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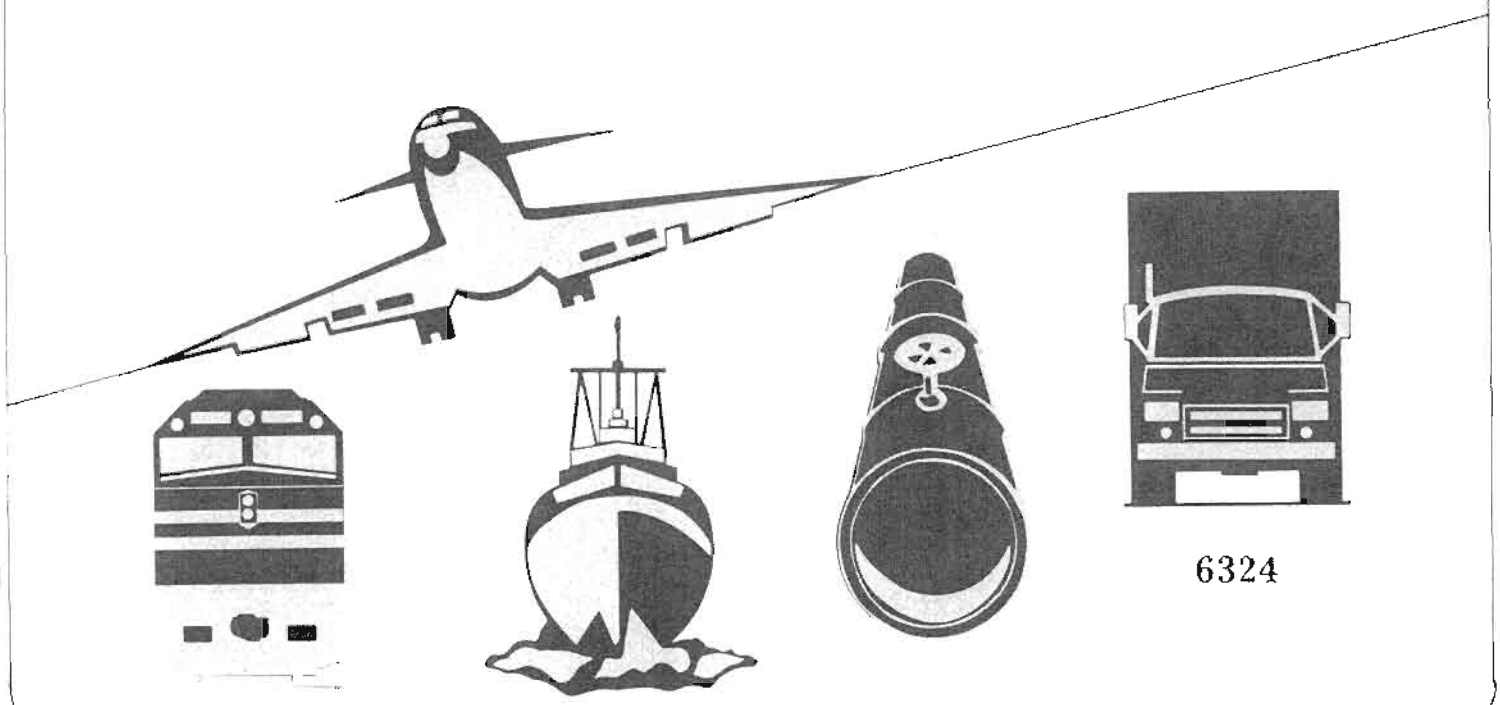
NATIONAL TRANSPORTATION SAFETY BOARD

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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INTRODUCTION

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

Aircraft damage	Degree of injury				Aircraft	
	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

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	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		Aircraft	
	VMC	IMC	No.	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				Aircraft	
	None	Minor	Serious	Fatal	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				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	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		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	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

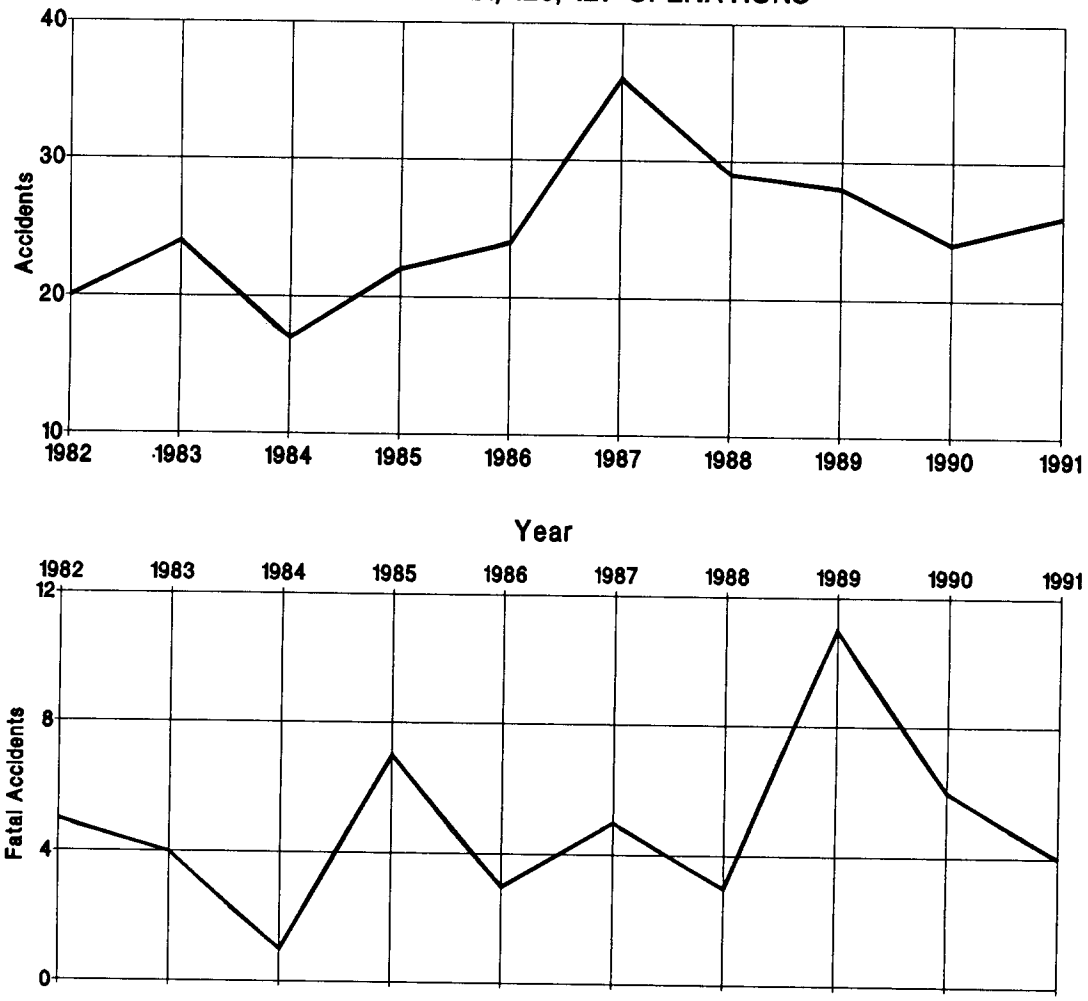

Figure 2 - NUMBER OF FATALITIES
ALL 14 CFR 121, 125, 127 OPERATIONS

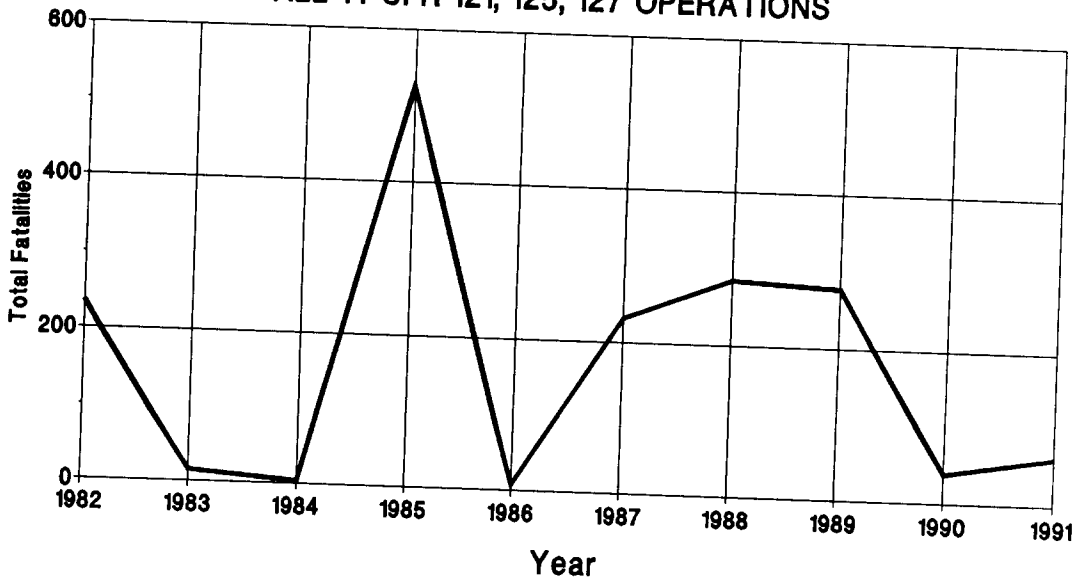

Figure 3 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL 14 CFR 121, 125, 127 OPERATIONS

