10 |
| Ice/frost removal from aircraft | 4 | 2 |
| Improper initial training | 1 | 0 |
| In flight weather avoidance assistance | 1 | 0 |
| In-flight planning/decision | 128 | 103 |
| Inad cockpit/workplace, fumes/smoke | 1 | 0 |
| Inadequate initial training | 2 | 1 |
| Inadequate training | 3 | 0 |
| Inadequate training (emergency procedure(s)) | 1 | 1 |
| Inadequate transition/upgrade training | 2 | 0 |
| Inattentive | 12 | 3 |
| Incapacitation | 2 | 2 |
| Incapacitation (heart attack) | 2 | 2 |
| Incapacitation (loss of consciousness) | 2 | 2 |
| Incapacitation (motion sickness) | 1 | 0 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **FLIGHT CREW** (continued) | | |
| Incapacitation (organic problem) | 1 | 1 |
| Incapacitation (other cardiovascular) | 3 | 3 |
| Incapacitation (other organic problem) | 1 | 1 |
| Incapacitation (stroke) | 2 | 2 |
| Information unavailable | 1 | 1 |
| Instructions, written/verbal | 1 | 1 |
| Intentional | 1 | 0 |
| Interpretation of instructions | 1 | 1 |
| Judgement | 22 | 15 |
| Lack of familiarity with aircraft | 28 | 3 |
| Lack of familiarity with geographic area | 8 | 0 |
| Lack of recent experience | 10 | 0 |
| Lack of recent experience in kind of aircraft | 1 | 0 |
| Lack of recent experience in type of aircraft | 2 | 0 |
| Lack of recent experience in type operation | 4 | 0 |
| Lack of recent instrument time | 2 | 0 |
| Lack of recent total experience | 6 | 0 |
| Lack of total experience | 92 | 3 |
| Lack of total experience in type of aircraft | 59 | 5 |
| Lack of total experience in type operation | 33 | 0 |
| Lack of total instrument time | 13 | 1 |
| Landing lights | 1 | 0 |
| Level off | 5 | 5 |
| Lift-off | 22 | 17 |
| Load jettison | 2 | 0 |
| Low pass | 11 | 4 |
| Lowering of flaps | 8 | 4 |
| Maintenance | 7 | 3 |
| Maintenance, adjustment | 6 | 4 |
| Maintenance, annual inspection | 3 | 0 |
| Maintenance, compliance with AD | 1 | 0 |
| Maintenance, inspection of aircraft | 5 | 3 |
| Maintenance, installation | 7 | 5 |
| Maintenance, lubrication | 1 | 1 |
| Maintenance, major repair | 1 | 1 |
| Maintenance, modification | 1 | 1 |
| Maintenance, overhaul, major | 1 | 1 |
| Maintenance, replacement | 3 | 1 |
| Maintenance, service bulletins | 1 | 1 |
| Maneuver | 9 | 6 |
| Meteorological service | 2 | 0 |
| Minimum descent altitude | 7 | 7 |
| Miscellaneous | 1 | 1 |
| Miscellaneous equipment | 1 | 1 |
| Misjudged | 1 | 0 |
| Missed approach | 5 | 5 |
| Mixture | 14 | 11 |
| Monitoring | 2 | 2 |
| NOTAMs | 1 | 1 |
| Object | 1 | 1 |
| Operation with known deficiencies in equipment | 38 | 22 |
| Ostentatious display | 5 | 1 |
| Other psychological condition | 2 | 0 |
| Over confidence in aircraft's ability | 15 | 3 |
| Over confidence in personal ability | 41 | 8 |
| Panic | 1 | 1 |
| Parking brakes | 2 | 1 |
| Passenger briefing | 2 | 2 |
| Performance data | 20 | 15 |
| Physical impairment | 3 | 3 |
| Physical impairment (alcohol) | 10 | 8 |
| Physical impairment (anoxia/hypoxia) | 1 | 0 |
| Physical impairment (carbon monoxide) | 2 | 0 |
| Physical impairment (drugs) | 11 | 4 |
| Physical impairment (heart attack) | 1 | 1 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **FLIGHT CREW** (continued) | | |
| Physical impairment (hypoglycemia/diet) | 1 | 1 |
| Physical impairment (organic problem) | 1 | 1 |
| Physical impairment (other cardiovascular) | 1 | 1 |
