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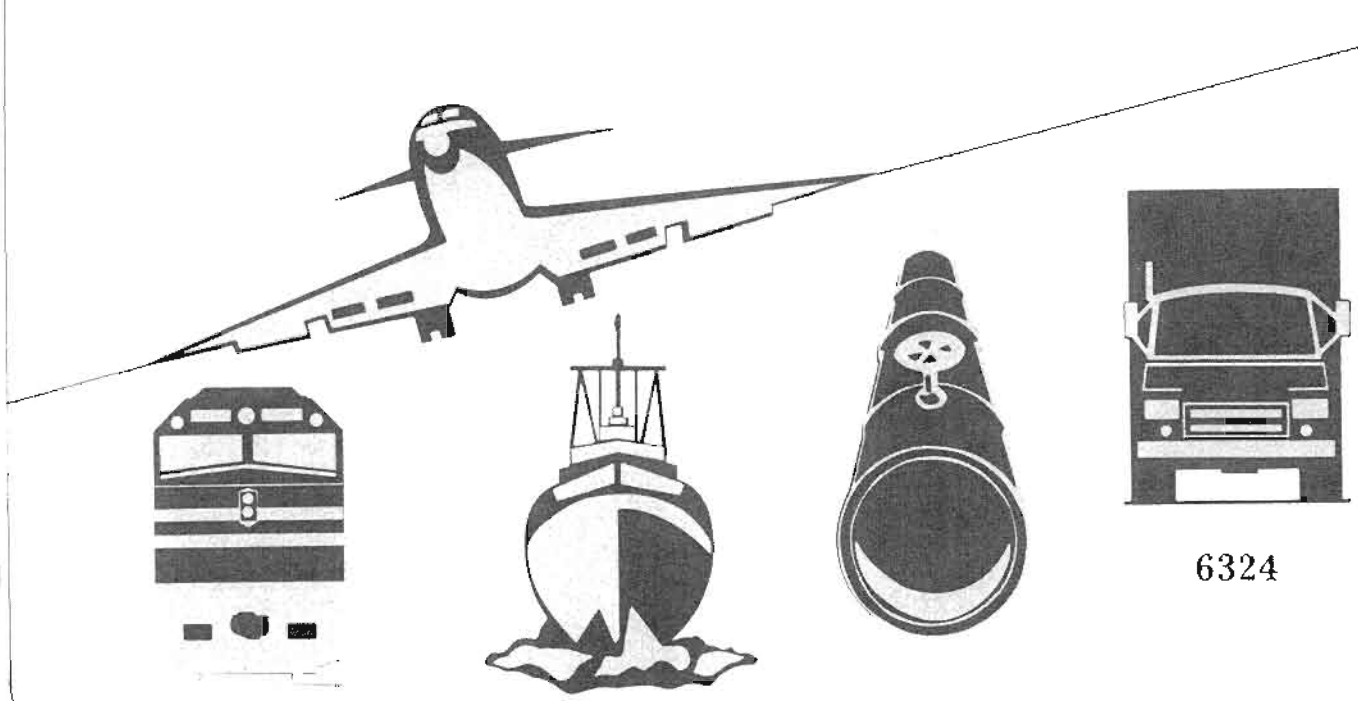
NATIONAL TRANSPORTATION SAFETY BOARD

ANNUAL REVIEW OF AIRCRAFT ACCIDENT DATA

U.S. AIR CARRIER OPERATIONS
CALENDAR YEAR 1991



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16. Abstract

This publication presents the record of aviation accidents involving revenue operations of U.S. Air Carriers including Commuter Air Carriers and On Demand Air Taxis for calendar year 1991.

The report is divided into three major sections according to the federal regulations under which the flight was conducted - 14 CFR 121, 125, 127, Scheduled 14 CFR 135, or Nonscheduled 14 CFR 135. In each section of the report tables are presented to describe the losses and characteristics of 1991 accidents to enable comparison with prior years.

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This report presents a statistical compilation and review of air carrier accidents that occurred in 1991, and involved U.S. registered aircraft conducting operations under Title 14 CFR Parts 121, 125, 127, and 135. Briefly stated, Part 121 applies to air carriers, such as major airlines and cargo haulers, that fly large transport aircraft. Part 125 covers the operation of large, privately owned aircraft not held out for hire. Part 127 regulates the operation of helicopters used as scheduled air carriers. Part 135 applies to commercial air carriers commonly referred to as commuter airlines and air taxis. For a complete definition of operations under each of these Parts, consult the applicable sections of the Code of Federal Regulations.

The report is divided into three major sections: 14 CFR 121, 125, 127 Operations; Scheduled 14 CFR 135 Operations; and Nonscheduled 14 CFR 135 Operations. Each section begins with an overview of accidents and their consequences for 1991 and for the four preceding years. Several tables then present accident parameters for 1991 only. Each section concludes with tabulations that present comparative statistics for 1991 and for the 5-year period 1986-1990.

Exposure data (flight hours, miles, and departures) used to compute accident rates for operations under Parts 121, 125, and 127 and for scheduled operations under Part 135 were obtained from the Federal Aviation Administration (FAA) who analyzed data reported by carriers to the Research and Special Programs Administration (RSPA) of the U.S. Department of Transportation (DOT). Flight hours for nonscheduled operations under Part 135 were estimated from data obtained by the FAA in its surveys of general aviation activity. NTSB Form 6120.4 (Appendix F) is the source of the factual data represented in this report.

In many of the tables presented in this report (such as table 4), the number of accidents in a given category is small; in these tables, even a small change in the number of accidents would result in a significant change in the accident rate. Therefore, the reader should exercise caution in the use of these rates and in comparing numbers and percentages of accidents between two time periods when the number of accidents is small.

14 CFR 121, 125, 127 OPERATIONS

There were 26 accidents in Part 121, 125,127 operations in 1991. The overall accident rate for 1991 was 0.218 accidents per 100,000 hours flown, a 10 percent increase from the 1990 rate of 0.198. The 1991 rate was 15.8 percent lower than the overall rate of 0.259 for the period from 1982 through 1990.

There were four fatal accidents in this category during 1991. During the period 1982 through 1990 there were an average of five fatal accidents per year. The four fatal accidents in 1991 were responsible for a total of sixty-two fatalities.

The most serious of these fatal accidents involved a ground collision between a Boeing 737 and a Fairchild 227 in Los Angeles, California (34 fatalities) and the crash of a Boeing 737 occurring in Colorado Springs, Colorado (25 fatalities).

Table 1 - SUMMARY OF LOSSES
14 CFR 121, 125, 127 OPERATIONS
1987 - 1991

	1987	1988	1989	1990	1991
Accidents					
Fatal	5	3	11	6	4
Involved Serious Injury	12	16	5	11	11
Involved Minor or No Injury	19	10	12	7	11
Total	36	29	28	24	26
Fatalities					
Passenger	213	255	259	8	40
Crew	17	19	17	4	9
Other Persons	2	11	2	27	13
Total	232	285	278	39	62
Aircraft Damage (14 CFR 121, 125, 127)					
Destroyed	5	3	7	3	5
Substantial	18	12	11	8	10
Minor	4	0	0	4	3
None	12	14	10	10	9
Total	39	29	28	25	27

Table 2 - ACCIDENT RATES
14 CFR 121, 125, 127 OPERATIONS

	1987	1988	1989	1990	1991
Aircraft Miles Flown (Thousands)	4,360,521	4,503,426	4,605,083	4,970,087	4,850,850
Aircraft Hours Flown	10,645,192	11,140,548	11,274,543	12,150,116	11,900,023
Departures Flown	7,601,373	7,716,061	7,645,494	8,224,902	7,985,630
Accident Rates *					
Per Million Miles Flown	0.0080	0.0062	0.0061	0.0048	0.0054
Per Hundred Thousand Hours Flown	0.329	0.251	0.248	0.198	0.218
Per Hundred Thousand Departures Flown	0.460	0.363	0.366	0.292	0.326
Fatal Accident Rates *					
Per Million Miles Flown	0.0009	0.0004	0.0024	0.0012	0.0008
Per Hundred Thousand Hours Flown	0.038	0.018	0.098	0.049	0.034
Per Hundred Thousand Departures Flown	0.053	0.026	0.144	0.073	0.050

* The 12/21/88 sabotage involving a Pan Am B747-100 and the 12/7/87 suicide/sabotage involving a PSA BAe-146e are excluded from accident rate computations.

Table 3 - LIST OF ACCIDENTS
14 CFR 121, 125, 127 OPERATIONS
1991

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/25	Indianapolis, IN	Sch Pax/Cargo	American	Boeing 727-200	None	Serious	Miscellaneous/other
2/01	Los Angeles, CA	Sch Passenger	US Air	Boeing 737-300	Destroyed	Fatal (34)	On ground collision with object (scheduled 14 CFR 135 aircraft)
2/17	Cleveland, OH	Sch Cargo	Ryan Int'l	McD-Doug DC-9-15	Destroyed	Fatal (2)	Loss of control - in flight
3/02	Chicago, IL	Sch Passenger	Simmons	Short Bros. SD3-60	Substantial	None	Hard landing
3/03	Colorado Spgs, CO	Sch Passenger	United	Boeing 737-291	Destroyed	Fatal (25)	Loss of control - in flight
3/12	Jamaica, NY	Sch Cargo	Air Trans.	McD-Doug DC-8-62	Destroyed	Minor	Overrun
3/23	Buffalo, NY	Sch Passenger	United	Boeing 727-222	None	Serious	Altitude deviation, uncontrolled
5/03	Windsor Locks, CT	Sch Cargo	Ryan Int'l	Boeing 727-100QC	Destroyed	None	Airframe/component/system failure/malfunction
5/04	Memphis, TN	Sch Pax/Cargo	US Air	Boeing 767-287ER	None	Serious	In flight encounter with weather
5/05	Atlanta, GA	Sch Passenger	Delta	McD-Doug MD-88	Substantial	Serious	On ground collision with object
5/11	Chicago, IL	Sch Pax/Cargo	Simmons	Short Bros. SD3-60	Substantial	None	Airframe/component/system failure/malfunction
6/05	Elk, NV	Sch Passenger	America West	Boeing 737-3G7	None	Serious	Miscellaneous/other
7/01	Newark, NJ	Sch Passenger	American	Airbus A300-605R	None	Serious	In flight encounter with weather
7/04	Alma, GA	Sch Passenger	Delta	Boeing 757-232	None	Serious	In flight encounter with weather
7/08	Denver, CO	Nonsch Cargo	Southern Air	Boeing 707-323C	Substantial	None	Airframe/component/system failure/malfunction
7/17	Peproa, IL	Sch Passenger	Trans States	Aerospatiale42-300	Substantial	None	Loss of power(total) - mech failure/malfunction

Table 3 - LIST OF ACCIDENTS (Continued)
14 CFR 121, 125, 127 OPERATIONS
1991

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
7/27	DFW Airport, TX	Sch Passenger	American	McD-Doug MD-80	Minor	None	On ground collision with object (scheduled 14 CFR 135 aircraft)
9/14	Muskegon, MI	Sch Passenger	Simmons	Aerospatiale 42-300	None	Serious	Airframe/component/system failure/malfunction
9/23	Chicago, IL	Sch Pax/Cargo	American	McD-Doug DC-9-82	Substantial	None	On ground collision with object
9/28	East Boston, MA	Sch Pax/Cargo	Continental	McD-Doug MD-82	Minor	Serious	Fire
10/04	DFW Airport, TX	Sch Cargo	Aerolease	McD-Doug DC-8-63F	Substantial	None	On ground collision with object
10/05	Little Rock, AR	Sch Passenger	Continental	Boeing 727-243	None	Serious	In flight encounter with weather
10/12	Bridgeport, CT	Sch Passenger	Britt Airways	Aerospatiale 42-320	Minor	Fatal (1)	Propeller/rotor contact
10/16	Newark, NJ	Sch Passenger Sch Passenger	Continental American	Boeing 737-291 McD-Doug MD-80	Substantial Substantial	Minor Minor	On ground collision
10/23	Boston, MA	Sch Pax/Cargo	US Air	Boeing 737-4B7	None	Serious	Airframe/component/system failure/malfunction
11/30	Lubbock, TX	Sch Passenger	Southwest	Boeing 737-200	Substantial	None	In flight collision with object