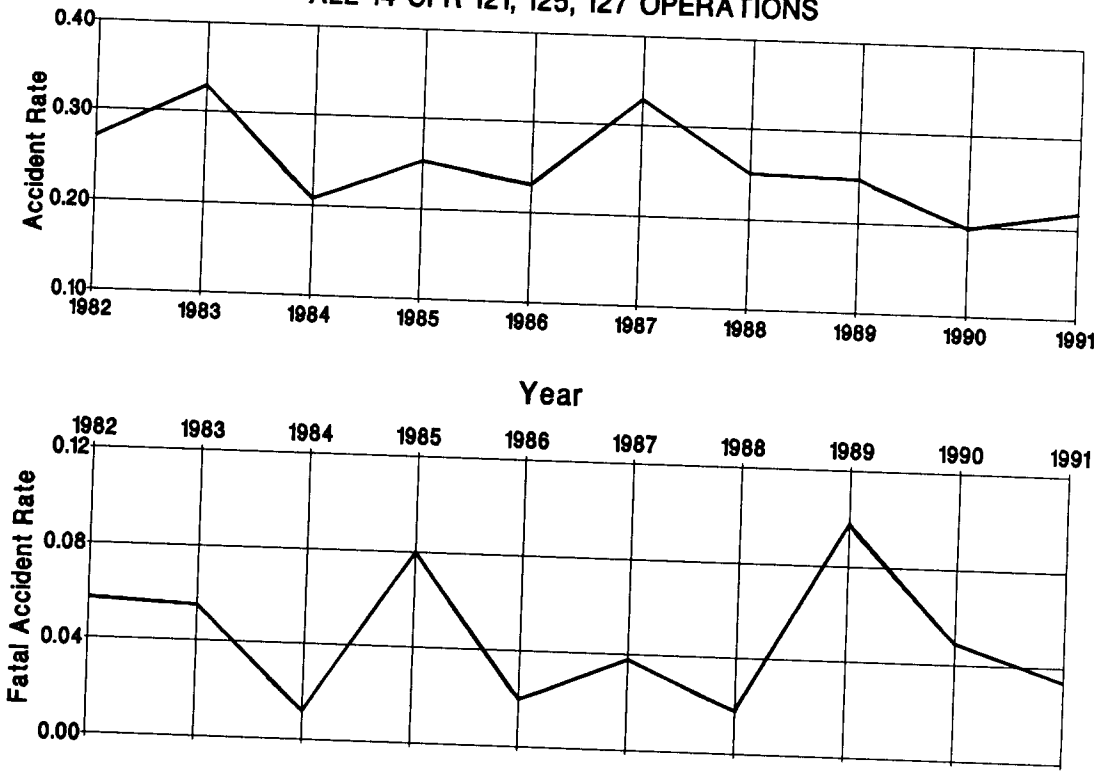

Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 121 125 127 OPERATIONS
1982 - 1991

Year	Accidents	Fatal Accidents	Fatalities		Accident Rate per 100,000* Aircraft Hours Flown		
			Total	Aboard Aircraft In This Category	Hours Flown	Total	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