| Physical impairment (other organic problem) | 1 | 0 |
| Physical impairment (other toxic) | 1 | 1 |
| Physical impairment (visual deficiency) | 1 | 0 |
| Physical strength overload | 1 | 0 |
| Physiological condition | 1 | 1 |
| Planned approach | 33 | 23 |
| Planning-decision | 34 | 30 |
| Powerplant controls | 4 | 3 |
| Precautionary landing | 5 | 2 |
| Preflight briefing service | 14 | 4 |
| Preflight planning/preparation | 95 | 67 |
| Pressure | 2 | 1 |
| Procedure inadequate | 2 | 0 |
| Procedures/directives | 44 | 25 |
| Propeller | 1 | 0 |
| Propeller feathering | 7 | 5 |
| Proper alignment | 34 | 27 |
| Proper altitude | 44 | 39 |
| Proper assistance | 5 | 3 |
| Proper climb rate | 17 | 15 |
| Proper descent rate | 27 | 20 |
| Proper glidepath | 11 | 9 |
| Proper touchdown point | 40 | 35 |
| Psychological condition | 2 | 0 |
| Pull-up | 8 | 6 |
| Qualification | 4 | 0 |
| Radar assistance to VFR aircraft | 2 | 1 |
| Radio communications | 1 | 0 |
| Raising of flaps | 8 | 5 |
| Reason for occurrence undetermined | 7 | 7 |
| Recovery from bounced landing | 46 | 38 |
| Refueling | 53 | 47 |
| Relinquishing of control | 1 | 1 |
| Remedial action | 97 | 68 |
| Removal of control/gust lock(s) | 2 | 2 |
| Rotation | 8 | 6 |
| Rotor rpm | 17 | 14 |
| Rotorcraft flight controls | 8 | 7 |
| Rudder | 5 | 3 |
| Rudder trim | 1 | 1 |
| Sabotage | 1 | 1 |
| Safety advisory | 1 | 0 |
| Seat belt | 1 | 0 |
| Self-induced pressure | 6 | 1 |
| Spatial disorientation | 34 | 24 |
| Speed brakes | 1 | 1 |
| Spiral | 2 | 0 |
| Spoiler extension | 1 | 1 |
| Stabilator | 1 | 0 |
| Stall | 87 | 77 |
| Stall/mush | 60 | 55 |
| Stall/spin | 36 | 30 |
| Starting procedure | 6 | 5 |
| Suicide | 2 | 2 |
| Supervision | 44 | 28 |
| Taxispeed | 3 | 3 |
| Throttle/power control | 5 | 4 |
| Tie down | 1 | 1 |
| Touch-and-go | 2 | 0 |
| Touchdown | 14 | 12 |
| Traffic advisory | 1 | 0 |
| Trim setting | 2 | 1 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **FLIGHT CREW** (continued) | | |
| Unsuitable terrain | 52 | 33 |
| VFR flight into IMC | 64 | 51 |
| VFR procedures | 3 | 1 |
| Vacuum system | 1 | 1 |
| Vertical takeoff | 1 | 1 |
| Visual lookout | 89 | 72 |
| Visual separation | 4 | 4 |
| Visual/aural detection | 4 | 3 |
| Visual/aural perception | 6 | 0 |
| Wake turbulence | 5 | 5 |
| Weather condition | 1 | 1 |
| Weather evaluation | 36 | 17 |
| Weather forecast | 4 | 1 |
| Weather observation | 1 | 0 |
| Wheels up landing | 1 | 1 |
| Wind information | 8 | 5 |
| Wrong propeller feathered | 1 | 1 |
| Wrong runway | 13 | 11 |
| **OTHER PERSON** | | |
| APU | 1 | 1 |
| ATC clearance | 2 | 2 |
| Acft/equip, inadequate aircraft component | 3 | 2 |
| Acft/equip, inadequate aircraft manuals | 1 | 0 |
| Acft/equip, inadequate airframe | 1 | 1 |
| Acft/equip, inadequate cockpit/workplace lighting | 1 | 0 |
| Acft/equip, inadequate control location | 1 | 0 |
| Acft/equip, inadequate control shape/size | 1 | 0 |
| Acft/equip, inadequate equipment, interference | 1 | 1 |
| Acft/equip, inadequate instrument location | 1 | 0 |
| Aircraft control | 2 | 2 |
| Aircraft/equipment inadequate | 1 | 0 |
| Aircraft/equipment, inadequate design | 9 | 4 |
| Airspeed | 1 | 1 |
| Airspeed(Vso) | 1 | 1 |
| Altitude | 1 | 0 |
| Became lost/disoriented | 1 | 1 |
| Brakes(normal) | 4 | 3 |
| Clearance | 9 | 9 |
| Communications | 3 | 0 |
| Compensation for wind conditions | 1 | 1 |