Table 4 - ACCIDENTS AND RATES BY TYPE OF OPERATION
14 CFR 121, 125, 127 OPERATIONS
1991

	Type of Operation				
	Scheduled				
	Passenger/ Cargo	All Cargo	All	All Non-Scheduled	All
Accidents	21	4	25	1	26
Fatal Accidents	3	1	4	0	4
Aircraft Miles Flown (Thousands)	4,401,492	182,226	4,583,718	267,132	4,850,850
Aircraft Hours Flown	10,806,468	447,400	11,253,868	646,155	11,900,023
Departures Flown	7,370,348	305,141	7,675,489	310,141	7,985,630
Accident Rates					
Per Million Miles Flown	0.0048	0.0219	0.0055	0.0037	0.0054
Per Hundred Thousand Hours Flown	0.194	0.894	0.222	0.155	0.218
Per Hundred Thousand Departures Flown	0.285	1.311	0.326	0.322	0.326
Fatal Accident Rates					
Per Million Miles Flown	0.0007	0.0055	0.0009	0.	0.0008
Per Hundred Thousand Hours Flown	0.028	0.223	0.036	0.	0.034
Per Hundred Thousand Departures Flown	0.041	0.328	0.052	0.	0.050

Table 5 - PERSONS BY ROLE AND DEGREE OF INJURY
14 CFR 121 125 127 OPERATIONS
1991

	Degree of Injury				
Role of Person	Fatal	Serious	Minor	None	Total
Pilot	3	0	1	23	27
Copilot	2	1	0	24	27
Flight engineer	0	0	0	7	7
Cabin attendants	4	5	7	58	74
Other crew	0	0	0	8	8
Passenger	40	19	76	1533	1668
Total aboard	49	25	84	1653	1811
Other aircraft*	12	0	0	9	21
Other ground	1	1	0	0	2
Grand total	62	26	84	1662	1834
Percent	3.4	1.4	4.6	90.6	

* 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 6 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
14 CFR 121 125 127 OPERATIONS
1991

	Degree of injury				Aircraft	
Aircraft damage	None	Minor	Ser	Fatal	No.	Percent
None	0	0	9	0	9	33.3
Minor	1	0	1	1	3	11.1
Substantial	7	2	1	0	10	37.0
Destroyed	1	1	0	3	5	18.5
Aircraft						
Total	9	3	11	4	27	
Percent	33.3	11.1	40.7	14.8		

Table 7 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1991

	Degree of injury				Aircraft damage				Aircraft	
Type of first occurrence	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Altitude deviation, uncontrolled	0	0	1	0	1	0	0	0	1	3.7
Airframe/component/system failure/malfunction	3	0	2	0	2	0	2	1	5	18.5
Fire	0	0	1	0	0	1	0	0	1	3.7
Hard landing	1	0	0	0	0	0	1	0	1	3.7
In flight collision with object	1	0	0	0	0	0	1	0	1	3.7
In flight encounter with weather	0	0	4	0	4	0	0	0	4	14.8
Loss of control - in flight	0	0	0	2	0	0	0	2	2	7.4
On ground collision with object	3	2	1	1	0	1	5	1	7	25.9
Overrun	0	1	0	0	0	0	0	1	1	3.7
Loss of power(total) - mech failure/malfunction	1	0	0	0	0	0	1	0	1	3.7
Propeller/rotor contact	0	0	0	1	0	1	0	0	1	3.7
Miscellaneous/other	0	0	2	0	2	0	0	0	2	7.4
Aircraft										
Number -	9	3	11	4	9	3	10	5	27	
Percent -	33.3	11.1	40.7	14.8	33.3	11.1	37.0	18.5		

Table 8 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
14 CFR 121 125 127 OPERATIONS
1991

Type of first occurrence	Phase of operation							Aircraft	
	Stndg	Taxi	Tkoff	Cruis	Aprch	Landg	Nrept	No.	Percent
Altitude deviation,uncontrolled	0	0	0	1	0	0	0	1	3.7
Airframe/component/system	0	1	2	1	0	1	0	5	18.5
Fire	0	1	0	0	0	0	0	1	3.7
Hard landing	0	0	0	0	0	1	0	1	3.7
In flight collision with object	0	0	0	0	1	0	0	1	3.7
In flight encounter with weather	0	0	0	4	0	0	0	4	14.8
Loss of control - in flight	0	0	1	0	1	0	0	2	7.4
On ground collision with object	0	6	0	0	0	1	0	7	25.9
Overrun	0	0	0	0	0	0	1	1	3.7
Loss of power(total) - mech failure/malfunction	0	0	0	0	1	0	0	1	3.7
Propeller/rotor contact	1	0	0	0	0	0	0	1	3.7
Miscellaneous/other	1	0	0	1	0	0	0	2	7.4
Aircraft									
Number -	2	8	3	7	3	3	1	27	
Percent -	7.4	29.6	11.1	25.9	11.1	11.1	3.7		

Table 9 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1991

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing	0	0	1	0	1	0	0	0	1	3.7
Standing - engine(s) operating	0	0	0	1	0	1	0	0	1	3.7
Taxi	1	0	1	0	0	0	2	0	2	7.4
Taxi - to takeoff	1	0	1	0	0	2	0	0	2	7.4
Taxi - from landing	2	2	0	0	0	0	4	0	4	14.8
Takeoff - ground run	3	0	1	1	1	1	3	0	5	20.0
Takeoff - initial climb	0	0	0	1	0	0	0	1	1	3.7
Cruise	0	0	2	0	2	0	0	0	2	7.4
Cruise - normal	0	0	5	0	5	0	0	0	5	18.5
Approach	1	0	0	1	0	0	1	1	2	7.4
Approach -VFR pattern - final approach	1	0	0	0	0	0	1	0	1	3.7
Landing - flare/touchdown	1	0	0	0	0	0	1	0	1	3.7
Landing - roll	0	0	1	1	1	0	0	1	2	7.4
Not reported	0	1	0	0	0	0	0	1	1	3.7
Aircraft										
Number -	9	3	11	4	9	3	10	5	27	
Percent -	33.3	11.1	40.7	14.8	33.3	11.1	37.0	18.5		

Table 10 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
14 CFR 121 125 127 OPERATIONS
1991

Condition of light	Type of weather: VMC	Type of weather: IMC	Aircraft: No.	Aircraft: Percent
Dawn	1	0	1	3.7
Daylight	12	2	14	51.9
Night (dark)	3	3	6	22.2
Night (bright)	2	0	2	7.4
Dusk	4	0	4	14.8
Aircraft				
Number -	22	5	27	
Percent -	81.5	18.5		

Table 11 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
14 CFR 121, 125, 127 OPERATIONS
1991

Type of Operation	Degree of Injury: None	Minor	Serious	Fatal	Aircraft: No.	Percent
Scheduled Domestic Passenger	4	2	6	3	15	55.5
Scheduled Domestic Cargo	2	0	0	1	3	11.1
Scheduled Domestic Pax/Cargo	2	0	3	0	5	18.5
Scheduled International Pass.	0	0	1	0	1	3.7
Scheduled International Cargo	0	1	0	0	1	3.7
Scheduled International Pax/Cargo	0	0	1	0	1	3.7
Nonscheduled Domestic Cargo	1	0	0	0	1	3.7
Aircraft						
Number -	9	3	11	4	27	
Percent -	33.3	11.1	40.7	14.8		

Table 12 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121, 125, 127 OPERATIONS
1991

Aircraft fire	Degree of injury: None	Minor	Ser	Fatal	Aircraft damage: None	Minor	Subs	Dest	Aircraft: No.	Percent
None	7	2	9	1	9	2	8	0	19	70.4
On ground	1	1	2	3	0	1	1	5	7	25.9
In-flight and on ground	1	0	0	0	0	0	1	0	1	3.7
Aircraft										
Number -	9	3	11	4	9	3	10	5	27	
Percent -	33.3	11.1	40.7	14.8	33.3	11.1	37.0	18.5		

Table 13 - BROAD CAUSE/FACTOR ASSIGNMENTS*
14 CFR 121 125 127 OPERATIONS
1991

Cause/Factor	Cited as a Cause		Cited as a Factor		Cited as Either a Cause or a Factor (or Both)	
	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents
Aircraft #	1	8	0	1	1	9
Propulsion System and Controls	0	2	0	0	0	2
Flight Control System	0	0	0	1	0	1
Airframe	1	1	0	0	1	1
Landing Gear	0	1	0	0	0	1
Systems/Equipment/Instruments	0	5	0	0	0	5
Environment #	0	4	1	6	1	8
Weather	0	3	1	5	1	7
Light Conditions	0	0	0	1	0	1
Object (trees, wires, etc.)	0	1	0	0	0	1
Personnel #	3	16	0	9	3	17
Pilot	1	11	0	5	1	11
Others (Aboard)	0	1	0	1	0	1
Others (Not Aboard)	2	7	0	4	2	10
Number of Aircraft					4	27
NTSB Determined Probable Cause					4	27

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* Multiple causes and factors may be assigned in an accident

\# This category is composed of the sub-categories indented below it. The number of aircraft cited in a category may be less than or equal to the sum of the sub-category citations.

Table 14 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL 14 CFR 121 125 127 OPERATIONS
1982 - 1991

Year	Accidents	Fatal Accidents	Fatalities: Total	Fatalities: Aboard Aircraft In This Category	Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown: Total	Accident Rate per 100,000* Aircraft Hours Flown: Fatal
1982	20	5	235	223	7,040,325	0.270	0.057
1983	24	4	15	14	7,298,799	0.329	0.055
1984	17	1	4	4	8,165,124	0.208	0.012
1985	22	7	526	525	8,709,894	0.253	0.080
1986	24	3	8	7	9,976,104	0.231	0.020
1987	36	5	232	230	10,645,192	0.329	0.038
1988	29	3	285	274	11,140,548	0.251	0.018
1989	28	11	278	276	11,274,543	0.248	0.098
1990	24	6	39	12	12,150,116	0.198	0.049
1991	26	4	62	49	11,900,023	0.218	0.034

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1), 1986 (1), 1987 (1), 1988 (1)
Fatal - 1982 (1), 1986 (1), 1987 (1), 1988 (1)