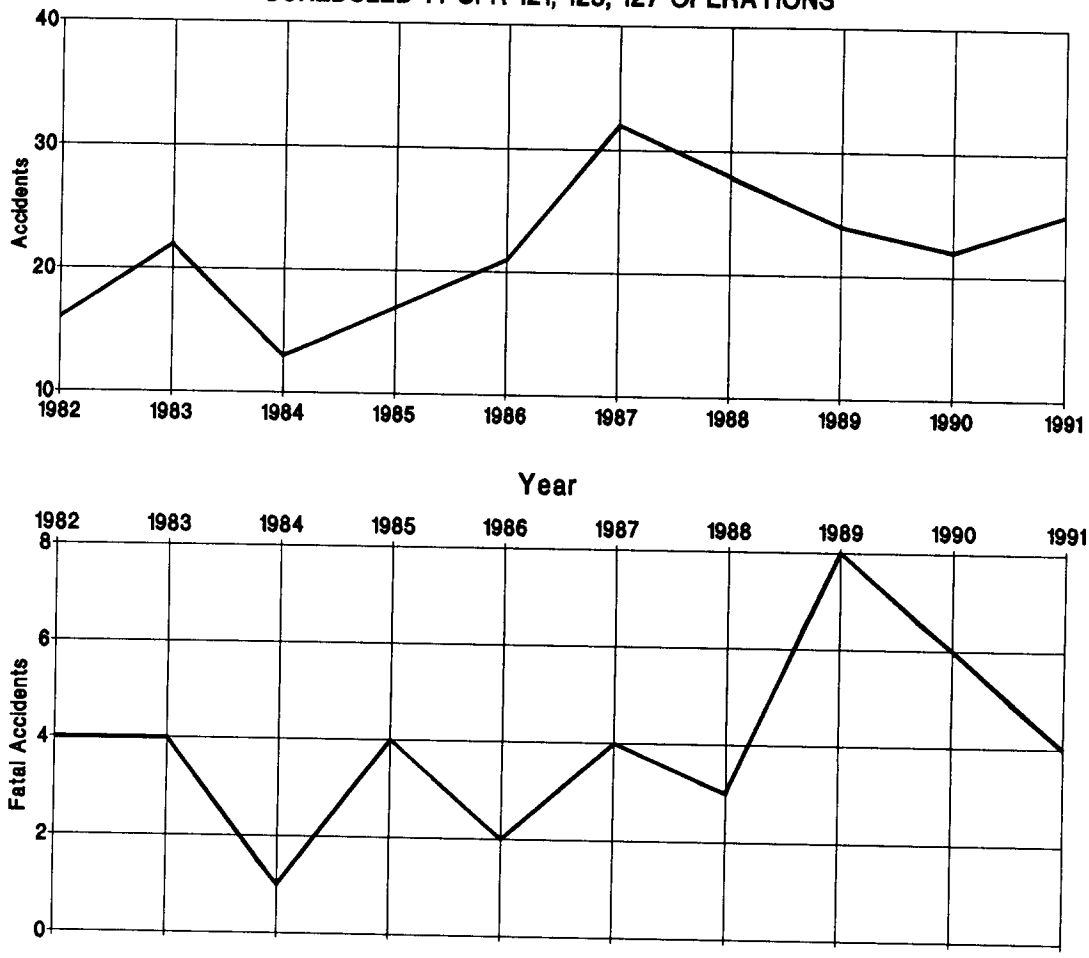

Figure 5 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

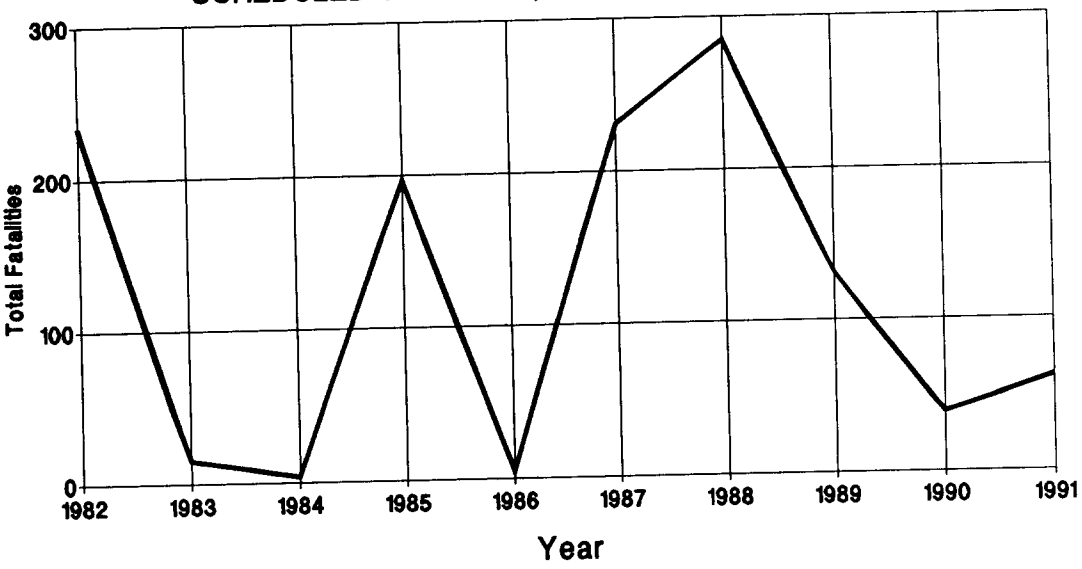

Figure 6 - ACCIDENTS PER 100,000 HOURS FLOWN
SCHEDULED CFR 121, 125, 127 OPERATIONS

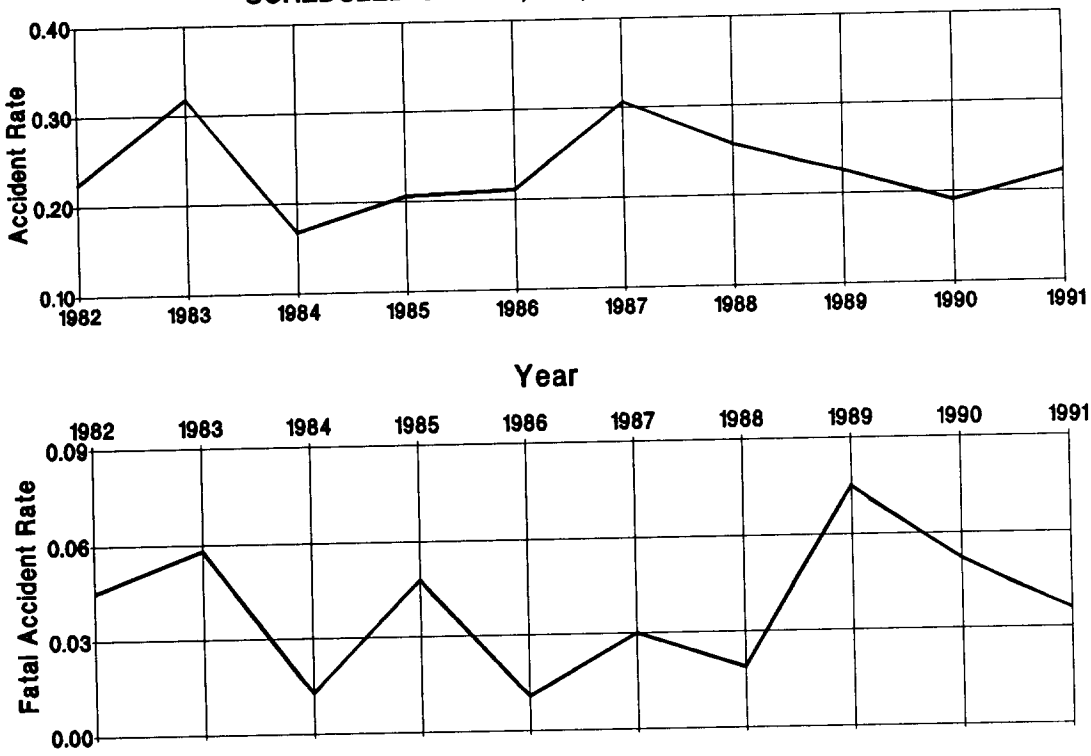

Table 16 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCHEDULED 14 CFR 121 125 127 OPERATIONS
1982 - 1991

Year	Accidents	Fatal Accidents	Fatalities		Accident Rate per 100,000* Aircraft Hours Flown		
			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