| Complacency | 4 | 2 |
| Condition(s)/step(s) insufficiently defined | 1 | 0 |
| Condition(s)/step(s) not listed | 1 | 0 |
| Control interference | 8 | 7 |
| Control tower service | 2 | 0 |
| Crew/group briefing | 2 | 1 |
| Cyclic | 1 | 1 |
| Distance | 1 | 1 |
| Diverted attention | 3 | 2 |
| Emergency procedure | 1 | 1 |
| FSS service | 1 | 0 |
| Facility, inadequate external lighting | 1 | 0 |
| Facility, inadequate manuals/directives | 1 | 1 |
| Facility,inadequate design | 1 | 0 |
| Gear down and locked | 1 | 0 |
| Go-around | 1 | 1 |
| Improper training | 1 | 0 |
| In-flight planning/decision | 1 | 1 |
| Inadequate initial training | 1 | 0 |
| Inadequate substantiation process | 1 | 0 |
| Inadequate surveillance of operation | 1 | 1 |
| Inadequate training(emergency procedure(s)) | 2 | 1 |
| Inattentive | 1 | 0 |
| Inattentive | 4 | 2 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **OTHER PERSON** (continued) | | |
| Information | 1 | 1 |
| Information insufficient | 3 | 0 |
| Information unclear | 1 | 0 |
| Instructions, written/verbal | 2 | 1 |
| Insufficient standards/requirements | 1 | 0 |
| Insufficient stds/rqmts - Manufacturer | 3 | 1 |
| Insufficient stds/rqmts - Operation/operator | 2 | 0 |
| Judgement | 1 | 1 |
| Lack of total experience | 3 | 1 |
| Lack of total experience in type of aircraft | 1 | 0 |
| Lack of total experience in type operation | 2 | 0 |
| Landing lights | 2 | 0 |
| Maintenance | 10 | 5 |
| Maintenance, 100 hour inspection | 3 | 2 |
| Maintenance, adjustment | 7 | 3 |
| Maintenance, alignment | 1 | 1 |
| Maintenance, annual inspection | 13 | 8 |
| Maintenance, balancing | 1 | 1 |
| Maintenance, calibration | 1 | 1 |
| Maintenance, compliance with AD | 2 | 1 |
| Maintenance, design change | 2 | 1 |
| Maintenance, inspection of aircraft | 14 | 9 |
| Maintenance, installation | 27 | 21 |
| Maintenance, lubrication | 1 | 1 |
| Maintenance, major alteration | 1 | 0 |
| Maintenance, modification | 3 | 3 |
| Maintenance, overhaul | 10 | 5 |
| Maintenance, overhaul, major | 4 | 2 |
| Maintenance, rebuild/remanufacture | 2 | 1 |
| Maintenance, recordkeeping | 1 | 1 |
| Maintenance, replacement | 9 | 6 |
| Maintenance, service bulletins | 8 | 3 |
| Maintenance, service of aircraft | 7 | 3 |
| Maintenance, top overhaul | 1 | 1 |
| Material defect (inadequate quality control) | 1 | 0 |
| Material inadequate | 1 | 1 |
| Material inadequate, improper | 2 | 1 |
| Miscellaneous | 1 | 1 |
| Monitoring | 1 | 1 |
| NOTAMs | 1 | 0 |
| Other airport/runway maintenance | 4 | 3 |
| Over confidence in aircraft's ability | 1 | 0 |
| Over confidence in personal ability | 1 | 0 |
| Physical impairment (alcohol) | 1 | 1 |
| Physical impairment (drugs) | 1 | 1 |
| Physical impairment (motion sickness) | 1 | 0 |
| Planned approach | 1 | 1 |
| Planning-decision | 1 | 1 |
| Preflight briefing service | 1 | 0 |
| Preflight planning/preparation | 1 | 0 |
| Pressure induced by others | 1 | 0 |
| Procedure inadequate | 2 | 1 |
| Procedures/directives | 7 | 4 |
| Proper climb rate | 1 | 0 |
| Proper glidepath | 1 | 1 |
| Radio communications | 2 | 0 |
| Reason for occurrence undetermined | 2 | 2 |
| Refueling | 1 | 1 |
| Relinquishing of control | 1 | 1 |
| Remedial action | 2 | 2 |
| Rotorcraft flight controls | 1 | 1 |
| Runway maintenance | 3 | 1 |
| Seat belt | 1 | 0 |
| Spatial disorientation | 2 | 2 |
| Stall | 1 | 1 |