Figure 1 - ACCIDENTS AND FATAL ACCIDENTS
ALL 14 CFR 121, 125, 127 OPERATIONS

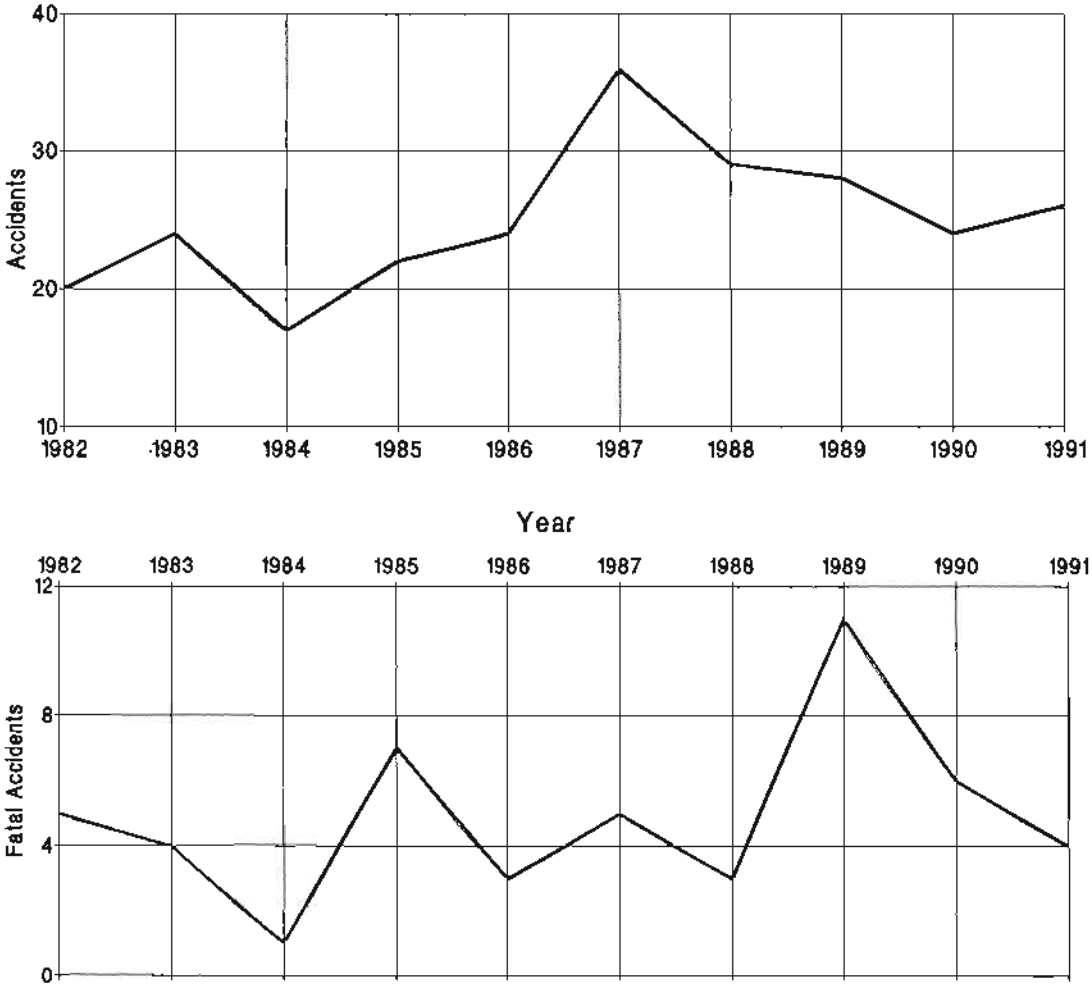

Figure 2 - NUMBER OF FATALITIES
ALL 14 CFR 121, 125, 127 OPERATIONS

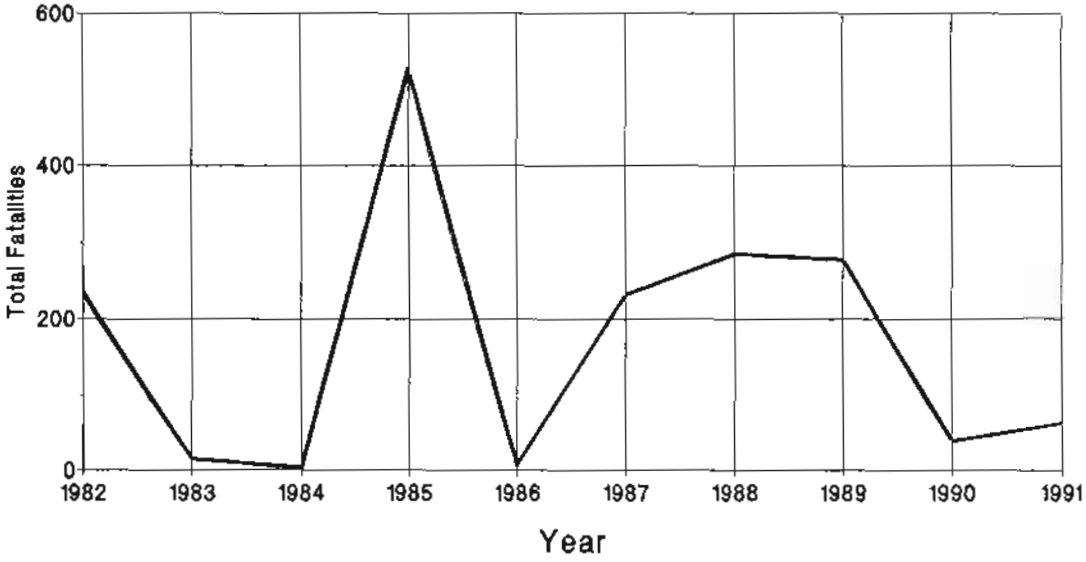

Figure 3 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL 14 CFR 121, 125, 127 OPERATIONS

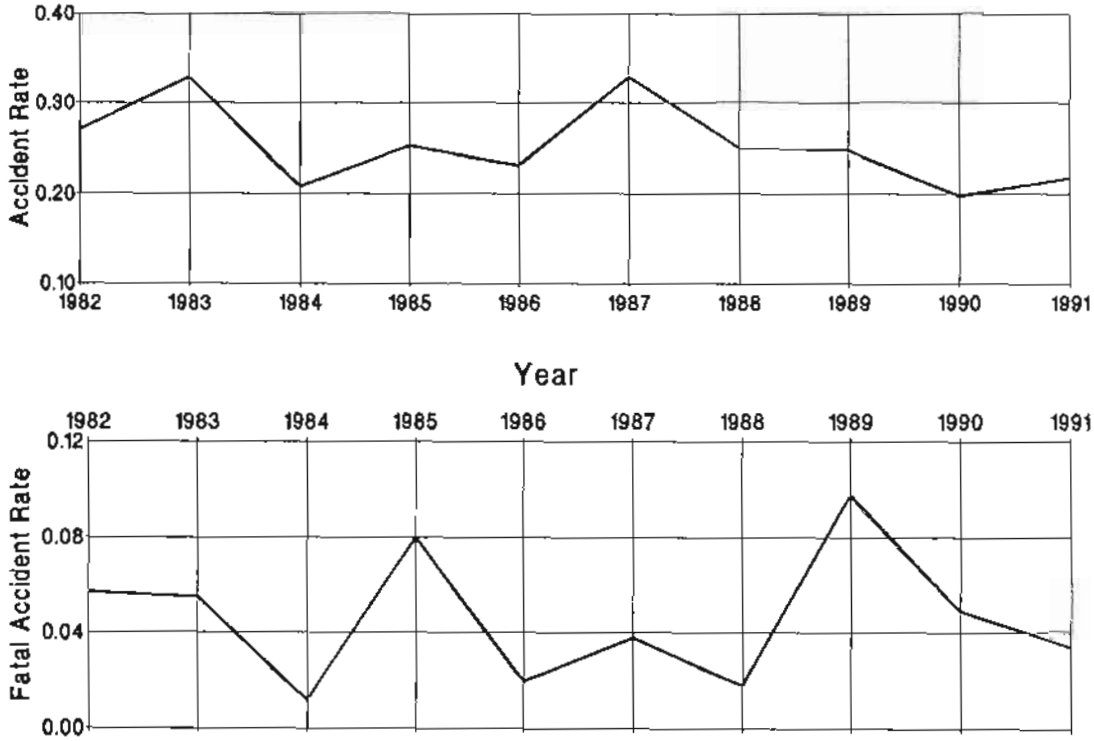

Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 121 125 127 OPERATIONS
1982 - 1991

Year	Accidents	Fatal Accidents	Fatalities: Total	Fatalities: Aboard Aircraft In This Category	Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown: Total	Accident Rate per 100,000* Aircraft Hours Flown: Fatal
1982	16	4	234	222	6,697,770	0.224	0.045
1983	22	4	15	14	6,914,969	0.318	0.058
1984	13	1	4	4	7,736,037	0.168	0.013
1985	17	4	197	196	8,265,332	0.206	0.048
1986	21	2	5	4	9,495,158	0.211	0.011
1987	32	4	231	229	10,115,407	0.306	0.030
1988	28	3	285	274	10,521,052	0.257	0.019
1989	24	8	131	130	10,597,922	0.226	0.075
1990	22	6	39	12	11,524,726	0.191	0.052
1991	25	4	62	49	11,253,868	0.222	0.036

* Suicide and sabotage accidents excluded from rates as follows :
Total - 1982 (1), 1986 (1), 1987 (1), 1988 (1)
Fatal - 1982 (1), 1986 (1), 1987 (1), 1988 (1)

Figure 4 - ACCIDENTS AND FATAL ACCIDENTS
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