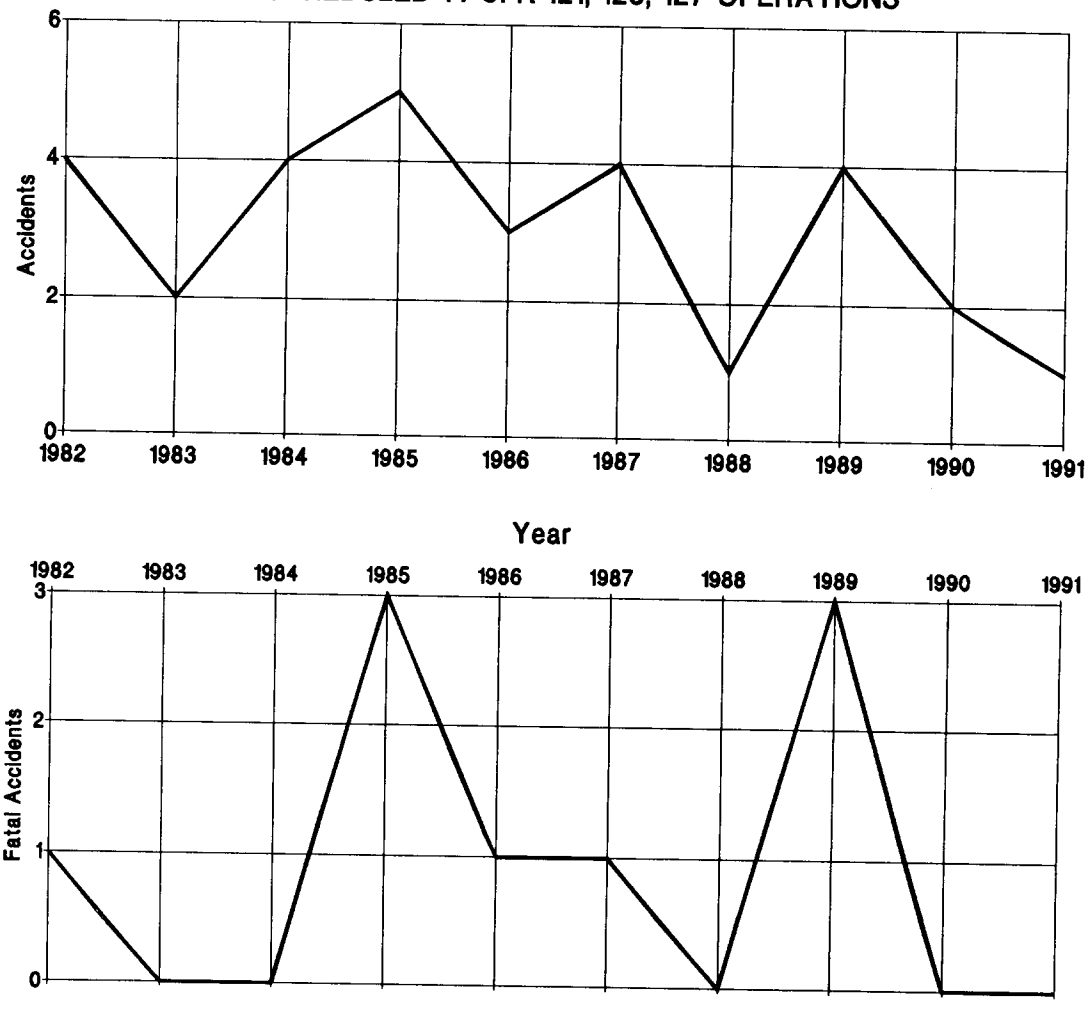

Figure 8 - NUMBER OF FATALITIES
NONSCHEDULED 121, 125, 127 OPERATIONS

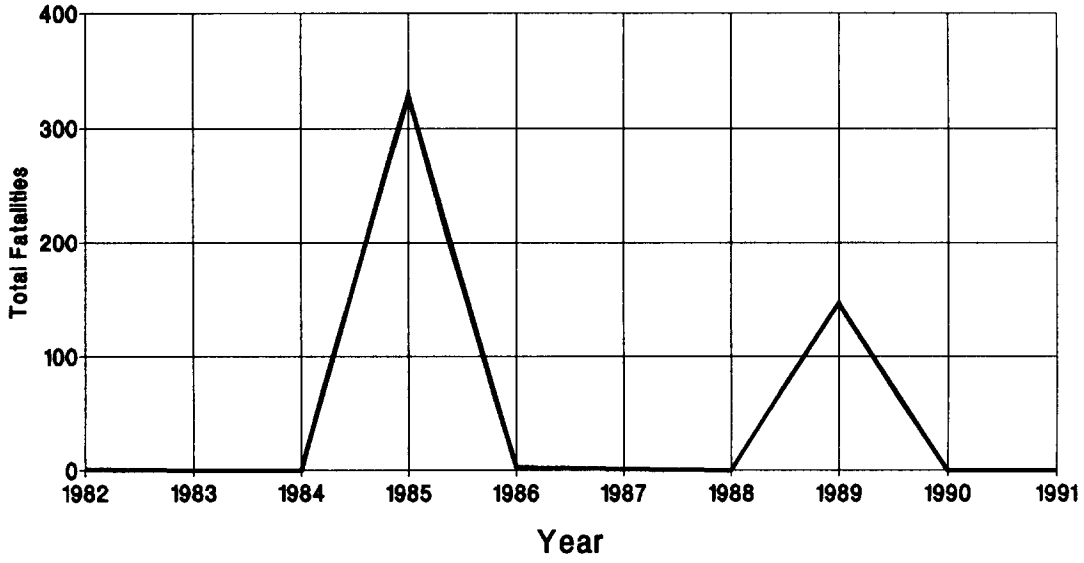

Figure 9 - ACCIDENTS PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 121, 125, 127

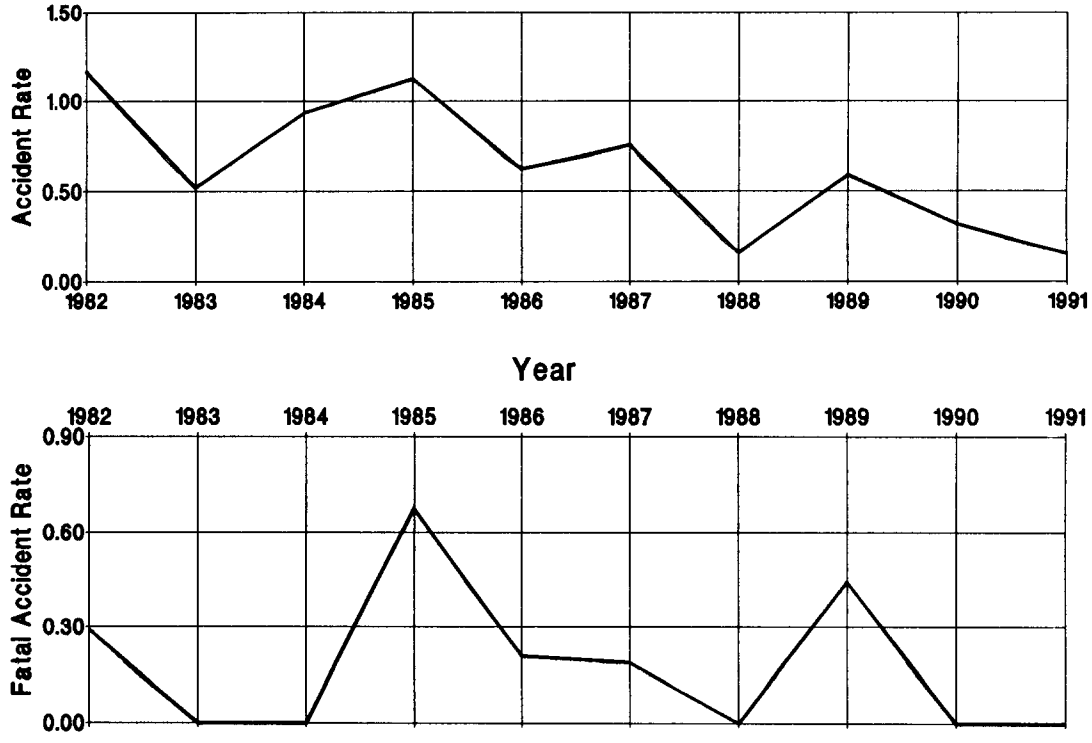

Table 17 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1991 AND 1986 - 1990

Type of Occurrence	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
	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 17 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1991 AND 1986 - 1990

Type of Occurrence	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
	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				Aircraft	
	None	Minor	Ser	Fatal	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				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	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			Aircraft	
	VMC	IMC	Not reptd	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				Aircraft	
	None	Minor	Serious	Fatal	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			Aircraft	
	VFR	IFR	Other	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		Accident Rate per 100,000* Aircraft Hours Flown		
			Total	Aboard Aircraft In This Category	Hours Flown	Total	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