**CAUSE / FACTOR TABLE**
**ALL ACCIDENTS - 1991**

| | Cause or Factor | Cause |
|---|---|---|
| **OTHER PERSON** (continued) | | |
| Stall/mush | 1 | 1 |
| Stolen aircraft/unauthorized use | 1 | 0 |
| Supervision | 7 | 5 |
| Taxispeed | 1 | 1 |
| Throttle/power control | 1 | 1 |
| Traffic advisory | 2 | 0 |
| Unsafe/hazardous condition | 1 | 1 |
| Visual lookout | 31 | 27 |
| Visual separation | 4 | 4 |
| Visual/aural perception | 1 | 0 |
| Weather observation | 1 | 0 |

APPENDIX C

N.T.S.B. FORM 6120.4

National Transportation Safety Board

# FACTUAL REPORT
# AVIATION

NTSB Accident/Incident Number

2
1 ☐ Accident
2 ☐ Incident

3 Investigation
1 ☐ NTSB
2 ☐ FAA Delegated

| 4 Aircraft Registration Number | 5 Nearest City/Place | 6 State | 7 Zip Code *(First 5 numbers only)* |
|---|---|---|---|
| | | | |

| 8 Date of Accident *(Nos. for M,D,Y)* | 9 Day of Week *(First 2 letters)* | 10 Local Time *(24 hour clock)* | 11 Time Zone |
|---|---|---|---|
| | | | |

12 Narrative Statement of Facts, Conditions and Circumstances Pertinent to the Accident/Incident

Additional Persons Participating in this Accident/Incident Investigation *(Name, address, affiliation. Continue on page 2 if necessary)*

**Investigated By:**

| 13 Date *(Nos. for M,D,Y)* | 14 Agency | 15 Name/Signature |
|---|---|---|
| | | |

National Transportation Safety Board

# FACTUAL REPORT
# AVIATION

NTSB Accident/Incident Number

12 Narrative Statement of Facts, Conditions and Circumstances Pertinent to the Accident/Incident *(continued)*

*Attach additional pages as necessary (Page 2b 2c 2d etc)*

National Transportation Safety Board

# FACTUAL REPORT
# AVIATION

NTSB Accident/Incident Number

## Airport/Approach/Landing Information

**16 Accident Location**
1 ☐ Off airport/airstrip
2 ☐ On airport
3 ☐ On airstrip
4 ☐ UNK/NA

**17 Airport Information**
☐ Not Applicable
(go to Block 28)

**18 Airport Name**

**19 Airport Identifier**

**20 Distance From Airport Center** *(Nearest SM)*
_____ SM
1 ☐ UNK/NA

**21 Direction from Airport**
_____ ° mag
1 ☐ UNK/NA

**22 Runway Used Identifier**
_____
1 ☐ UNK/NA

**23 Runway Length**
_____ Feet
1 ☐ UNK/NA

**24 Runway Width**
_____ Feet
1 ☐ UNK/NA

**25 Airport Elevation**
_____ Ft. MSL
1 ☐ UNK/NA

**26 Runway/Landing Surface**
1 ☐ Macadam
2 ☐ Asphalt
3 ☐ Concrete
4 ☐ Gravel
5 ☐ Dirt
6 ☐ Grass/turf
7 ☐ Snow
8 ☐ Ice
9 ☐ Water
10 ☐ Metal/Wood
11 ☐ UNK/NA

**27 Runway/Landing Surface Condition** *(Multiple entry)*
1 ☐ Dry
2 ☐ Wet
3 ☐ Ice covered
4 ☐ Snow--dry
5 ☐ Snow--wet
6 ☐ Snow--crusted
7 ☐ Snow--compacted
8 ☐ Vegetation
9 ☐ Water--calm
10 ☐ Water--choppy
11 ☐ Water--glassy
12 ☐ Rubber deposits
13 ☐ Soft
14 ☐ Rough
15 ☐ Slush covered
16 ☐ Holes
17 ☐ UNK/NA

**28 Type Instrument Approach Flown** *(Multiple entry)*
1 ☐ None
2 ☐ ADF/NDB
3 ☐ SDF
4 ☐ VOR/TVOR
5 ☐ VOR/DME
6 ☐ TACAN
7 ☐ ILS-complete
8 ☐ ILS-localizer
9 ☐ ILS-backcourse
10 ☐ RNAV
11 ☐ MLS
12 ☐ LDA
13 ☐ ASR
14 ☐ PAR
15 ☐ Sidestep
16 ☐ Visual
17 ☐ Contact
18 ☐ Circling
19 ☐ Practice
20 ☐ UNK/NA

**29 VFR Approach/Landing** *(Multiple entry)*
1 ☐ None
2 ☐ Traffic pattern
3 ☐ Straight-in
4 ☐ Valley/terrain following
5 ☐ Go around
6 ☐ Touch and go
7 ☐ Full stop
8 ☐ Stop and go
9 ☐ Simulated forced landing
10 ☐ Forced landing
11 ☐ Precautionary landing
12 ☐ UNK/NA

## Aircraft Information

**30 Aircraft Manufacturer**

**31 Aircraft Model/Series**

**32 Serial No.**
_____
1 ☐ UNK/NA

**33 Certificated Maximum Gross Weight**
_____
1 ☐ UNK/NA

**34 Type of Aircraft**
1 ☐ Airplane
2 ☐ Helicopter
3 ☐ Glider
4 ☐ Balloon
5 ☐ Blimp/dirigible
6 ☐ Ultralight
7 ☐ Gyroplane
A Specify
_____