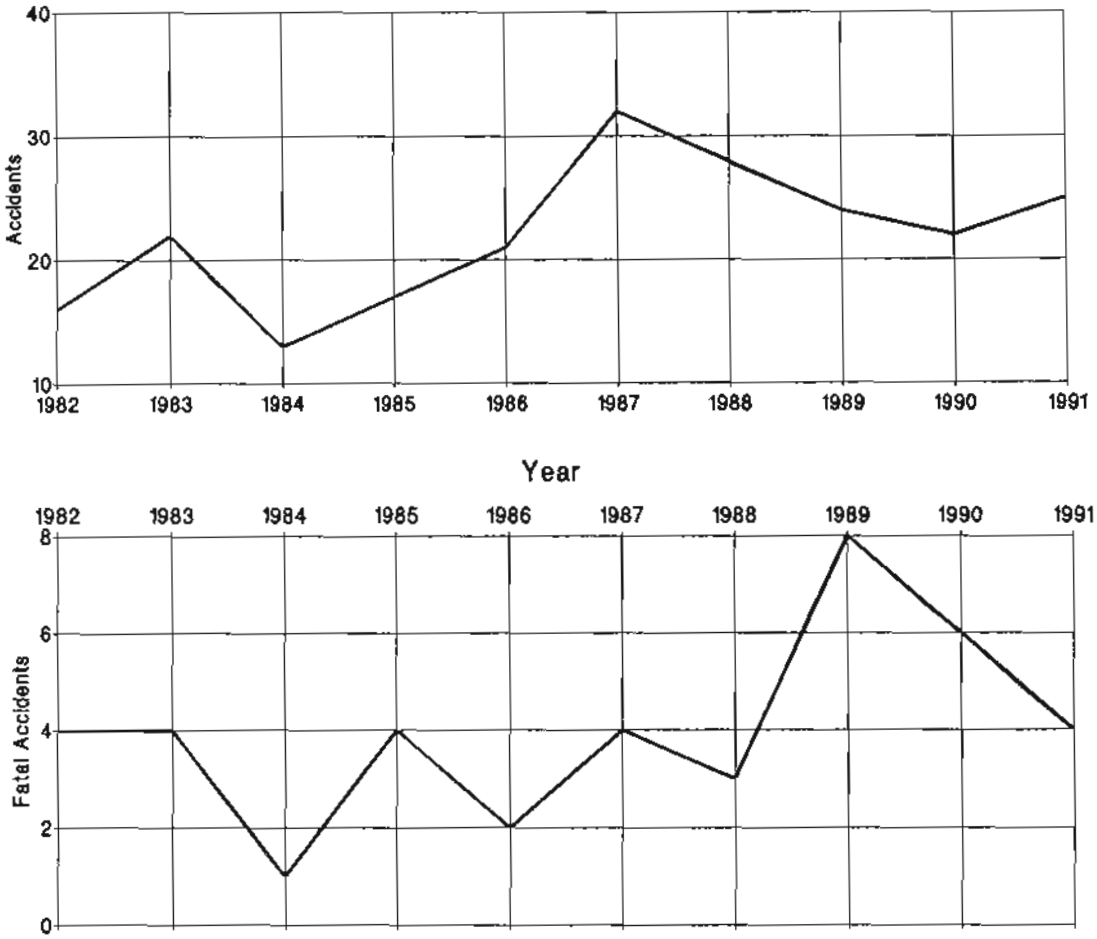

Figure 5 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

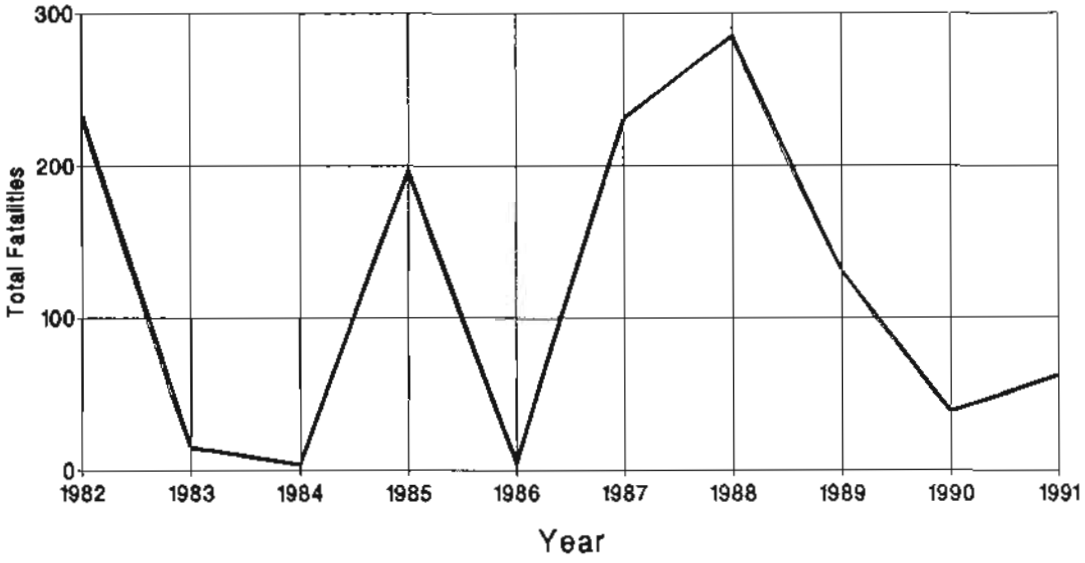

Figure 6 - ACCIDENTS PER 100,000 HOURS FLOWN
SCHEDULED CFR 121, 125, 127 OPERATIONS

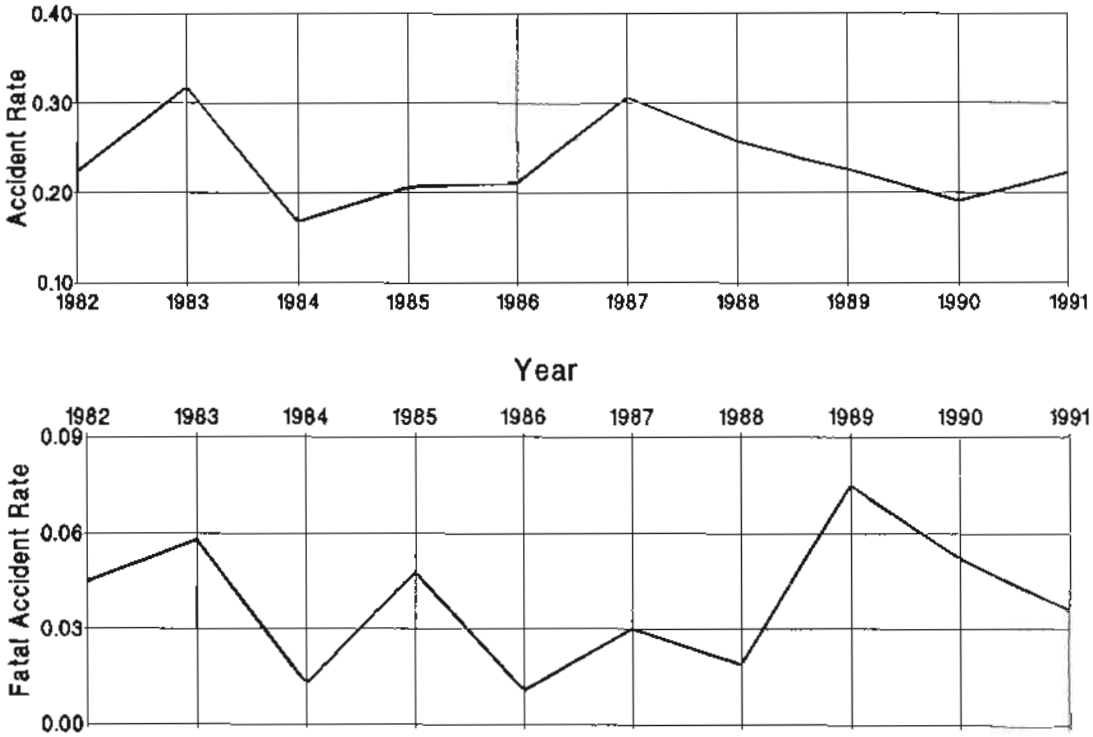

Table 16 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCHEDULED 14 CFR 121 125 127 OPERATIONS
1982 - 1991

			Fatalities			Accident Rate per 100,000* Aircraft Hours Flown	
Year	Accidents	Fatal Accidents	Total	Aboard Aircraft In This Category	Hours Flown	Total	Fatal
1982	4	1	1	1	342,555	1.168	0.292
1983	2	0	0	0	383,830	0.521	0.000
1984	4	0	0	0	429,087	0.932	0.000
1985	5	3	329	329	444,562	1.125	0.675
1986	3	1	3	3	480,946	0.624	0.208
1987	4	1	1	1	529,785	0.755	0.189
1988	1	0	0	0	619,496	0.161	0.000
1989	4	3	147	146	676,621	0.591	0.443
1990	2	0	0	0	625,390	0.320	0.000
1991	1	0	0	0	646,155	0.155	0.000

Figure 7 - ACCIDENTS AND FATAL ACCIDENTS
NONSCHEDULED 14 CFR 121, 125, 127 OPERATIONS

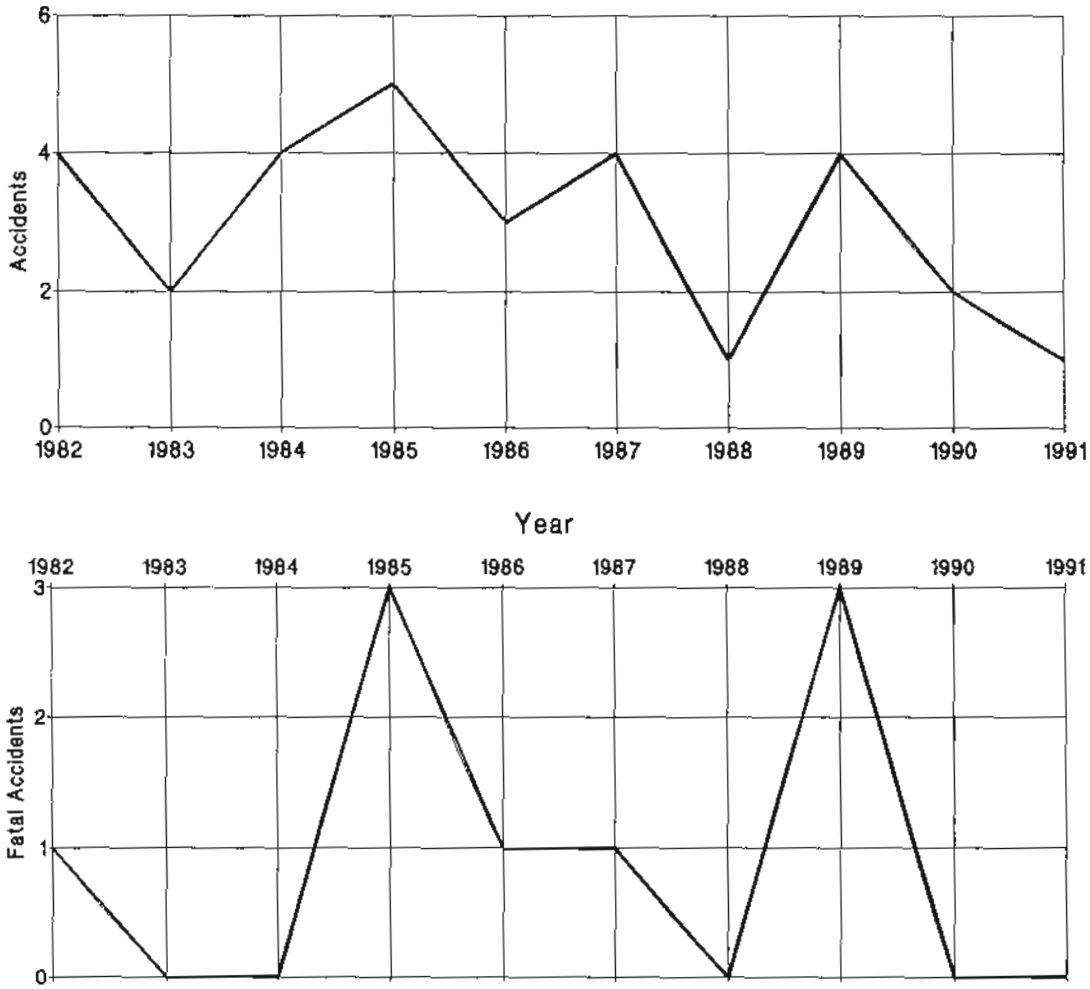

Figure 8 - NUMBER OF FATALITIES
NONSCHEDULED 121, 125, 127 OPERATIONS

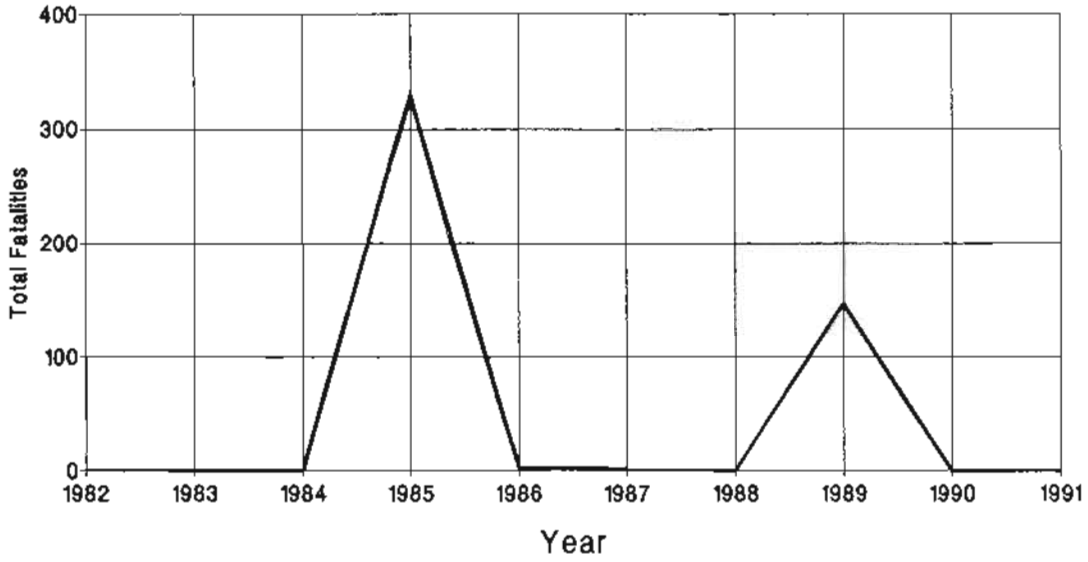

Figure 9 - ACCIDENTS PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 121, 125, 127

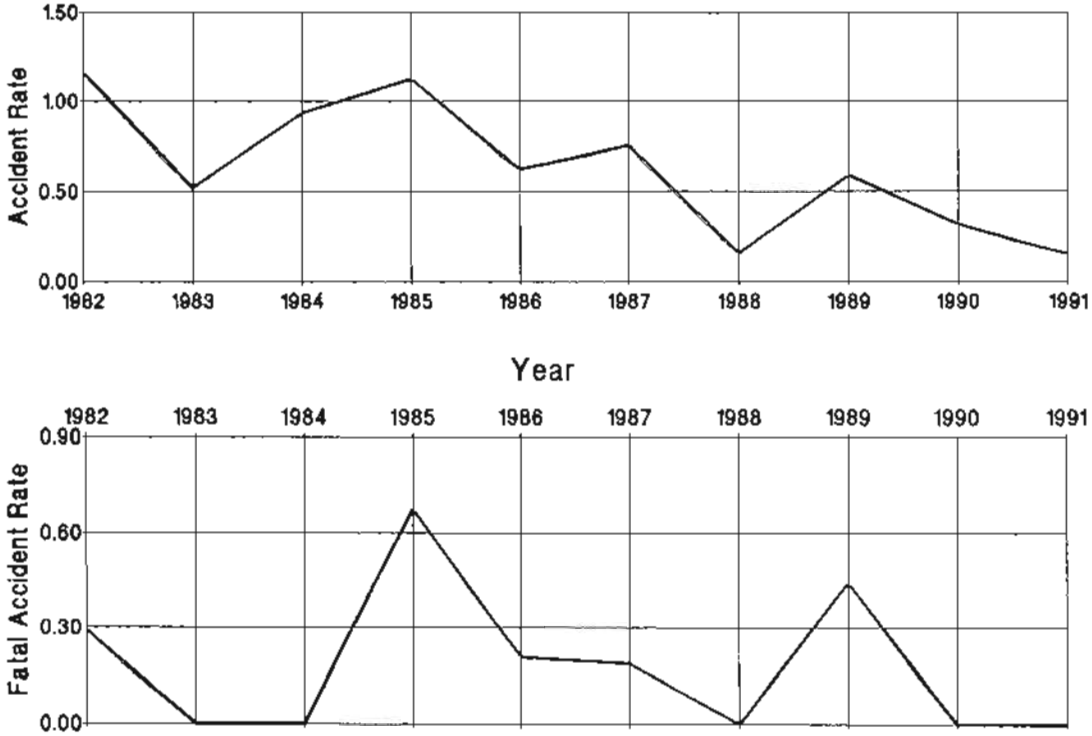

Table 17 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1991 AND 1986 - 1990