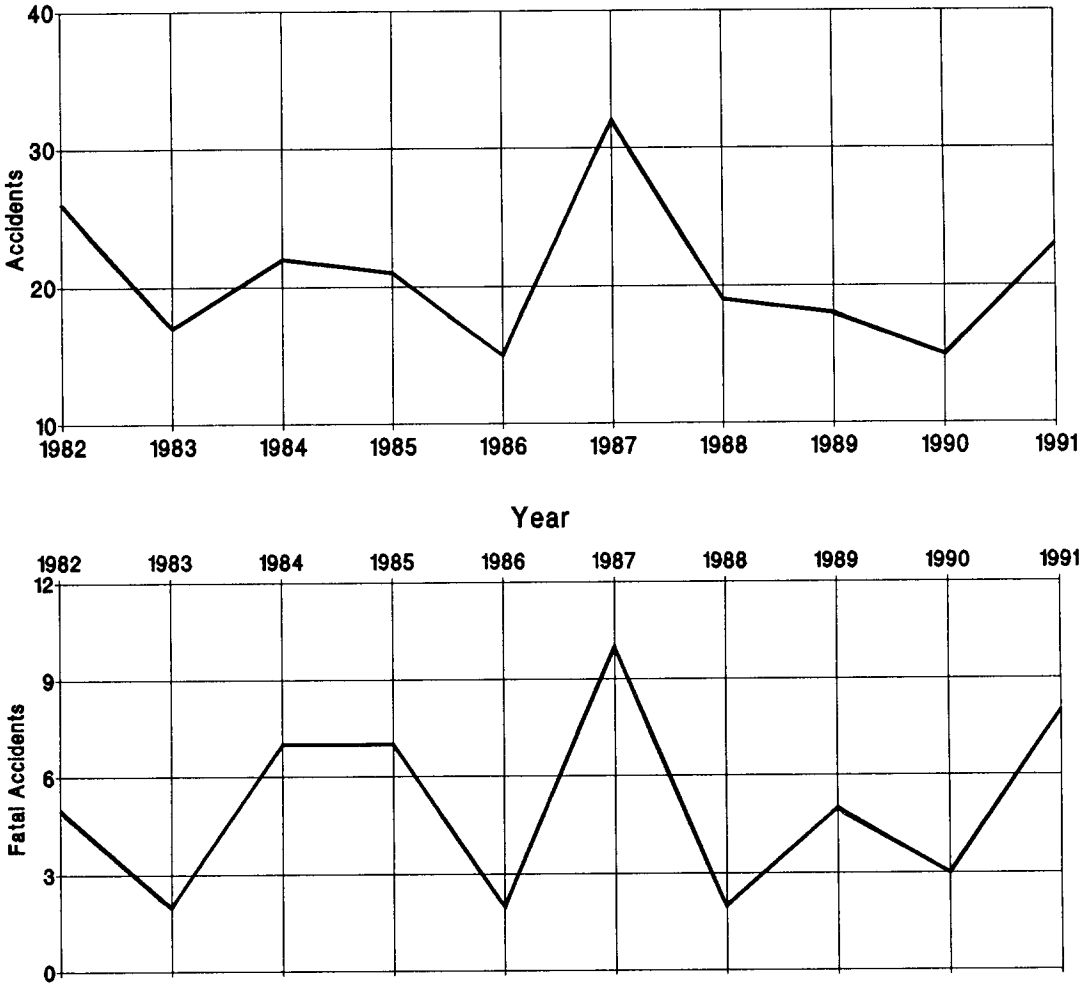


Figure 11 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 135 OPERATIONS

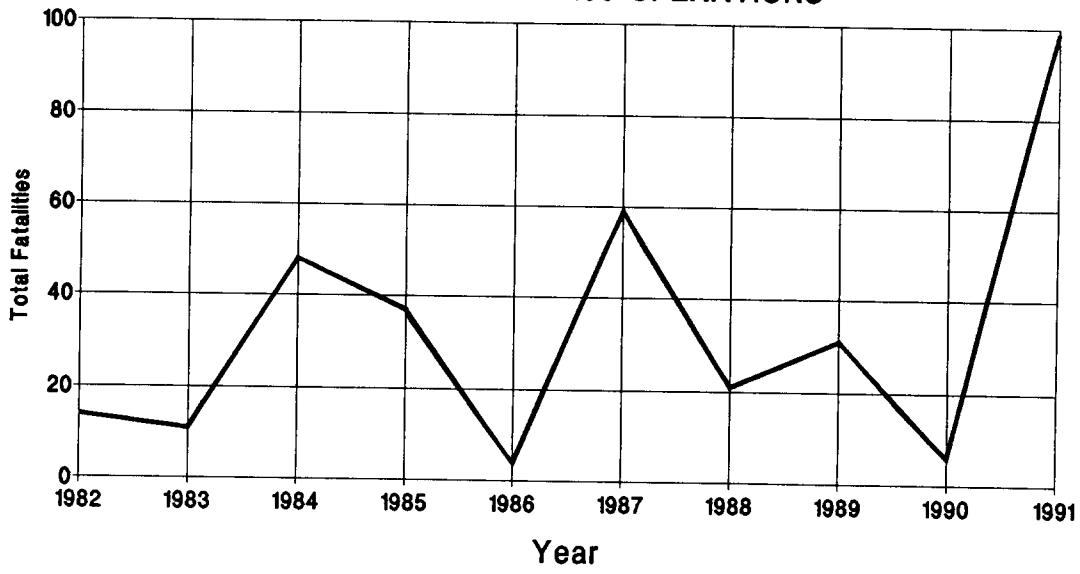
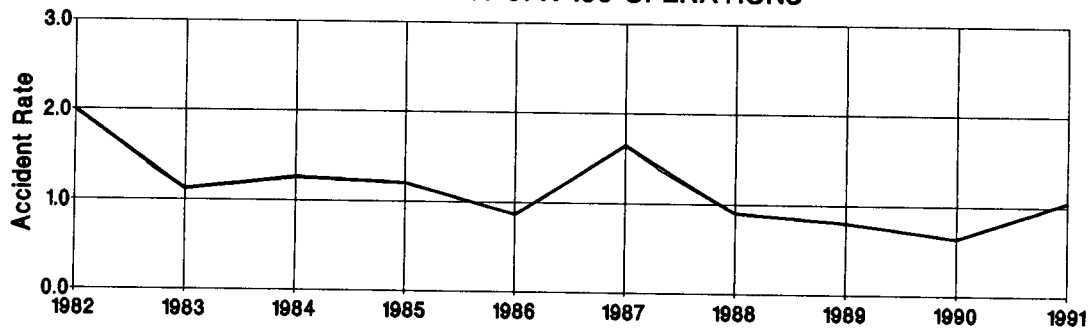


Figure 12 - ACCIDENT RATE PER 100,000 HOURS FLOWN
SCHEDULED 14 CFR 135 OPERATIONS



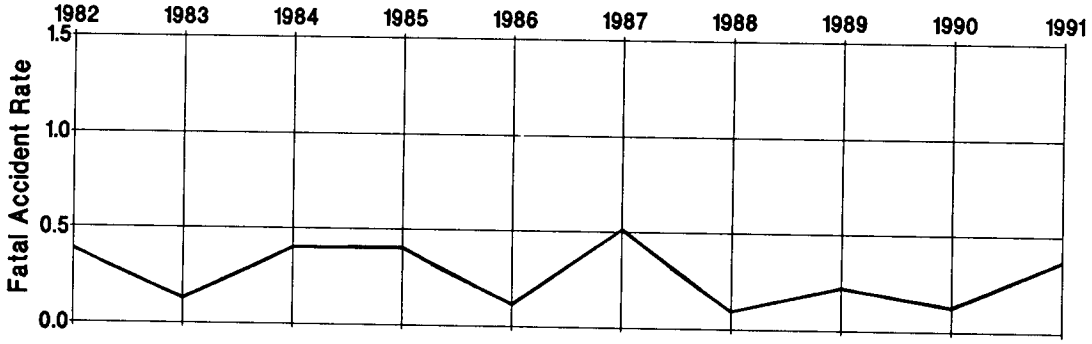


Table 35 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1991 AND 1986 - 1990

Type of Occurrence	All Accidents				Fatal Accidents			
	1991		1986 - 1990		1991		1986 - 1990	
	No.	Percent	Mean	Percent	No.	Percent	Mean	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
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				Aircraft	
	None	Minor	Ser	Fatal	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		

Table 45 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 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 - engine(s) operating	0	0	0	1	1	0	0	0	1	1.1
Standing - engine(s) operating	0	0	1	0	0	1	0	0	1	1.1
Standing - engine(s) not	0	0	0	1	0	1	0	0	1	1.1
Taxi - from landing	1	0	0	0	0	0	1	0	1	1.1
Takeoff	1	0	0	0	0	0	1	0	1	1.1
Takeoff - ground run	6	0	0	0	0	0	6	0	6	6.8
Takeoff - initial climb	3	1	3	3	0	0	5	5	10	11.4
Climb - to cruise	0	1	0	0	0	0	1	0	1	1.1
Cruise	2	1	0	6	0	0	3	6	9	10.2
Cruise - normal	5	0	2	5	0	0	4	8	12	13.0
Descent - normal	0	1	0	1	0	0	1	1	2	2.3
Approach	2	0	1	3	0	0	3	3	6	6.8
Approach - VFR pattern - final approach	1	0	0	1	0	0	1	1	2	2.3
Approach - FAF/outer marker to threshold (IFR)	0	0	0	1	0	0	1	0	1	1.1
Approach - circling(IFR)	0	0	0	1	0	0	0	1	1	1.1
Landing - flare/touchdown	7	0	0	0	0	0	7	0	7	8.0
Landing - roll	10	1	1	0	1	0	11	0	12	13.6
Landing - aborted	0	0	1	0	0	0	0	1	1	1.1
Maneuvering	1	2	0	4	0	0	3	4	7	8.0
Maneuvering - turn to reverse direction	0	1	1	1	0	0	2	1	3	3.4
Hover	1	0	0	0	0	0	1	0	1	1.1
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 46 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Dawn	1	0	0	1	1.1
Daylight	54	12	0	66	75.0
Night (dark)	9	5	1	15	17.0
Night (bright)	2	1	0	3	3.4
Dusk	1	0	0	1	1.1
Not Reported	2	0	0	2	2.3
Aircraft					
Number -	69	18	1	88	
Percent -	78.4	20.5	1.1		

Table 47 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Domestic Passenger	19	5	5	14	43	48.9
Domestic Cargo	14	3	2	12	31	35.2
Domestic Pass/Cargo	8	0	2	2	12	13.6
International Passenger	1	0	1	0	2	2.3
Aircraft						
Number -	42	8	10	28	88	
Percent -	47.3	9.1	11.4	31.8		

Table 48 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Accident location	Flight plan					Aircraft	
	None	VFR	IFR	VFR/ IFR	Cmpny VFR	No.	Percent
Off airport/airstrip	12	11	11	0	28	62	70.5
On airport	1	2	14	1	2	20	22.7
On airstrip	0	1	1	0	2	4	4.5
Other	1	1	0	0	0	2	2.3
Aircraft							
Number -	14	15	26	1	32	88	
Percent -	15.9	17.0	29.5	1.1	36.4		

Table 49 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	40	6	9	15	2	2	49	17	70	79.5
On ground	0	2	1	11	0	0	2	12	14	15.9
Other	2	0	0	2	0	0	2	2	4	4.5
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 50 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