**35 Type Airworthiness Certificate** *(Multiple entry)*
Standard
1 ☐ Normal
2 ☐ Utility
3 ☐ Acrobatic
4 ☐ Transport
Special
5 ☐ Restricted
6 ☐ Limited
7 ☐ Provisional
8 ☐ Special flight
9 ☐ Experimental
10 ☐ UNK/NA

**36 Home Built**
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

National Transportation Safety Board

# FACTUAL REPORT AVIATION

NTSB Accident/Incident Number

## Aircraft Information *(continued)*

**37 Landing Gear**

1 ☐ Tricycle--fixed
2 ☐ Tricycle--retractable
3 ☐ Tailwheel--all fixed
4 ☐ Tailwheel--all retractable
5 ☐ Tailwheel--retractable mains
6 ☐ Amphibian
7 ☐ Hull
8 ☐ Float
9 ☐ Emerg float
10 ☐ Ski
11 ☐ Ski/wheel
12 ☐ Skid
13 ☐ High Skid
14 ☐ UNK/NA

**38 No. of Seats**

_____
1 ☐ UNK/NA

**39 Stall Warning System Installed**

1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**40 Aircraft Not Engine Powered**

☐ Go to block 46

**41 Engine Type**

1 ☐ Reciprocating--carburetor
2 ☐ Reciprocating--fuel injected
3 ☐ Turbo prop
4 ☐ Turbo jet
5 ☐ Turbo fan
6 ☐ Turbo shaft
7 ☐ UNK/NA

**42 Engine Manufacturer**

**43 Engine Model and Series**

**44 Engine Rated Power**

A _____ Horsepower
B _____ Lbs. Thrust
C _____ UNK/NA

**45 Number of Engines**

_____
1 ☐ UNK/NA

**46 Type of Last Inspection**

1 ☐ Annual
2 ☐ 100 hour
3 ☐ AAIP
4 ☐ Continuous airworthiness
5 ☐ UNK/NA

**47 Date Last Inspection Performed**

*(Nos. for M. D. Y)*

_____
1 ☐ UNK/NA

**48 Time Since Inspection**

_____ Hours
1 ☐ UNK/NA

**49 Airframe Total Time**

_____ Hours
1 ☐ UNK/NA

| Emergency Locator Transmitter (ELT) | 1 Yes | 2 No | 3 UNK/NA |
|---|---|---|---|
| 50 Installed | | | |
| 51 Operated | | | |
| 52 Aided in location of accident site | | | |

## Owner/Operator Information

**53 Registered Aircraft Owner**

Name :

**54 Address**

**55 Operator of Aircraft** 1 ☐ Same as registered owner

A Name :
B dba
2 ☐ UNK/NA

**56 Address** 1 ☐ Same as registered owner

A _____
_____
2 ☐ UNK/NA

**57 Operator Designator Code**

_____

## Type of Certificate(s) Held

**58 None** ☐ *(Go to block 62)*

**59 Air Carrier Operationg Certificate** *(Check all applicable)*

1 ☐ Flag carrier/domestic (121)
2 ☐ Supplemental
3 ☐ All cargo (418)
4 ☐ Large helicopter (127)
5 ☐ Commuter air carrier
6 ☐ On-demand air taxi

**60 Operating Certificate**

☐ Other operator of large aircraft

**61 Operator Certificate**

1 ☐ Rotorcraft--external load operator (133)
2 ☐ Agricultural aircraft (137)

## Regulation Flight Conducted Under

**62 Regulation Flight Conducted Under**

1 ☐ 14 CFR 91 *(only)*
2 ☐ 14 CFR 91D
3 ☐ 14 CFR 103
4 ☐ 14 CFR 105
5 ☐ 14 CFR 121
6 ☐ 14 CFR 125
7 ☐ 14 CFR 127
8 ☐ 14 CFR 133
9 ☐ 14 CFR 135
10 ☐ 14 CFR 137
11 ☐ 14 CFR 129 *(Foreign flag)*
A Specify

## Type of Flight Operation Conducted

*(Complete 63 a, b, c ONLY if flight was a revenue operation conducted under 121, 125, 127, 129, 135)*

**63a**

1 ☐ Scheduled
2 ☐ Non-scheduled

**63b**

1 ☐ Domestic
2 ☐ International

**63c**

1 ☐ Passenger
2 ☐ Cargo
3 ☐ Passenger/cargo
4 ☐ Mail contract ONLY

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## Owner/Operator Information *(continued)*

*(Complete 64 **ONLY** if 63 a, b, c are not applicable)*

**64**

1 ☐ Personal
2 ☐ Business
3 ☐ Instructional *(including air carrier training)*
4 ☐ Executive/corporate
5 ☐ Aerial application
6 ☐ Aerial observation
7 ☐ Other work use
8 ☐ Public use
9 ☐ Ferry
10 ☐ Positioning
A Specify _____