	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
Type of Occurrence	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
In flight encounter with weather	4	14.8	6.0	20.8	0	.0	.2	3.6
Airframe/component/system failure/malfunction	5	18.5	5.0	17.4	0	.0	.8	14.3
On ground collision with object	7	25.9	4.4	15.3	1	25.0	1.4	25.0
Miscellaneous/other	2	7.4	2.8	9.7	0	.0	.4	7.1
Not reported	0	.0	1.4	4.9	0	.0	.4	7.1
Loss of control - in flight	2	7.4	1.0	3.5	2	50.0	1.0	17.9
In flight collision w/terrain	0	.0	1.0	3.5	0	.0	.4	7.1
On ground collision w/terrain	0	.0	.8	2.8	0	.0	.0	.0
Hard landing	1	3.7	.6	2.1	0	.0	.0	.0
In flight collision with object	1	3.7	.6	2.1	0	.0	.2	3.6
Loss of engine power(total) - mech failure/malfunction	1	3.7	.6	2.1	0	.0	.0	.0
Fire/explosion	0	.0	.6	2.1	0	.0	.0	.0
Fire	1	3.7	.4	1.4	0	.0	.0	.0
Overrun	1	3.7	.4	1.4	0	.0	.0	.0
Main gear collapsed	0	.0	.4	1.4	0	.0	.0	.0
On ground encounter with weather	0	.0	.4	1.4	0	.0	.2	3.6
Loss of engine power	0	.0	.4	1.4	0	.0	.0	.0
Loss of engine power(total) - non-mechanical	0	.0	.4	1.4	0	.0	.0	.0
Propeller blast or jet exhaust	0	.0	.4	1.4	0	.0	.0	.0
Propeller/rotor contact to person	1	3.7	.2	.7	1	25.0	.0	.0
Altitude deviation,uncontrolled	1	3.7	.2	.7	0	.0	.0	.0
Explosion	0	.0	.2	.7	0	.0	.2	3.6
Nose gear collapsed	0	.0	.2	.7	0	.0	.0	.0
Loss of control - on ground	0	.0	.2	.7	0	.0	.2	3.6
Loss of engine power(partial) - mech failure/malfunction	0	.0	.2	.7	0	.0	.0	.0
Total	27	100.0	28.8	100.0	4	100.0	5.6	100.0

Table 18 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1991 AND 1986 - 1990

	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
Phase of Operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Cruise	7	25.9	5.8	20.1	0	.0	1.2	21.4
Takeoff	3	11.1	4.4	15.3	1	25.0	1.6	28.6
Landing	3	11.1	4.0	13.9	1	25.0	.2	3.6
Taxi	8	29.6	3.8	13.2	0	.0	.8	14.3
Descent	0	.0	3.4	11.8	0	.0	.0	.0
Standing	2	7.4	3.0	10.4	1	25.0	.4	7.1
Climb	0	.0	1.8	6.3	0	.0	.4	7.1
Not reported	1	3.7	1.4	4.9	0	.0	.4	7.1
Approach	3	11.1	1.2	4.2	1	25.0	.6	10.7
Total Aircraft	27	100.0	28.8	100.0	4	100.0	5.6	100.0

Table 19 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1991 AND 1986 - 1990

	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Other Person (Not Aboard)	10	37.0	11.4	39.6	2	50.0	3.2	57.1
Pilot	11	40.7	10.0	34.7	1	25.0	2.2	39.3
Weather	7	25.9	7.8	27.1	1	25.0	1.2	21.4
Other Person (Aboard)	1	3.7	6.4	22.2	0	.0	.4	7.1
Systems/Equipment/ Instruments	5	18.5	5.0	17.4	0	.0	1.2	21.4
Propulsion System and Controls	2	7.4	3.0	10.4	0	.0	.2	3.6
Object (tree,wires,etc)	1	3.7	2.2	7.6	0	.0	.6	10.7
Landing Gear	1	3.7	2.0	6.9	0	.0	.0	.0
Airframe	1	3.7	1.6	5.6	1	25.0	.8	14.3
Light Conditions	1	3.7	1.4	4.9	0	.0	.2	3.6
Terrain/Runway Condition	0	.0	1.4	4.9	0	.0	.2	3.6
Flight Control System	1	3.7	.8	2.8	0	.0	.4	7.1
Airport/Airways Facilities, Aids	0	.0	.6	2.1	0	.0	.4	7.1
Total Aircraft	27		28.8		4		5.6	
NTSB Determined Probable Cause	27		28.8		4		5.6	

Scheduled 14 CFR 135 Operations

There were 23 accidents involving scheduled 14 CFR 135 operations (commuter air carriers) in 1991. The average number of accidents per year in this category for the years 1982 through 1990 is 20.5. The accident rate per 100,00 hours flown for 1991 is 1.059, compared with an overall rate of 1.162 for the period 1982 through 1990.

Of the 23 accidents in this category, eight accidents were fatal and resulted in a total of 99 fatalities. During the period 1982 through 1990, there were an average of 4.8 fatal accidents and 25.7 fatalities per year in Scheduled 14 CFR 135 operations, with a fatal accident rate of 0.368 accidents per 100,000 hours flown for the year 1991.

Table 20 - SUMMARY OF LOSSES
SCHEDULED 14 CFR 135 OPERATIONS
1987 - 1991

	1987	1988	1989	1990	1991
Accidents					
Fatal	10	2	5	3	8
Involved Serious Injury	5	2	1	2	3
Involved Minor or No Injury	17	15	12	10	12
Total	32	19	18	15	23
Fatalities					
Passenger	42	17	25	3	64
Crew	15	4	6	1	13
Other Persons	2	0	0	2	22
Total	59	21	31	6	99
Aircraft Damage (Scheduled 14 CFR 135)					
Destroyed	11	3	5	2	9
Substantial	18	15	13	12	13
Minor	2	1	0	1	0
None	1	0	1	0	1
Total	32	19	19	15	23

Table 21 - ACCIDENT RATES
SCHEDULED 14 CFR 135 OPERATIONS

	1987	1988	1989	1990	1991
Aircraft Miles Flown (Thousands)	350,879	380,237	393,619	450,067	381,464
Aircraft Hours Flown	1,946,349	2,092,689	2,240,555	2,336,952	2,171,067
Departures Flown	2,809,918	2,909,005	2,818,520	3,159,763	2,647,867
Accident Rates					
Per Million Miles Flown	0.091	0.050	0.046	0.033	0.060
Per Hundred Thousand Hours Flown	1.644	0.908	0.803	0.642	1.059
Per Hundred Thousand Departures Flown	1.139	0.653	0.639	0.475	0.869
Fatal Accident Rates					
Per Million Miles Flown	0.028	0.005	0.013	0.007	0.021
Per Hundred Thousand Hours Flown	0.514	0.096	0.223	0.128	0.368
Per Hundred Thousand Departures Flown	0.356	0.069	0.177	0.095	0.302

Table 22 - LIST OF ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/18	Two Moon Bay, AK	Passenger	China Air	DeHavilland DHC-2	Substantial	Serious	Loss of control - in flight
1/30	Beckley, WV	Passenger	US Air Express	British Aerospace 3101	Destroyed	Serious	In flight encounter with weather
2/01	Los Angeles, CA	Passenger	Skywest	Swearingen SA-227-AC	Destroyed	Fatal (34)	On ground collision with object (scheduled 14 CFR 121 aircraft)
2/10	Kivalina, AK	Passenger	Baker Aviation	Cessna 207	Substantial	Minor	In flight collision with terrain
3/18	Treasure Cay, BH	Passenger	Aero Coach	Cessna 402C	Destroyed	Fatal (5)	Not reported
3/30	Kenai, AK	Passenger	South Central Air	Piper PA-31T	Substantial	None	Airframe/component/ system failure malf.
4/05	Brunswick, GA	Passenger	Atlantic Southeast	Embraer 120RT	Destroyed	Fatal (23)	Airframe/component/ system failure malf.
5/03	Eek, AK	Pax and Cargo	Camai Air	Piper PA-32-300	Substantial	None	Undershoot
6/02	Friday Harbor, WA	Passenger	Lake Union Air	DeHavilland DHC-2	Substantial	None	In flight collision with object
7/10	Birmingham, AL	Passenger	L'Express Airlines	Beech C99	Destroyed	Fatal (13)	Loss of control - in flight
7/13	Kiana, AK	Pax and Cargo	Baker Aviation	Cessna 402-C	Substantial	None	Overrun
7/27	DFW Airport, TX	Pax and Cargo	Metro Airlines	British Aerospace 3100	Substantial	None	On ground collision with object (scheduled 14 CFR 121 aircraft)
8/12	St. Louis, MO	Pax and Cargo	Trans States Airlines	British Aerospace 3201	Substantial	None	Airframe/component/ system failure malf.
8/20	Ketchikan, AK	Pax and Cargo	Temsco Helicopters	British Norman BN-2A-26	Destroyed	Fatal (4)	In flight collision with terrain
9/11	Eagle Lake, TX	Passenger	Continental Express	Embraer 120	Destroyed	Fatal (14)	Airframe/component/ system failure malf.

Table 22 - LIST OF ACCIDENTS (Continued)
SCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
10/06	Augusta, ME	Pax and Cargo	Northeast Express	Swearingen SA-227AC	Substantial	Minor	Overrun
10/18	Scammon Bay, AK	Pax and Cargo	Village Aviation	Cessna U206	Substantial	Minor	Loss of control - in flight
10/19	Allakaket, AK	Passenger	Northern Air Lease	Beech BE-99	Substantial	None	Undershoot
10/26	Chevak, AK	Pax and Cargo	Markair Express	DeHavilland DHC-6	Substantial	None	Loss of control - in flight
11/09	Memphis, TN	Passenger	Northwest Airlink	British Aerospace 3101	None	Serious	Miscellaneous/other
12/01	Missoula, MT	Pax and Cargo	Horizon Air	Swearingen SA-227-AC	Substantial	None	Loss of control - on ground
12/10	Temple Bar, AZ	Passenger	Las Vegas Airlines	Piper PA-31-350	Destroyed	Fatal (5)	In flight collision with terrain
12/13	Ninilchik, AK	Passenger	South Central Air	Piper PA-31T3	Destroyed	Fatal (1)	Loss of control - in flight

Table 23 - PERSONS BY ROLE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1991

Role of Person	Degree of Injury: Fatal	Serious	Minor	None	Total
Pilot	7	3	1	12	23
Copilot	4	0	0	8	12
Cabin attendants	2	0	0	0	2
Passenger	64	15	8	81	168
Total aboard	77	18	9	101	205
Other aircraft*	22	13	17	160	212
Grand total	99	31	26	261	417
Percent	23.7	7.4	6.2	62.6	

* 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 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1991

Aircraft damage	Degree of injury: None	Minor	Ser	Fatal	Aircraft: No.	Percent
None	0	0	1	0	1	4.3
Substantial	9	3	1	0	13	56.5
Destroyed	0	0	1	8	9	39.1
Aircraft						
Number -	9	3	3	8	23	
Percent -	39.1	13.0	13.0	34.8		

Table 25 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1991

Type of first occurrence	Degree of injury: None	Minor	Ser	Fatal	Aircraft damage: None	Minor	Subs	Dest	Aircraft: No.	Percent
Airframe/component/system failure/malfunction	2	0	0	2	0	0	2	2	4	17.4
Inflight collision w/obj.	1	0	0	0	0	0	1	0	1	4.3
In flight collision w/ter.	0	1	0	2	0	0	1	2	3	13.0
In flight encounter w/wx.	0	0	1	0	0	0	0	1	1	4.3
Loss of control - in flight	1	1	1	2	0	0	3	2	5	21.7
Loss of control - on ground	1	0	0	0	0	0	1	0	1	4.3
On ground collision w/obj.	1	0	0	1	0	0	1	1	2	8.7
Overrun	1	1	0	0	0	0	2	0	2	8.7
Undershoot	2	0	0	0	0	0	2	0	2	8.7
Miscellaneous/other	0	0	1	0	1	0	0	0	1	4.3
Not reported	0	0	0	1	0	0	0	1	1	4.3
Aircraft										
Number -	9	3	3	8	1	0	13	9	23	
Percent -	39.1	13.0	13.0	34.8	4.3	.0	56.5	39.1		

Table 26 - AIRCRAFT BY FIRST OCCURANCE AND BROAD PHASE OF OPERATION
SCHEDULED 14 CFR AND 135 OPERATIONS
1991

Type of first occurrence	Phase of opertation								Aircraft	
	Stndg	Tkoff	Cruis	Dscnt	Aprch	Landg	Manvr	Nrept	No.	Percent
Airframe/component/system failure/malfunction	0	0	1	1	1	0	0	1	4	17.4
In flight collision with object	0	0	0	0	0	0	0	1	1	4.3
In flight collision with terrain	0	0	1	0	0	0	2	0	3	13.0
In flight encounter with weather	0	0	0	1	0	0	0	0	1	4.3
Loss of control - in flight	0	1	1	0	1	0	1	1	5	21.7
Loss of control - on ground	0	0	0	0	0	1	0	0	1	4.3
On ground collision with object	2	0	0	0	0	0	0	0	2	8.7
Overrun	0	0	0	0	0	2	0	0	2	8.7
Undershoot	0	0	0	0	0	2	0	0	2	8.7
Miscellaneous/other	1	0	0	0	0	0	0	0	1	4.3
Not reported	0	0	0	0	0	0	0	1	1	4.3
Aircraft										
Number -	3	1	3	2	2	5	3	4	23	
Percent -	13.0	4.3	13.0	8.7	8.7	21.7	13.0	17.4		