Type of aircraft	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
All Fixed Wing *	35	5	7	21	2	2	42	22	68	77.3
Fixed Wing Single Recip. Eng.	15	3	4	10	1	1	20	10	32	36.4
Fixed Wing Multiple Recip. Eng.	14	2	2	9	1	0	15	11	27	30.7
Fixed Wing Turboprop	2	0	1	1	0	1	3	0	4	4.5
Fixed Wing Turbojet	4	0	0	1	0	0	4	1	5	5.7
All Rotorcraft *	7	3	3	7	0	0	11	9	20	22.7
Rotorcraft, Recip. Engine	2	0	0	0	0	0	2	0	2	2.3
Rotorcraft, Turbine Engine	5	3	3	7	0	0	9	9	18	20.5
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		

* Not included in column totals

Table 51 - BROAD CAUSE/FACTOR ASSIGNMENTS*
NONSCHEDULED 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 #	6	30	2	10	8	36
Propulsion System and Controls	4	17	1	4	5	20
Flight Control System	1	1	0	1	1	2
Landing Gear	0	6	0	0	0	6
Systems/Equipment/ Instruments	2	5	1	5	3	9
Environment #	3	7	9	39	12	44
Weather	2	5	6	16	8	20
Light Conditions	0	0	2	4	2	4
Object(trees,wires,etc.)	0	0	0	1	0	1
Airport/Airways Facilities, Aids	0	1	0	1	0	2
Terrain/Runway Condition	1	1	5	23	6	24
Personnel #	21	62	10	25	22	65
Pilot	20	58	8	20	20	59
Others (Not Aboard)	5	8	4	8	6	12
Number of Aircraft					28	88
NTSB Determined Probable Cause					28	86

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* Multiple causes and factors may be assigned in an accident

\# This category is composed of 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 52 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCHEDULED 14 CFR 135 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	132	31	72	72	3,008,000	4.388	1.031
1983	141	27	62	57	2,378,000	5.929	1.135
1984	146	23	52	52	2,843,000	5.135	0.809
1985	154	35	76	75	2,570,000	5.992	1.362
1986	117	31	65	61	2,690,000	4.349	1.152
1987	97	30	65	63	2,657,000	3.651	1.129
1988	101	28	59	55	2,632,000	3.837	1.064
1989	111	25	83	81	3,020,000	3.675	0.828
1990	106	28	50	48	2,249,000	4.713	1.245
1991	87	27	70	66	2,241,000	3.882	1.205