## First Pilot Information

**65 Name** *(Last, First, Initial)*
_____
1 ☐ UNK/NA

**66 Pilot Certificate No.**
_____
1 ☐ UNK/NA

**67 City**
_____
1 ☐ UNK/NA

**68 State**
_____
1 ☐ UNK/NA

**69 Date of Birth** *(Nos. for M, D, Y)*
_____
1 ☐ UNK/NA

**70 Age**
_____ Yrs.
1 ☐ UNK/NA

**71 Sex**
1 ☐ Male
2 ☐ Female

**72 Seat Occupied**
1 ☐ Left
2 ☐ Right
3 ☐ Center
4 ☐ Front
5 ☐ Rear
6 ☐ UNK/NA

**73 Principal Profession**
1 ☐ Pilot--civilian
2 ☐ Pilot--military
3 ☐ Other--military
4 ☐ Aircraft mechanic
5 ☐ Business
6 ☐ Lawyer
7 ☐ Doctor/dentist
8 ☐ Police
9 ☐ Student
10 ☐ Clergy
11 ☐ Teacher
12 ☐ Engineer
13 ☐ Farmer/rancher
14 ☐ Retired
15 ☐ UNK/NA

**74 Certificate(s)** *(Mutiple entry)*
1 ☐ Student
2 ☐ Private
3 ☐ Commercial
4 ☐ Airline Transport
5 ☐ Flight Instructor
6 ☐ Flight Engineer
7 ☐ Military
8 ☐ None
9 ☐ Foreign
10 ☐ UNK/NA

**75 Ratings--Airplane** *(multiple entry)*
1 ☐ None
2 ☐ Single engine land
3 ☐ Multiengine land
4 ☐ Single engine sea
5 ☐ Multiengine sea

**76 Rotorcraft/Glider/LTA** *(multiple entry)*
1 ☐ None
2 ☐ Helicopter
3 ☐ Gyroplane
4 ☐ Airship
5 ☐ Free balloon
6 ☐ Glider

**77 Instrument Rating** *(multiple entry)*
1 ☐ None
2 ☐ Airplane
3 ☐ Helicopter

**78 Instructor Rating(s)** *(multiple entry)*
1 ☐ None
2 ☐ Airplane SE
3 ☐ Airplane ME
4 ☐ Helicopter
5 ☐ Gyroplane
6 ☐ Glider
7 ☐ Instrument airplane
8 ☐ Instrument helicopter

**79 Type-Rating Endorsement This Aircraft**
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**80 Biennial Flight Review** *(Or equivalent)*
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**81 Months since Last BFR**
_____ Months
1 ☐ UNK/NA

**82 BFR** *(or equivalent)* **Aircraft Make/Model**
A Make _____
B Model _____
C ☐ UNK/NA

**83 Medical Certificate**
1 ☐ None
2 ☐ Class 1
3 ☐ Class 2
4 ☐ Class 3
5 ☐ UNK/NA

**84 Medical Certificate Validity**
1 ☐ Valid medical--no waivers/limitations
2 ☐ Valid medical--with waivers/limitations
3 ☐ Non valid medical for this flight
4 ☐ Expired
5 ☐ No medical certicate
6 ☐ UNK/NA

**85 Date of Last Medical**
*(Nos. for M, D, Y)*
_____
1 ☐ UNK/NA

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# FACTUAL REPORT
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NTSB Accident/Incident Number

## First Pilot Information *(continued)*

**86 Source of Pilot Flight Time** *(Multiple entry)*

1 ☐ Pilot log
2 ☐ Company
3 ☐ FAA
4 ☐ Pilot/Operator Report
5 ☐ Investigators Estimate
6 ☐ Relative
7 ☐ Other Person
8 ☐ UNK/NA

| Flight Time | A All A/C | B This Make & Model | C Airplane Single Engine | D Airplane Multiengine | E Night | F Instrument Actual | G Instrument Simulated | H Rotorcraft | I Glider | J Lighter Than Air |
|---|---|---|---|---|---|---|---|---|---|---|
| 87 Total Time | | | | | | | | | | |
| 88 Pilot in Command (PIC) | | | | | | | | | | |
| 89 Instructor | | | | | | | | | | |
| 90 Last 90 Days | | | | | | | | | | |
| 91 Last 30 Days | | | | | | | | | | |
| 92 Last 24 Hours | | | | | | | | | | |

**93 Seatbelt Used**
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**94 Shoulder Harness Used**
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**95 Autopsy Performed** *(This pilot)*
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**96 Toxicology Performed** *(This pilot)*
1 ☐ Yes
2 ☐ No
3 ☐ UNK/NA