Table 27 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1991

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing	0	0	0	1	0	0	0	1	1	4.3
Standing - engines operating	1	0	0	0	0	0	1	0	1	4.3
Standing - engines not operating	0	0	1	0	1	0	0	0	1	4.3
Takeoff - initial climb	1	0	0	0	0	0	1	0	1	4.3
Cruise	0	0	0	1	0	0	0	1	1	4.3
Cruise - normal	1	0	0	1	0	0	1	1	2	8.7
Descent - normal	0	0	1	1	0	0	0	2	2	8.7
Approach	0	0	0	1	0	0	0	1	1	4.3
Approach - IAF to FAF/ outer marker (IFR)	0	0	0	1	0	0	0	1	1	4.3
Landing	1	1	0	0	0	0	2	0	2	8.7
Landing - flare/touchdown	2	0	0	0	0	0	2	0	2	8.7
Landing - roll	1	0	0	0	0	0	1	0	1	4.3
Maneuvering	0	1	1	1	0	0	2	1	3	13.0
Not reported	2	1	0	1	0	0	3	1	4	17.4
Aircraft										
Number -	9	3	3	8	1	0	13	9	23	
Percent -	39.1	13.0	13.0	34.8	4.3	.0	56.5	39.1		

Table 28 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
SCHEDULED 14 CFR 135 OPERATIONS
1991

Condition of light	Type of weather: VMC	IMC	Not reptd	Aircraft: No.	Percent
Daylight	12	1	1	14	60.9
Night (dark)	1	4	0	5	21.7
Night (bright)	1	0	0	1	4.3
Dusk	1	1	0	2	8.7
Not reported	1	0	0	1	4.3
Aircraft					
Number -	16	6	1	23	
Percent -	69.6	26.1	4.3		

Table 29 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1991

Type of Operation	Degree of Injury: None	Minor	Serious	Fatal	Aircraft: No.	Percent
Scheduled Domestic Passenger	3	1	3	6	13	56.5
Scheduled Domestic Pass/Cargo	6	2	0	1	9	39.1
Scheduled International Pass.	0	0	0	1	1	4.3
Aircraft						
Number -	9	3	3	8	23	
Percent -	39.1	13.0	13.0	34.8		

Table 30 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
SCHEDULED 14 CFR 135 OPERATIONS
1991

Accident location	Flight Plan: VFR	IFR	Other	Aircraft: No.	Percent
Off airport/airstrip	3	4	1	8	34.8
On Airport	9	3	0	12	52.2
On Airstrip	1	0	0	1	4.3
Other	2	0	0	2	8.7
Aircraft					
Number -	15	7	1	23	
Percent -	65.2	30.4	4.3		

Table 31 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1991

	Degree of injury				Aircraft damage				Aircraft	
Aircraft fire	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	9	3	2	0	1	0	13	0	14	60.9
In-flight	0	0	0	1	0	0	0	1	1	4.3
On ground	0	0	1	6	0	0	0	7	7	30.4
In-flight and on ground	0	0	0	1	0	0	0	1	1	4.3
Aircraft										
Number -	9	3	3	8	1	0	13	9	23	
Percent -	39.1	13.0	13.0	34.8	4.3	.0	56.5	39.1		

Table 32 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1991

	Degree of injury				Aircraft damage				Aircraft	
Type of aircraft	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Fixed Wing Single Recip. Engine	2	2	1	0	0	0	5	0	5	21.7
Fixed Wing Multiple Recip. Engine	1	0	0	3	0	0	1	3	4	17.4
Fixed Wing Turboprop	6	1	2	5	1	0	7	6	14	60.9
Aircraft										
Number -	9	3	3	8	1	0	13	9	23	
Percent -	39.1	13.0	13.0	34.8	4.3	.0	56.5	39.1		

Table 33 - BROAD CAUSE/FACTOR ASSIGNMENTS*
SCHEDULED 14 CFR 135 OPERATIONS
1991

Cause/Factor	Cited as a Cause		Cited as a Factor		Cited as Either a Cause or a Factor (or Both)	
	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents
Aircraft #	2	4	0	3	2	6
Propulsion System and Controls	1	1	0	0	1	1
Flight Control System	1	2	0	0	1	2
Airframe	0	0	0	1	0	1
Landing Gear	0	1	0	1	0	2
Systems/Equipment/Instruments	0	0	0	1	0	1
Environment #	0	2	3	9	3	10
Weather	0	2	3	7	3	8
Airport/Airways Facilities,Aids	0	0	0	1	0	1
Terrain/Runway Condition	0	0	2	6	2	6
Personnel #	5	19	1	8	6	20
Pilot	3	15	0	5	3	15
Others (Aboard)	0	0	0	1	0	1
Others (Not Aboard)	2	4	1	3	3	7
Number of Aircraft					8	23
NTSB Determined Probable Cause					7	22

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* Multiple causes and factors may be assigned in an accident

\# This category is composed of the sub-categories indented below it. The number of aircraft cited in a category may be less than or equal to the sum of the sub-category citations.

Table 34 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 135 OPERATIONS
1982 - 1991

Year	Accidents	Fatal Accidents	Fatalities: Total	Fatalities: Aboard Aircraft In This Category	Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown: Total	Accident Rate per 100,000* Aircraft Hours Flown: Fatal
1982	26	5	14	14	1,299,748	2.000	0.385
1983	17	2	11	10	1,510,908	1.125	0.132
1984	22	7	48	46	1,745,762	1.260	0.401
1985	21	7	37	36	1,737,106	1.209	0.403
1986	15	2	4	4	1,724,586	0.870	0.116
1987	32	10	59	57	1,946,349	1.644	0.514
1988	19	2	21	21	2,092,689	0.908	0.096
1989	18	5	31	31	2,240,555	0.803	0.223
1990	15	3	6	4	2,336,952	0.642	0.128
1991	23	8	99	77	2,171,067	1.059	0.368

Figure 10 - ACCIDENTS AND FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS

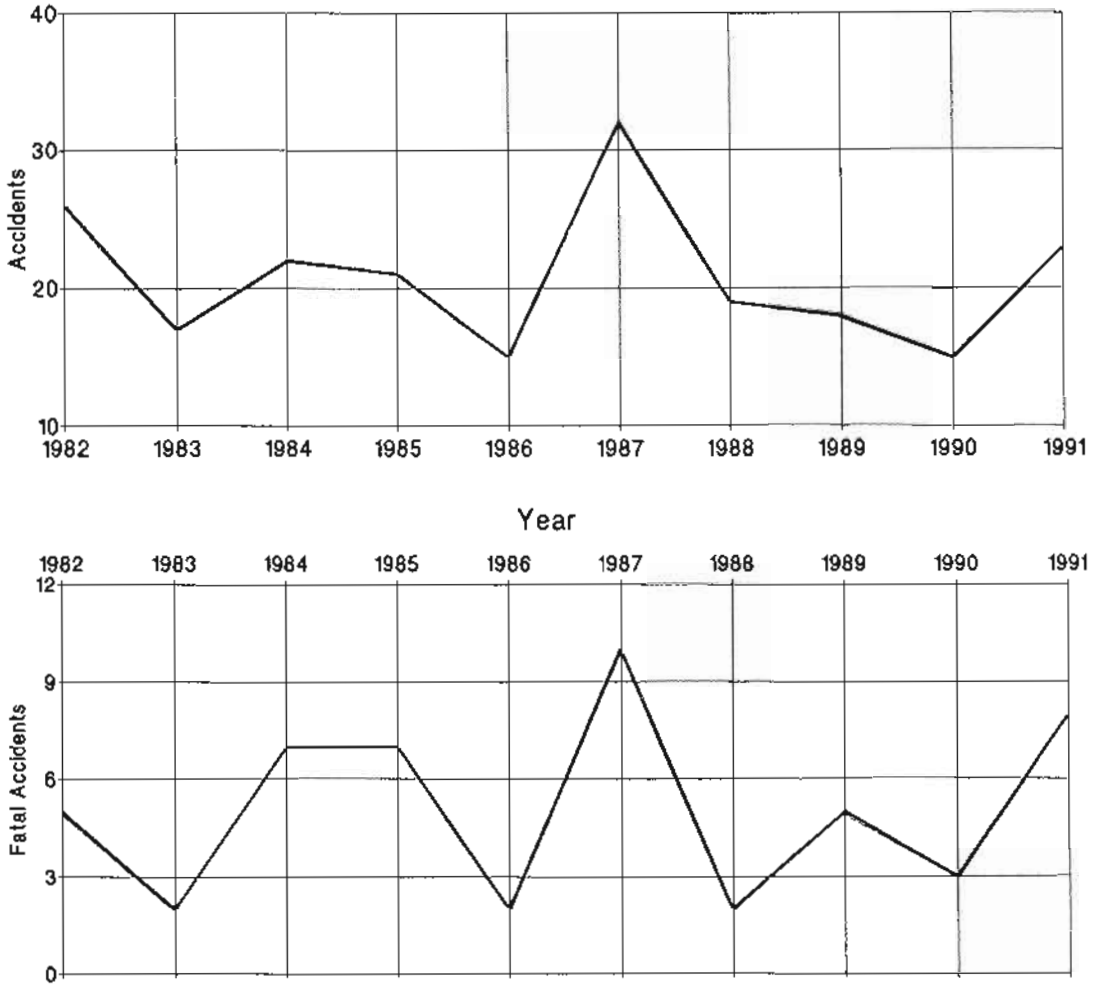


Figure 11 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 135 OPERATIONS

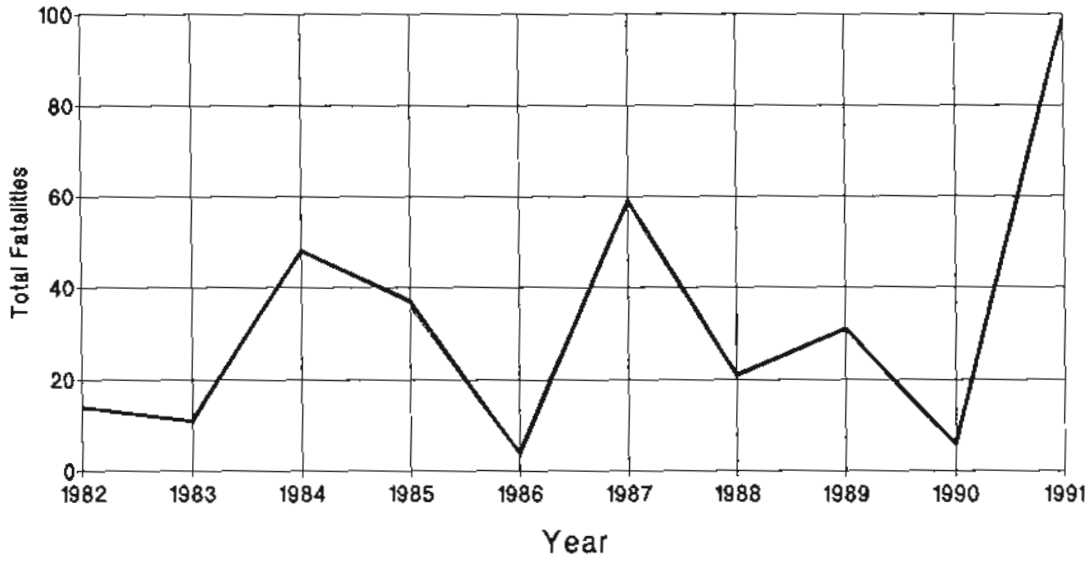
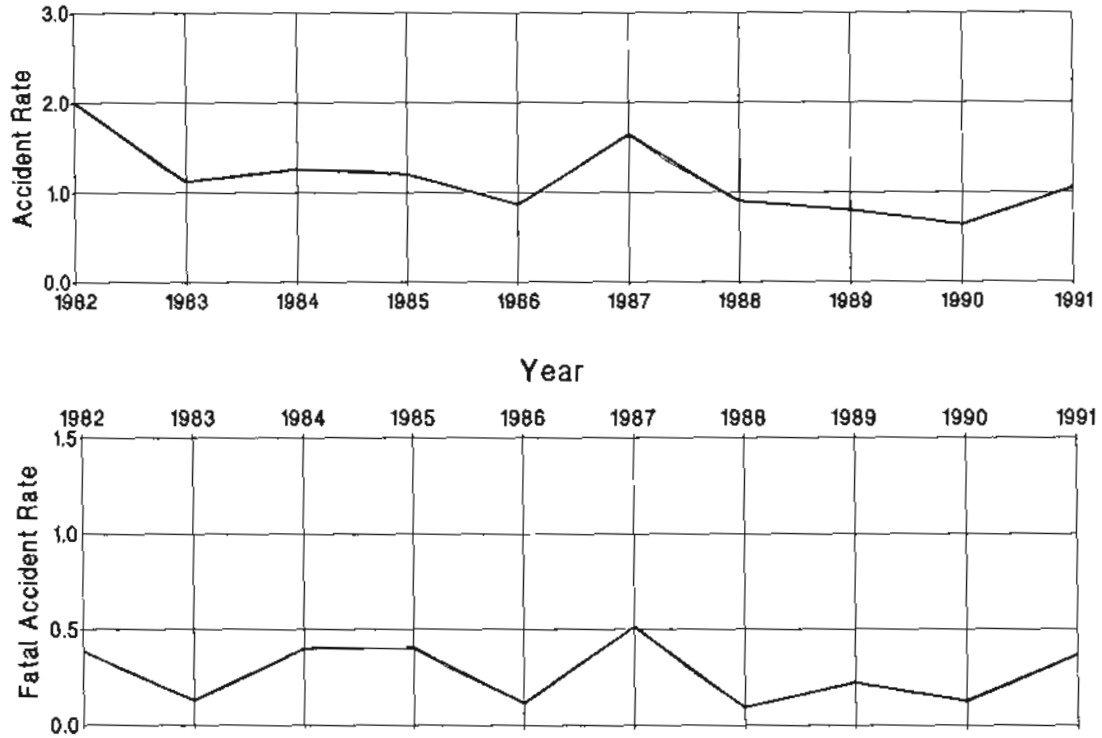