Figure 13 - ACCIDENTS AND FATAL ACCIDENTS NONSCHEDULED 14 CFR 135 OPERATIONS

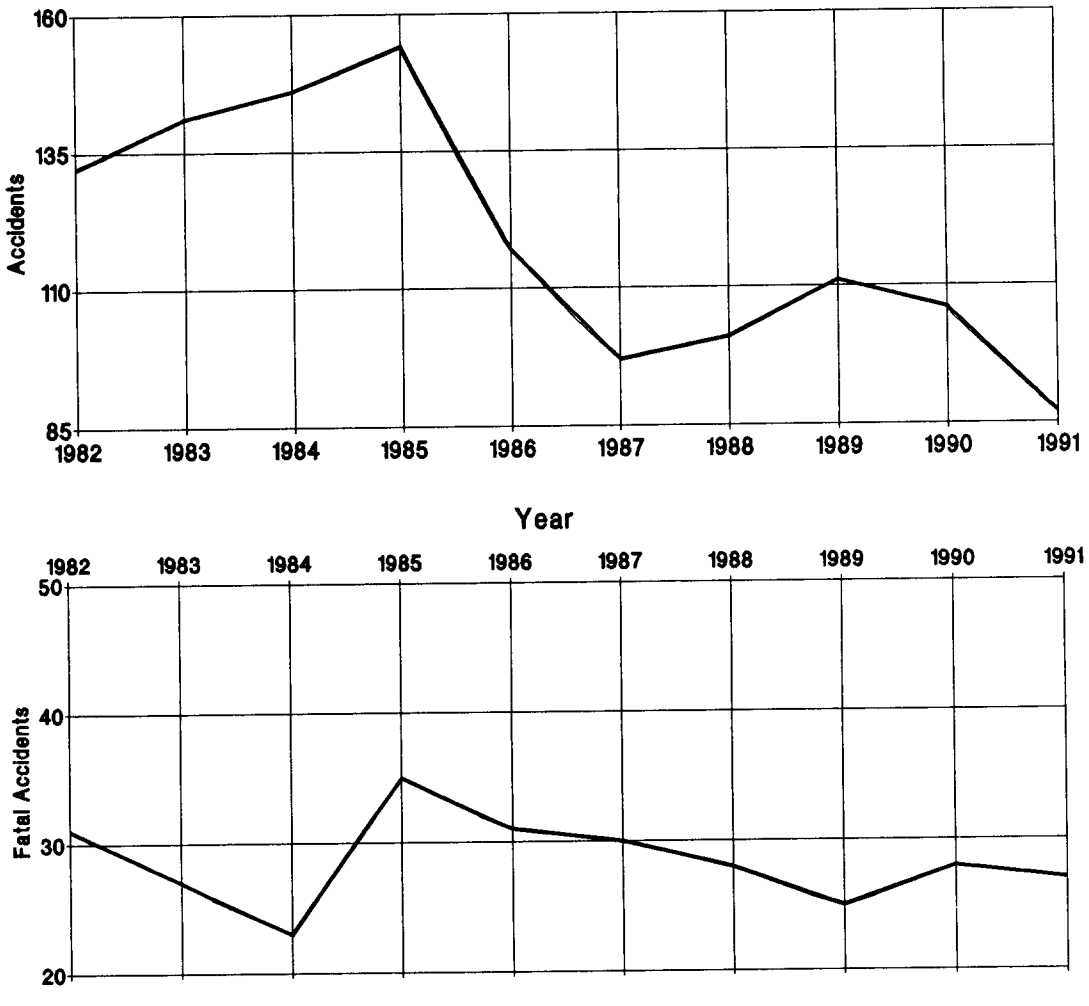


Figure 14 - NUMBER OF FATALITIES
NONSCHEDULED 14 CFR 135 OPERATIONS

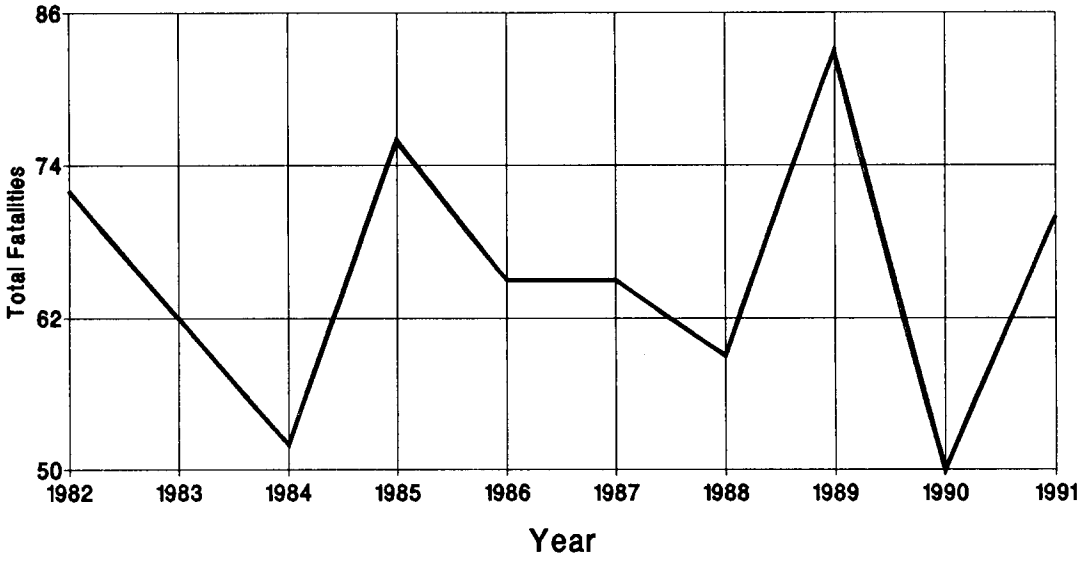
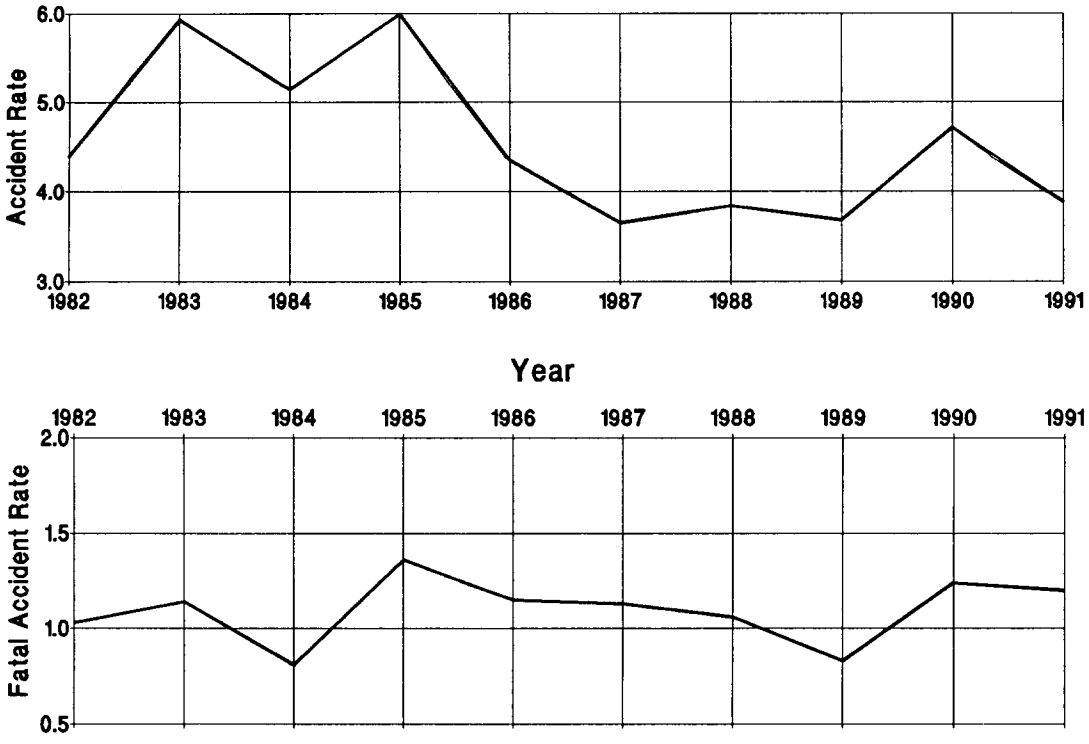


Figure 15 - ACCIDENT RATE PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 135 OPERATIONS



BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ CARL W. VOGT
Chairman

/s/ JOHN K. LAUBER
Member

/s/ JOHN HAMMERSCHMIDT
Member

/s/ JIM HALL
Member

APPENDIX A
MIDAIR COLLISION ACCIDENTS
U.S. AIR CARRIER OPERATIONS
1982 - 1991

Year	Accidents		Total Fatalities	Number of Accidents by Segements of Aviation Involved		
	Total	Fatal		S135 and GA	N135 and N135	N135 and GA
1982	3	1	3	1	1	1
1983	1	1	4	0	0	1
1984	1	1	17	1	0	0
1985	2	1	1	0	2	0
1986	0	0	0	0	0	0
1987	5	2	12	3	0	2
1988	2	1	4	0	0	2
1989	1	1	2	0	0	1
1990	3	2	5	1	1	1
1991	2	2	9	0	1	1
	20	12	57	6	5	9

NOTE: S135 = Scheduled 14 CFR 135 Operation
N135 = Nonscheduled 14 CFR 135 Operation
GA = General Aviation

APPENDIX B -- EXPLANATORY NOTES

AIRCRAFT ACCIDENT: The accidents included herein 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 definition of substantial damage is:

(1) Substantial damage means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and 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 or 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."

AIRCRAFT-MILES: The distance flown by aircraft in terms of great circle airport-to-airport distances measured in statute miles.

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 there are two or more causes of 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.

NONSCHEDULED SERVICE: Revenue flights that are not operated in regular scheduled service, such as charter flights, and all nonrevenue flights incident to such flights.

PASSENGER-MILES: One passenger transported 1 mile. Passenger miles are computed by the summation of the products of the aircraft-miles flown on each inter-airport flight multiplied by the number of passengers carried on the flight.

PERSONNEL (NON-PILOT): As defined for the Broad Cause/Factor tables may include any of the following personnel:

Rules, Regulations, Standards Personnel
Maintenance, Servicing, Inspection Personnel
Weather Service Personnel
Airport Management
Production-Design Personnel
Ground Signalman
Passenger
Driver of Vehicle
Flight Engineer
Radio Operator
Other Flight Personnel
Flight Instructor on Ground
Operational Supervisor Personnel
Air Traffic Control Personnel
Airways Facilities Personnel
Pilot of Another Aircraft
Ground Crewman
Spectator
Third Pilot
Navigator
Flight Attendant
Dispatching Personnel

PHASE OF OPERATION: The phase of flight in which the first occurrence happened.

REVENUE PASSENGER: A person receiving air transportation from an air carrier for which remuneration is received by the air carrier. Air carrier employees and others receiving air transportation for which a token service charge is levied are considered nonrevenue passengers.

REVENUE PLANE-MILES: The total plane-miles flown in revenue service.

ROTORCRAFT (BROAD CAUSE/FACTOR): When any part, assembly, or system which is unique to rotorcraft is cited as a cause or factor, then "Rotorcraft" is considered a broad cause or factor in that accident.

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.

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 #1 LOSS OF POWER (PARTIAL) - MECHANICAL FAILURE/MALFUNCTION
Phase of Operation TAKEOFF - GROUND RUN

Finding(s)
1. COMPRESSOR ASSEMBLY - FATIGUE
2. COMPRESSOR ASSEMBLY - FAILURE, TOTAL
3. MATERIAL DEFECT (INADEQUATE QUALITY CONTROL) - MANUFACTURER

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 determined from officially recognized sources. Weather conditions encountered in flight are not necessarily representative of the flight plan classifications VFR/IFR as carried under Type of Weather Conditions.

REVENUE PASSENGER: A person receiving air transportation from an air carrier for which remuneration is received by the air carrier. Air carrier employees and others receiving air transportation for which a token service charge is levied are considered nonrevenue passengers.

REVENUE PLANE-MILES: The total plane-miles flown in revenue service.

ROTORCRAFT (BROAD CAUSE/FACTOR): When any part, assembly, or system which is unique to rotorcraft is cited as a cause or factor, then "Rotorcraft" is considered a broad cause or factor in that accident.

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.

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Phase of Operation TAKEOFF - GROUND RUN

Finding(s)
1. COMPRESSOR ASSEMBLY - FATIGUE
2. COMPRESSOR ASSEMBLY - FAILURE, TOTAL
3. MATERIAL DEFECT (INADEQUATE QUALITY CONTROL) - MANUFACTURER

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APPENDIX C

DETAILED CAUSE/FACTOR ASSIGNMENTS
14 CFR 121 125 127 OPERATIONS

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1991

	Cause or Factor	Cause
AIRCRAFT		
1 engine	1	1
Compressor assembly,rotor disc	1	1
Electrical system,fuse	1	1
Engine assembly,bearing	1	1
Flight control,flap	1	0
Hydraulic system,line	1	1
Landing gear,nose gear strut	1	1
Misc eqpt/furnishings,buffet	1	1
Misc eqpt/furnishings,storage bins/racks	1	1
Wing	1	1
ENVIRONMENT		
Bird(s)	1	1
Dark night	1	0
Snow	1	0
Thunderstorm	1	1
Turbulence	1	0
Turbulence in clouds	2	1
Turbulence(thunderstorms)	2	0
Turbulence,clear air	1	1
FLIGHT CREW		
Aircraft preflight	1	1
Aircraft weight and balance	1	1
Airspeed(Vr)	1	1
Clearance	3	3
Excessive workload (task overload)	2	0
Flare	1	1
Ice/frost removal from aircraft	1	1
Identification of aircraft visually	2	2
In-flight planning/decision	1	1
Monitoring	1	0
Procedures/directives	1	1
Supervision	2	1
Throttle/power control	1	1
Trim setting	1	0
Unsafe/hazardous condition	1	0
Unsafe/hazardous condition warning	1	1
OTHER PERSON		
ATC clearance	1	1
Acft/equip, inadequate aircraft component	1	1
Acft/equip, inadequate aircraft manuals	1	1
Acft/equip, inadequate standard/requirement	1	0
Diverted attention	1	1
Inadequate substantiation process	1	0
Inadequate surveillance of operation	1	0
Inadequate training	1	1
Inattentive	1	1
Information	2	2
Insufficient standards/requirements	1	1
Maintenance,overhaul	1	1
Maintenance,recordkeeping	1	0
Procedures/directives	3	1
Supervision	1	1
Visual lookout	3	3