**97 Person at Controls**
1 ☐ Pilot in command
2 ☐ Second pilot
3 ☐ Both pilots
4 ☐ Non-pilot
5 ☐ No one
6 ☐ UNK/NA

**98 Second Pilot**
1 ☐ Yes *(Complete second pilot supplement)*
2 ☐ No

## Flight Itinerary Information

**99 Last Departure Point**
1 ☐ Same as accident/incident location or
A Airport identifier _____
B City/Place _____
C State _____ 2 ☐ UNK/NA

**102 Time of Departure** 1 ☐ UNK/NA
A Time _____
B Time Zone _____

**100 Destination**
1 ☐ Same as accident/incident location or
2 ☐ Local flight
A Airport Identifier _____
B City/Place _____
C State _____
3 ☐ UNK/NA

**101 Flight Plan Filed**
1 ☐ None
2 ☐ Visual Flight Rules (VFR)
3 ☐ Instrument Flight Rules (IFR)
4 ☐ VFR/IFR
5 ☐ Company (VFR)
6 ☐ Military (VFR)
7 ☐ UNK/NA

**103 Type of Clearance** *(Multiple entry)*
1 ☐ None
2 ☐ VFR
3 ☐ Special VFR
4 ☐ IFR
5 ☐ Special IFR
6 ☐ VFR on top
7 ☐ Cruise
8 ☐ Traffic Advisory
9 ☐ VFR Flight Following
10 ☐ UNK/NA

**104 Airspace** *(Multiple entry)*
1 ☐ Uncontrolled
2 ☐ Controlled
3 ☐ Airport traffic area
4 ☐ Control zone
5 ☐ Airport advisory area
6 ☐ Positive control area
7 ☐ Terminal control area
8 ☐ Stage II TRSA
9 ☐ Stage III TRSA
10 ☐ Prohibited area
11 ☐ Restricted area
12 ☐ Military Operation Area (MOA)
13 ☐ Student Jet Training Area
14 ☐ Demo Area
15 ☐ Warning area
16 ☐ FAR 93
17 ☐ (Special air traffic areas)
18 ☐ UNK/NA

## Aircraft Loading Information

**105 Load Description**
1 ☐ None
2 ☐ Passengers
3 ☐ Cargo
4 ☐ Towing glider
5 ☐ Towing banner
6 ☐ Other external
7 ☐ Parachutists
8 ☐ Water
9 ☐ Chemical
10 ☐ Livestock
11 ☐ Illegal cargo
12 ☐ UNK/NA

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# FACTUAL REPORT
# AVIATION

NTSB Accident/Incident Number

## Weather Information

**106 Source of Weather Briefing** *(Multiple entry)*

1 ☐ No record of briefing *(Go to block 109)*
2 ☐ National Weather Service (NWS)
3 ☐ Flight Service Station
4 ☐ PATWAS (Pilot Automated Tel. WX Answering Svc)
5 ☐ VRS (Voice Response System)
6 ☐ Company
7 ☐ Commercial weather service
8 ☐ TV/radio weather
9 ☐ Military
10 ☐ UNK/NA

**107 Method of Briefing** *(Multiple entry)*

1 ☐ In person
2 ☐ Teletype
3 ☐ Telephone
4 ☐ Aircraft radio
5 ☐ TV/radio
6 ☐ UNK/NA

**108 Completeness of Weather Briefing**

1 ☐ Weather not pertinent
2 ☐ Full
3 ☐ Partial--limited by pilot
4 ☐ Partial--limited by briefer/forecaster
5 ☐ UNK/NA

**109 Investigator's Source of Weather Information**

1 ☐ Pilot *(Go to block 111)*
2 ☐ Witness *(Go to block 111)*
3 ☐ Weather observation facility

**110 Weather Observation Facility**

A Identifier _____
B Time of observation _____ zone _____
C Elevation _____ feet MSL
D Distance from accident site _____ NM
E Direction from accident site _____ °magnetic

**111 Basic Weather Conditions at Accident Site**

1 ☐ Visual Meteorological Conditions (VMC)
2 ☐ Instrument Meteorological Conditions (IMC)
3 ☐ UNK/NA

**112 Conditions of Light**

1 ☐ Dawn
2 ☐ Daylight
3 ☐ Night (Dark)
4 ☐ Night (Bright)
5 ☐ Dusk
6 ☐ UNK/NA

**113 Sky/Lowest/Cloud Conditions**

1 ☐ Clear
2 ☐ Scattered
3 ☐ Thin broken
4 ☐ Thin overcast
5 ☐ Partial obscuration
6 ☐ UNK/NA

A _____ Feet AGL

**114 Lowest Ceiling**

1 ☐ None
2 ☐ Broken
3 ☐ Overcast
4 ☐ Obscured
5 ☐ UNK/NA

A _____ Feet AGL

**115 Visibility** *(Decimals)*

A _____ SM
B RVR _____ Feet
C RVV _____ SM
1 ☐ UNK/NA

**116 Temperature**

_____ F
1 ☐ UNK/NA

**117 Dew Point**

_____ F
1 ☐ UNK/NA

**118 Wind (From)**

1 ☐ Variable
2 ☐ UNK/NA

A _____ Magnetic

**119 Wind Speed**

1 ☐ Calm
2 ☐ Light and Variable
3 ☐ UNK/NA

A _____ Kts.