Figure 12 - ACCIDENT RATE PER 100,000 HOURS FLOWN
SCHEDULED 14 CFR 135 OPERATIONS



NCES IN ALL ACCIDENTS
ULED 14 CFR 135 OPERA
1991 AND 1986 - 1990

Type of Occurrence	All Accidents 1991 No.	All Accidents 1991 Percent	All Accidents 1986 - 1990 Mean	All Accidents 1986 - 1990 Percent	Fatal Accidents 1991 No.	Fatal Accidents 1991 Percent	Fatal Accidents 1986 - 1990 Mean	Fatal Accidents 1986 - 1990 Percent
On ground collision with object	2	8.7	3.2	15.1	1	12.5	.0	.0
In flight encounter with weather	1	4.3	2.0	9.4	0	.0	1.2	27.3
Airframe/component/system failure/ malfunction	4	17.4	1.8	8.5	2	25.0	.2	4.5
Loss of control - in flight	5	21.7	1.8	8.5	2	25.0	1.0	22.7
In flight collision w/terrain	3	13.0	1.2	5.7	2	25.0	.4	9.1
Loss of control - on ground	1	4.3	1.2	5.7	0	.0	.0	.0
Loss of engine power(total) - non-mechanical	0	.0	1.0	4.7	0	.0	.2	4.5
In flight collision with object	1	4.3	.8	3.8	0	.0	.2	4.5
Hard landing	0	.0	.8	3.8	0	.0	.0	.0
Midair collision	0	.0	.8	3.8	0	.0	.4	9.1
Loss of engine power(total) - mech failure/malfunction	0	.0	.8	3.8	0	.0	.0	.0
Loss of engine power(partial) - non-mechanical	0	.0	.6	2.8	0	.0	.0	.0
Undershoot	2	8.7	.4	1.9	0	.0	.0	.0
Miscellaneous/other	1	4.3	.4	1.9	0	.0	.0	.0
Complete gear collapsed	0	.0	.4	1.9	0	.0	.0	.0
Gear not extended	0	.0	.4	1.9	0	.0	.0	.0
On ground collision w/terrain	0	.0	.4	1.9	0	.0	.0	.0
Loss of engine power	0	.0	.4	1.9	0	.0	.4	9.1
Loss of engine power(partial) - mech failure/malfunction	0	.0	.4	1.9	0	.0	.2	4.5
Propeller/rotor contact to person	0	.0	.4	1.9	0	.0	.0	.0
Vortex turbulence encountered	0	.0	.4	1.9	0	.0	.0	.0
Overrun	2	8.7	.2	.9	0	.0	.0	.0
Not reported	1	4.3	.2	.9	1	12.5	.2	4.5
Dragged wing, rotor, pod, or float	0	.0	.2	.9	0	.0	.0	.0
Explosion	0	.0	.2	.9	0	.0	.0	.0
Main gear collapsed	0	.0	.2	.9	0	.0	.0	.0
Nose gear collapsed	0	.0	.2	.9	0	.0	.0	.0
Undetermined	0	.0	.2	.9	0	.0	.0	.0
Total	23	100.0	21.2	100.0	8	100.0	4.4	100.0

Table 36 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1991 AND 1986 - 1990

	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
Phase of operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Landing	5	21.7	3.8	18.8	0	.0	.0	.0
Taxi	0	.0	3.6	17.8	0	.0	.0	.0
Approach	2	8.7	3.2	15.8	2	25.0	1.6	36.4
Takeoff	1	4.3	2.2	10.9	0	.0	.4	9.1
Cruise	3	13.0	2.2	10.9	2	25.0	1.2	27.3
Standing	3	13.0	1.4	6.9	1	12.5	.0	.0
Descent	2	8.7	1.4	6.9	1	12.5	.0	.0
Maneuvering	3	13.0	1.0	5.0	1	12.5	.8	18.2
Climb	0	.0	.8	4.0	0	.0	.2	4.5
Not Reported	4	17.4	.2	1.0	1	12.5	.2	4.5
Total Aircraft	23	100.0	20.2	100.0	8	100.0	4.4	100.0

Table 37 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1991 AND 1986 - 1990

	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	15	65.2	14.6	72.3	3	37.5	4.0	90.9
Other Person (Not Aboard)	7	30.4	8.8	43.6	3	37.5	1.8	40.9
Weather	8	34.8	6.0	29.7	3	37.5	2.0	45.5
Terrain/Runway Condition	6	26.1	5.2	25.7	2	25.0	1.4	31.8
Light Conditions	0	.0	3.6	17.8	0	.0	1.0	22.7
Propulsion System and Controls	1	4.3	3.0	14.9	1	12.5	.6	13.6
Object (tree,wires,etc)	0	.0	2.8	13.9	0	.0	.2	4.5
Systems/Equipment/ Instruments	1	4.3	2.2	10.9	0	.0	.6	13.6
Landing Gear	2	8.7	1.2	5.9	0	.0	.0	.0
Airframe	1	4.3	1.0	5.0	0	.0	.2	4.5
Airport/Airways Facilities, Aids	1	4.3	1.0	5.0	0	.0	.4	9.1
Flight Control System	2	8.7	.4	2.0	1	12.5	.4	9.1
Other Person (Aboard)	1	4.3	.2	1.0	0	.0	.0	.0
Total Aircraft	23	100.0	20.2	100.0	8	100.0	4.4	100.0
NTSB Determined Probable Cause	22		19.8		7		4.2	

Nonscheduled 14 CFR 135 Operations

During 1991 there were 87 accidents involving nonscheduled 14 CFR 135 aircraft (air taxis). This is the lowest number of accidents in this report and represents a decrease of 29.1 percent from the average of 122.8 accidents per year in this category during the period 1982 through 1990. The average accident rate for the period 1982 - 1990 was 4.63 accidents per 100,000 hours flown. The 1991 rate of 3.88 is lower than the nine year average.

There were 27 fatal accidents in this category that were responsible for 70 fatalities in 1991. During the period 1982 through 1990, there were an average of 28.6 fatal accidents and 64.9 fatalities per year. The overall rate for 1991 was 1.20 fatal accident per 100,000 hours flown.

One of the accidents reported in this section involved a midair collision between two non-scheduled 14 CFR 135 aircraft. Therefore, this section lists 87 accidents involving 88 aircraft.

Table 38 - SUMMARY OF LOSSES
NONSCHEDULED 14 CFR 135 OPERATIONS
1987 - 1991

	1987	1988	1989	1990	1991
Accidents					
Fatal	30	28	25	28	27
Involved Serious Injury	9	15	13	14	10
Involved Minor or No Injury	58	58	73	64	50
Total	97	101	111	106	87
Fatalities					
Passenger	31	22	46	20	35
Crew	32	33	35	28	31
Other Persons	2	4	2	2	4
Total	65	59	83	50	70
Aircraft Damage (Nonscheduled 14 CFR 135)					
Destroyed	34	37	32	38	31
Substantial	62	62	80	68	53
Minor	4	1	0	1	2
None	0	1	0	1	2
Total	100	101	112	108	88

Table 39 - ACCIDENT RATES
NONSCHEDULED 14 CFR 135 OPERATIONS

	1987	1988	1989	1990	1991
Aircraft Hours Flown	2,657,000	2,632,000	3,020,000	2,249,000	2,241,000
Accident Rates *					
All Accidents	3.65	3.84	3.68	4.71	3.88
Fatal Accidents	1.13	1.06	0.83	1.24	1.20

*Per Hundred Thousand Hours Flown

Table 40 - LIST OF ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/18	Patterson, LA	Passenger	Cessna 180K	Minor	Fatal (1)	Miscellaneous/other
1/19	S. Pass Blk 70, GM	Passenger	Bell B206B III	Destroyed	Fatal (3)	Loss of control - in flight
1/21	Anaheim, CA	Cargo	Piper PA 32-300	Substantial	Minor	Loss of power(partial) - mech failure/malfunction
1/24	Batavia, NY	Cargo	Beech 58	Destroyed	Fatal (1)	Loss of power(total) - non-mechanical
1/27	S.Tim Blk 198, GM	Passenger	Bell 206L-1	Destroyed	Fatal (2)	In flight encounter with weather
1/28	Nome, AK	Passenger	DeHavilland DHC-3	Substantial	Serious	Loss of power(total) - mech failure/malfunction
1/28	Orlando, FL	Cargo	Cessna 210L	Destroyed	Fatal (1)	Loss of control - in flight
2/07	Munford, AL	Passenger	Piper PA-31-350	Destroyed	Fatal (4)	In flight collision with terrain
2/10	Valdez, AK	Passenger	MBB BO-105	Substantial	Minor	Loss of power(partial) - mech failure/malfunction
2/13	Aspen, CO	Passenger	Learjet 35A	Destroyed	Fatal (3)	Loss of control - in flight
2/16	Kodiak, AK	Passenger	Bell 206-B	Substantial	Minor	Loss of control - in flight
2/18	Thornton, TX	Cargo	Cessna 172N	Destroyed	Fatal (1)	Loss of control - in flight
3/01	Taps, NM	Cargo	Cessna T210M	Destroyed	Fatal (1)	In flight collision with terrain
3/03	Finger Lake, AK	Passenger	DeHavilland DHC-2	None	Serious	Loss of control - on ground
3/06	St. Louis, MO	Pax and Cargo	Cessna 401	Substantial	None	Gear collapsed
3/07	Palm Springs, CA	Cargo	Piper PA-32R-300	Destroyed	Fatal (1)	In flight collision with terrain
3/08	Shageluk, AK	Pax and Cargo	Cessna A185-F	Substantial	None	Airframe/component/system failure/malfunction
3/08	Honolulu, HI	Passenger	Bell 206B	Destroyed	None	Loss of power(total) - non-mechanical
3/16	Las Vegas, NV	Passenger	Cessna T207A	Substantial	None	Loss of power(total) - non-mechanical