APPENDIX D

DETAILED CAUSE/FACTOR ASSIGNMENTS
SCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
SCHEDULED 14 CFR 135 OPERATIONS
1991

	Cause or Factor	Cause
AIRCRAFT		
Landing gear,main gear	1	0
Landing gear,normal retraction/extension assembly	1	1
Turboshaft engine,free (power) turbine	1	1
Turboshaft engine,gas generator turbine	1	1
FACILITY		
Airport facilities,runway safety area	1	0
Airport facilities,runway/landing area condition	2	0
ENVIRONMENT		
Clouds	1	0
Dark night	1	0
Downdraft	1	0
Dusk	1	0
Fog	1	0
Gusts	1	0
Hail	1	0
High wind	1	0
Icing conditions	1	0
Low ceiling	3	0
Mountain wave	1	0
Obscuration	1	0
Rain	1	0
Snow	2	0
Sunglare	1	0
Terrain condition	6	0
Turbulence in clouds	1	0
Vehicle	1	1
Whiteout	1	1
FLIGHT CREW		
Aircraft control	2	2
Airspeed	1	0
Altitude	1	1
Anxiety/apprenhension	1	0
Clearance	1	1
Compensation for wind conditions	1	1
Design stress limits of aircraft	1	1
Directional control	1	1
Diverted attention	2	1
Flare	1	1
Go-around	1	0
IFR procedure	1	1
In-flight planning/decision	1	1
Monitoring	1	1
Planning-decision	1	1
Proper touchdown point	1	0
Self-induced pressure	1	0
Visual lookout	3	3
OTHER PERSON		
Airport snow removal	1	0
Lack of total experience in type operation	1	0
Maintenance,adjustment	1	1
Other airport/runway maintenance	1	0
Procedure inadequate	1	1
Reason for occurrence undetermined	1	0
Visual lookout	3	2
Visual/aural perception	2	1

APPENDIX E

DETAILED CAUSE/FACTOR ASSIGNMENTS
NONSCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

	Cause or Factor	Cause
AIRCRAFT		
Accessory drive assy,drive gear	1	1
All engines	1	1
Bleed air system,lines	1	1
Compressor assembly	1	1
Door,cargo	1	1
Engine assembly	1	0
Engine assembly,connecting rod	2	2
Engine assembly,crankshaft	1	1
Engine assembly,cylinder	1	1
Engine assembly,rocker arm/tappet	1	1
Engine assembly,valve,intake	1	0
Exhaust system,gasket	1	1
Exhaust system,turbocharger	2	2
Flight compartment lights	1	1
Fluid,fuel	5	4
Fluid,fuel grade	1	1
Fluid,oil	2	1
Fuel injection control/system	1	1
Fuel system	1	1
Fuel system,carburetor	1	0
Fuel system,line	1	1
Fuselage	1	0
Fuselage,crew compartment	1	1
Ignition system,magneto	1	1
Ignition system,magneto grounding lead (p-lead)	1	1
Landing gear,main gear	1	1
Landing gear,main gear spring	1	1
Landing gear,main gear strut scissors	2	2
Landing gear,normal retraction/extension assembly	3	3
Landing gear,nose gear assembly	1	0
Landing gear,skid assembly	1	1
Lubricating system,oil filler cap	2	2
Oxygen system	1	1
Rotor system	1	1
Rotor system,main rotor hub damper	2	2
Rotor system,main rotor hub stop(static/dynamic)	1	0
Turbine assembly,turbine blade	1	1
Turbine assembly,turbine wheel	2	2
Turboshaft engine,free (power) turbine	1	1
Turboshaft engine,free turbine governor	1	1
Turboshaft engine,free turbine shaft	1	1
Wing	1	1
FACILITY		
Airport facilities,runway marking	1	0
Airport facilities,runway/landing area condition	2	0
ENVIRONMENT		
Animal(s)	1	1
Below approach minimums	1	0
Carburetor icing conditions	1	0
Clouds	2	0
Crosswind	3	0
Dark night	6	0
Dawn	1	0
Drizzle	1	0
Fence	1	0
Fog	4	0
Gusts	3	0
Haze/smoke	1	0
High density altitude	4	0
High wind	1	0
Icing conditions	5	0
Low ceiling	6	0

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

	Cause or Factor	Cause
ENVIRONMENT (continued)		
Obscuration	3	0
Rain	4	0
Snow	6	0
Tailwind	3	0
Terrain condition	27	0
Thunderstorm	1	0
Tree(s)	3	0
Turbulence	2	0
Unfavorable wind	1	0
Vehicle	1	0
Wall/barricade	2	0
Whiteout	1	0
Windshear	1	1
Wire, static	1	0
Wire, transmission	1	0
FLIGHT CREW		
Abort	1	1
Aborted takeoff	2	2
Aircraft control	9	8
Aircraft preflight	2	2
Aircraft unattended/engine(s) running	1	1
Airspeed	9	9
Airspeed(Vmc)	2	2
Altitude	3	3
Clearance	4	4
Compensation for wind conditions	3	3
Decision height	1	1
Descent	3	2
Directional control	6	5
Distance	3	3
Diverted attention	1	1
Emergency equipment	1	1
Emergency procedure	1	1
Fatigue	1	0
Flare	1	1
Flight into known adverse weather	4	2
Flight manuals	1	1
Fuel boost pump selector position	1	1
Fuel consumption calculations	1	0
Fuel tank selector position	3	3
Go-around	2	2
IFR procedure	1	0
Ice/frost removal from aircraft	2	1
In-flight planning/decision	4	3
Lack of familiarity with aircraft	1	0
Lack of recent experience in type of aircraft	1	0
Lack of total experience in type operation	1	0
Lift-off	2	1
Lowering of flaps	1	1
Maneuver	1	1
Minimum descent altitude	1	1
Missed approach	1	1
Over confidence in aircraft's ability	1	1
Planned approach	1	0
Planning-decision	5	4
Preflight planning/preparation	4	4
Procedures/directives	2	1
Proper altitude	5	5
Proper climb rate	1	1
Proper descent rate	1	0
Proper glidepath	1	1
Proper touchdown point	3	2
Radar assistance to VFR aircraft	1	0

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1991

	Cause or Factor	Cause
FLIGHT CREW (continued)		
Raising of flaps	1	0
Reason for occurrence undetermined	1	1
Recovery from bounced landing	1	0
Remedial action	2	0
Rotorcraft flight controls	1	1
Spatial disorientation	1	1
Stall	2	2
Stall/mush	2	2
Throttle/power control	1	1
Unsuitable terrain	6	4
VFR flight into IMC	4	4
Visual lookout	7	5
Visual/aural perception	1	0
Weather evaluation	1	0
Wrong propeller feathered	1	1
OTHER PERSON		
Aircraft/equipment, inadequate design	1	1
Control interference	1	1
Distance	1	1
Identification of aircraft visually	1	1
Inadequate initial training	1	0
Inadequate surveillance of operation	1	0
Inadequate training	1	0
Maintenance	1	1
Maintenance, adjustment	2	2
Maintenance, inspection of aircraft	1	1
Maintenance, installation	1	1
Maintenance, overhaul	2	2
Maintenance, replacement	1	1
Maintenance, service bulletins	1	0
Procedures/directives	1	1
Psychological condition	1	0
Radar assistance to VFR aircraft	1	0
Refueling	1	1
Safety advisory	1	0
Supervision	1	1
Updating of recorded weather information	1	0
Visual lookout	2	2
Visual separation	2	2

APPENDIX F

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 N0. 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

National Transportation Safety Board

FACTUAL REPORT AVIATION

NTSB Accident/Incident Number

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) *(Multiple 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

National Transportation Safety Board

FACTUAL REPORT
AVIATION

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

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

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

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

National Transportation Safety Board

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

National Transportation Safety Board

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.:1994-300-644:80038