**120 Gusts**

1 ☐ None
2 ☐ UNK/NA

A _____ Kts

**121 Altimeter Setting**

_____ " Hg
1 ☐ UNK/NA

**122 Density Altitude**

_____ feet
1 ☐ UNK/NA

**123 Restrictions to Visibility**

1 ☐ None
2 ☐ Haze (H)
3 ☐ Dust (D)
4 ☐ Smoke (K)
5 ☐ Fog (F)
6 ☐ Ice fog (IF)
7 ☐ Ground fog (GF)
8 ☐ Blowing spray (BY)
9 ☐ Blowing dust (BD)
10 ☐ Blowing snow (BS)
11 ☐ Blowing sand (BN)
12 ☐ UNK/NA

**124 Type of Precipitation**

1 ☐ None *(Go to block 126)*
2 ☐ Rain (R)
3 ☐ Snow (S)
4 ☐ Hail (A)
5 ☐ Rain showers (RW)
6 ☐ Freezing rain (ZR)
7 ☐ Snow shower (SW)
8 ☐ Drizzle (L)
9 ☐ Ice pellets (IP)
10 ☐ Snow pellets (SP)
11 ☐ Snow Grains (SG)
12 ☐ Freezing drizzle (ZL)
13 ☐ Ice crystals (IC)
14 ☐ Ice pellet shower (IPW)
15 ☐ UNK/NA

**125 Intensity of Precipitation**

1 ☐ Light
2 ☐ Moderate
3 ☐ Heavy
4 ☐ UNK/NA

**126 Aircraft Damage**

1 ☐ None
2 ☐ Minor
3 ☐ Substantial
4 ☐ Destroyed
5 ☐ UNK/NA

**127 Aircraft Fire**

1 ☐ None
2 ☐ In-flight
3 ☐ On ground
4 ☐ UNK/NA

**128 Explosion**

1 ☐ None
2 ☐ In-flight
3 ☐ On ground
4 ☐ UNK/NA

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# FACTUAL REPORT
# AVIATION

NTSB Accident/Incident Number

## Accident Information

**129 Injury Index** *(Most critical injury)*

1 ☐ None 2 ☐ Minor 3 ☐ Serious 4 ☐ Fatal

| Injury Summary | A Fatal | B Serious | C Minor | D None | E Total |
|---|---|---|---|---|---|
| 130 First Pilot | | | | | |
| 131 Co-pilot | | | | | |
| 132 Dual Student | | | | | |
| 133 Check Pilot | | | | | |
| 134 Flight Engineer | | | | | |
| 135 Cabin Attendants | | | | | |
| 136 Other Crew | | | | | |
| 137 Passengers | | | | | |
| 138 TOTAL ABOARD | | | | | |
| 139 Other Aircraft | | | | | |
| 140 Other Ground | | | | | |
| | | | | | |
| 141 GRAND TOTAL | | | | | |

**142 Classification**

1 ☐ U.S. Registered Aircraft on U.S. Soil, Territories and Possessions, or International Waters
2 ☐ U.S. Registered Aircraft on foreign Soil
3 ☐ U.S. Registered Aircraft operated by a Foreign Operator
4 ☐ Foreign Registered Aircraft on U.S. Soil, Territories or Possessions
5 ☐ Military Aircraft
6 ☐ Aircraft not Registered

## Part Failure/Incorrect Part

**143 Part Failure/Malfunction** *(Multiple entry)*

1 ☐ None
2 ☐ Part/component #1
3 ☐ Part/component #2
4 ☐ Part/component #3
5 ☐ UNK/NA

**144 Incorrect Part** *(Multiple entry)*

1 ☐ None
2 ☐ Part/component #1
3 ☐ Part/component #2
4 ☐ Part/component #3
5 ☐ UNK/NA

| | A Part/Component #1 | B Part/Component #2 | C Part/Component #3 |
|---|---|---|---|
| 145 Part Name | | | |
| 146 Bogus Part | 1 ☐ Yes 2 ☐ No | 1 ☐ Yes 2 ☐ No | 1 ☐ Yes 2 ☐ No |



*U.S. G.P.O.:1994-300-644:80035