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
3/21	Burbank, CA	Cargo	Beech 55	Destroyed	Serious	Loss of control - in flight
3/27	St. Marys, AK	Cargo	Cessna 207	Substantial	Minor	In flight encounter with weather
3/28	Kasigluk, AK	Cargo	Piper PA-32-300	Substantial	None	Loss of control - on ground
3/29	Homer, AK	Passenger	Cessna 206	Destroyed	Fatal (4)	In flight encounter with weather
3/30	Thompson Pass, AK	Passenger	Bell 47	Substantial	None	Hard landing
4/04	Merion, PA	Passenger	Piper PA-60-601	Destroyed	Fatal (7)	Midair collision
4/06	Avenal, CA	Passenger	Cessna 414A	Substantial	None	On ground collision with terrain
4/09	Oak Island, MN	Pax and Cargo	DeHavilland U-6A	Substantial	None	On ground collision with terrain
4/23	S. Marsh 275, GM	Pax and Cargo	Bell 206B	Destroyed	Fatal (2)	Airframe/component/system failure/malfunction
5/01	Oxford, CT	Passenger	Isreal 1124A	Substantial	None	Hard landing
5/05	Keanae, HI	Passenger	Hughes 369HS	Substantial	Minor	Loss of power
5/06	Ravensdale, WA	Cargo	Piper PA-34-200T	Destroyed	Fatal (1)	Airframe/component/system failure/malfunction
5/07	Houston, TX	Passenger	Bell 206B-3	Destroyed	Serious	Airframe/component/system failure/malfunction
5/10	Aguadilla, PR	Cargo	McD-Doug DC-3C	Destroyed	Fatal (2)	Loss of power(partial) - mech failure/malfunction
5/13	Grand Canyon, AZ	Passenger	Cessna 207A	Destroyed	Fatal (7)	Loss of power(total) - mech failure/malfunction
5/18	Englewood, CO	Cargo	Beech D18-S	Substantial	None	Loss of control - on ground
6/05	Eek, AK	Passenger	Cessna 207A	Substantial	None	Loss of power(total) - mech failure/malfunction
6/17	Ship Shoal 290K, GM	Passenger	Sikorsky S76A	Destroyed	Serious	In flight collision with object
6/25	Culebra, PR	Passenger	Piper PA-32-260	Substantial	Minor	Loss of power(total) - mech failure/malfunction

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
6/30	S. Tim 171D, GM	Passenger	Bell 206L-1	Substantial	None	Hard landing
7/01	Sheep Mountain, AK	Passenger	Bell 206BIII	Substantial	None	Loss of control - in flight
7/01	Columbus, OH	Cargo	Lear LR25B-XR	Substantial	None	Loss of control - on ground
7/02	Columbia, TN	Cargo	Learjet 23	Substantial	None	On ground collision with terrain
7/03	Waldron, WA	Passenger	Cessna 172N	Substantial	None	Loss of control - on ground
7/04	Colorado Spring, CO	Passenger	Bell 47G-3B-1	Substantial	None	Forced landing
7/16	Naknek, AK	Passenger	Piper PA-32-300	Substantial	None	Undershoot
7/18	Jago River, AK	Passenger	Cessna 185	Substantial	None	Loss of control - on ground
7/19	Albuquerque, NM	Cargo	Douglas DC-3C	Substantial	None	Airframe/component/system failure/malfunction
7/23	Salmon, ID	Passenger	Cessna 206	Destroyed	Fatal (5)	Loss of control - in flight
7/24	Kahului, HI	Passenger	Aerospatiale AS350B	Substantial	None	Loss of power(total) - non-mechanical
7/29	Hutchinson, KS	Cargo	Aero Commander 500B	Substantial	None	Main gear collapsed
7/31	Silica, KS	Cargo Cargo	Aero Commander 500B Aero Commander 500B	Destroyed Destroyed	Fatal (1) Fatal (1)	Midair collision
8/04	Atlantic Ocean, AO	Passenger	Aero Commander 500	Destroyed	Serious	Loss of power
8/08	Grand Canyon, AZ	Passenger	Cessna 402C	Substantial	None	On ground collision with object
8/10	Angoon, AK	Cargo	Cessna 185F	Destroyed	Serious	Loss of power(partial) - non-mechanical
8/14	Ugashik, AK	Passenger	DeHavilland DHC-2	Substantial	None	Loss of control - on ground
8/14	Gustavus, AK	Passenger	Piper PA-32	Destroyed	Fatal (6)	In flight encounter with weather
8/15	Bimini, OF	Cargo	Beech E18S	Substantial	None	Not reported
8/20	Martinsville, OH	Cargo	Beech E18S	Substantial	Minor	Loss of power

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
8/23	Fredonia, AZ	Passenger	Cessna R182	Substantial	None	Loss of power
8/24	White Mountain, AK	Cargo	Beech 18H	Substantial	None	Loss of control - on ground
8/25	Aspen Creek, AK	Pax and Cargo	Piper PA-18	Substantial	None	Loss of power
8/26	Garden Banks, GM	Passenger	Bell 412	Substantial	Fatal (1)	Airframe/component/system failure/malfunction
8/28	Walton, OR	Passenger	Aerospatiale 350-B1	Destroyed	Fatal (3)	In flight collision with terrain
8/30	Andros Island, OF	Passenger	Cessna 402	Substantial	None	Not reported
9/03	Dillingham, AK	Pax and Cargo	Cessna 208	Substantial	None	Loss of power(total) - mech failure/malfunction
9/19	Eagle, AK	Pax and Cargo	Piper PA-18-150	Substantial	None	On ground collision with object
9/23	Koliganek, AK	Pax and Cargo	Cessna A185F	Substantial	Serious	In flight encounter with weather
10/03	Bethel, AK	Passenger	Cessna 172M	Substantial	None	Loss of power(total) - mech failure/malfunction
10/05	Amber Bay, AK	Pax and Cargo	Cessna A185F	Substantial	None	Loss of control - on ground
10/14	Hilo, HI	Passenger	Aerospatiale AS-350D	Substantial	None	Loss of power(total) - non-mechanical
10/17	Dog Salmon Riv, AK	Cargo	Cessna A185E	Substantial	None	Altitude deviation,uncontrolled
11/08	Syracuse, NY	Pax and Cargo	Beech C99	Minor	Serious	Propeller/rotor contact
11/09	Hilo, HI	Passenger	Bell 206B	Substantial	Serious	Loss of control - in flight
11/10	Hilo, HI	Passenger	Beech D18S	Substantial	None	Loss of power(total) - mech failure/malfunction
11/14	St. Petersburg, FL	Passenger	Beech 35	None	Fatal (1)	Miscellaneous/other
11/16	Destin, FL	Cargo	Cessna 208B	Substantial	Fatal (1)	In flight collision with terrain
11/16	Boise, ID	Cargo	Cessna C-402B	Destroyed	Fatal (2)	Loss of power(total) - mech failure/malfunction

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
11/20	Davis, CA	Pax and Cargo	Bell 206BIII	Destroyed	Fatal (3)	In flight encounter with weather
11/22	South St. Paul, MN	Cargo	Cessna 310R	Substantial	None	Airframe/component/system failure/malfunction
11/27	Bridgeport, CA	Passenger	Aerospatiale SA-316B	Destroyed	Fatal (4)	Airframe/component/system failure/malfunction
11/29	Denver, CO	Cargo	Piper PA-31-350	Substantial	None	Gear not extended
11/29	Zephyrhills, FL	Cargo	Cessna 210M	Substantial	None	Loss of power(total) - non-mechanical
12/03	Iowa, IA	Pax and Cargo	Swearingen SA-226T	Substantial	None	In flight collision with terrain
12/04	West Chicago, IL	Cargo	Beech G-18S	Destroyed	None	Loss of control - in flight
12/18	Albuquerque, NM	Cargo	Cessna 210M	Destroyed	Fatal (1)	In flight collision with terrain
12/23	Carlsbad, CA	Cargo	LEARJET 25B	Substantial	None	Overrun
12/25	Tatitlek, AK	Passenger	Piper PA-31	Substantial	Minor	Loss of control - on ground

Table 41 - PERSONS BY ROLE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Role of Person	Degree of Injury: Fatal	Serious	Minor	None	Total
Pilot	26	7	8	47	88
Copilot	3	3	0	6	12
Other crew	2	0	0	2	4
Passenger	35	14	26	138	213
Total aboard	66	24	34	193	317
Other aircraft*	2	0	0	0	2
Other ground	2	2	5	0	9
Grand total	70	26	39	193	328
Percent	21.3	7.9	11.9	58.8	

* 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 42 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Aircraft damage	Degree of injury: None	Minor	Ser	Fatal	Aircraft: No.	Percent
None	0	0	1	1	2	2.3
Minor	0	0	1	1	2	2.3
Substantial	40	8	3	2	53	60.2
Destroyed	2	0	5	24	31	35.2
Aircraft						
Number -	42	8	10	28	88	
Percent -	47.7	9.1	11.4	31.8		

Table 43 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED14 CFR 135 OPERATIONS
1991

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Altitude deviation,uncontrolled	1	0	0	0	0	0	1	0	1	1.1
Airframe/component/system failure/malfunction	3	0	1	4	0	0	4	4	8	9.1
Forced landing	1	0	0	0	0	0	1	0	1	1.1
Gear collapsed	1	0	0	0	0	0	1	0	1	1.1
Main gear collapsed	1	0	0	0	0	0	1	0	1	1.1
Gear not extended	1	0	0	0	0	0	1	0	1	1.1
Hard landing	3	0	0	0	0	0	3	0	3	3.4
In flight collision with object	0	0	1	0	0	0	0	1	1	1.1
In flight collision with terrain	1	0	0	6	0	0	2	5	7	8.0
In flight encounter with weather	0	1	1	4	0	0	2	4	6	6.8
Loss of control - in flight	2	1	2	5	0	0	3	7	10	11.4
Loss of control - on ground	8	1	1	0	1	0	9	0	10	11.4
Midair collision	0	0	0	3	0	0	0	3	3	3.4
On ground collision with object	2	0	0	0	0	0	2	0	2	2.3
On ground collision with terrain	3	0	0	0	0	0	3	0	3	3.4
Overrun	1	0	0	0	0	0	1	0	1	1.1
Loss of power	2	2	1	0	0	0	4	1	5	5.7
Loss of power(total) - mech failure/malfunction	4	1	1	2	0	0	6	2	8	9.1
Loss of power(partial) - mech failure/malfunction	0	2	0	1	0	0	2	1	3	3.4
Loss of power(total) - non-mechanical	5	0	0	1	0	0	4	2	6	6.8
Loss of power(partial) - non-mechanical	0	0	1	0	0	0	0	1	1	1.1
Propeller/rotor contact	0	0	1	0	0	1	0	0	1	1.1
Undershoot	1	0	0	0	0	0	1	0	1	1.1
Miscellaneous/other	0	0	0	2	1	1	0	0	2	2.3
Not reported	2	0	0	0	0	0	2	0	2	2.3
Aircraft										
Number -	42	8	10	28	2	2	53	31	88	
Percent -	47.7	9.1	11.4	31.8	2.3	2.3	60.2	35.2		

Table 44 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Type of first occurrence	Phase of operation										Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Manvr	Nrept	No.	Percent
Altitude deviation, uncontrolled	0	0	0	0	0	0	1	0	0	0	1	1.1
Airframe/component/system failure/malfunction	0	0	2	0	3	1	1	1	0	0	8	9.1
Forced landing	0	0	1	0	0	0	0	0	0	0	1	1.1
Gear collapsed	0	0	0	0	0	0	0	1	0	0	1	1.1
Main gear collapsed	0	0	1	0	0	0	0	0	0	0	1	1.1
Gear not extended	0	0	0	0	0	0	1	0	0	0	1	1.1
Hard landing	0	0	0	0	0	0	0	3	0	0	3	3.4
In flight collision w/object	0	0	0	0	0	0	0	1	0	0	1	1.1
In flight collision w/terrain	0	0	1	0	3	0	1	1	1	0	7	8.0
In flight encounter w/weather	0	0	1	0	3	0	1	0	1	0	6	6.8
Loss of control - in flight	0	0	2	0	2	0	2	1	3	0	10	11.4
Loss of control - on ground	0	0	2	0	0	0	0	8	0	0	10	11.4
Midair collision	0	0	0	0	0	0	0	0	3	0	3	3.4
On ground collision w/object	0	0	2	0	0	0	0	0	0	0	2	2.3
On ground collision w/terrain	0	1	0	0	0	0	0	2	0	0	3	3.4
Overrun	0	0	0	0	0	0	0	1	0	0	1	1.1
Loss of power	0	0	2	0	3	0	0	0	0	0	5	5.7
Loss of power(total) - mech failure/malfunction	0	0	2	0	4	1	0	0	1	0	8	9.1
Loss of power(partial) - mech failure/malfunction	0	0	1	1	0	0	0	0	1	0	3	3.4
Loss of power(total) - non-mechanical	0	0	0	0	3	0	2	0	1	0	6	6.8
Loss of power(partial) - non-mechanical	0	0	0	0	0	0	1	0	0	0	1	1.1
Propeller/rotor contact	1	0	0	0	0	0	0	0	0	0	1	1.1
Undershoot	0	0	0	0	0	0	0	1	0	0	1	1.1
Miscellaneous/other	2	0	0	0	0	0	0	0	0	0	2	2.3
Not reported	0	0	0	0	0	0	0	0	0	2	2	2.3
Aircraft												
Number -	3	1	17	1	21	2	10	20	11	3	88	
Percent -	3.4	1.1	19.3	1.1	23.9	2.3	11.4	22.7	12.5	3.4		