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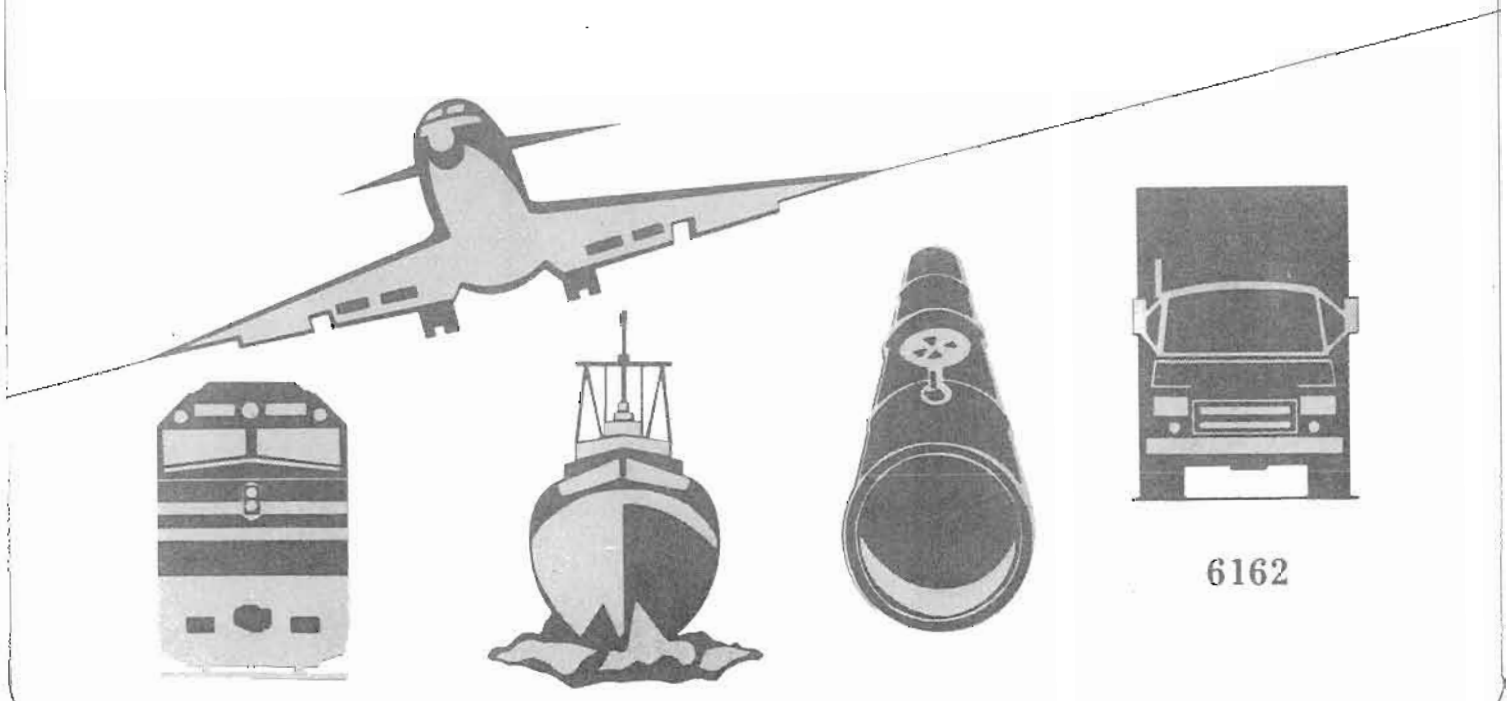
NATIONAL TRANSPORTATION SAFETY BOARD

ANNUAL REVIEW OF AIRCRAFT ACCIDENT DATA

U.S. AIR CARRIER OPERATIONS
CALENDAR YEAR 1990



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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 1990.

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 1990 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 1990, 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 1990 and for the four preceding years. Several tables then present accident parameters for 1990 only. Each section concludes with tabulations that present comparative statistics for 1990 and for the 5-year period 1985-1989.

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 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 Federal Aviation Administration (FAA) in its surveys of general aviation activity. NTSB Form 6120.4 (Appendix F) provides 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 24 accidents in Part 121, 125,127 operations in 1990. The overall accident rate for 1990 was 0.198 accidents per 100,000 hours flown, a 20.2 percent decrease from the 1989 rate of 0.248. The 1990 rate was 28.8 percent lower than the overall rate of 0.278 for the period from 1981 through 1989.

There were six fatal accidents in this category during 1990. During the period 1981 through 1989 there were an average of five fatal accidents per year. The six fatal accidents in 1990 were responsible for a total of thirty-seven fatalities.

The most serious of these fatal accidents involved a McDonnell Douglas DC-6 in Guatemala City (25 fatalities) and a ground collision between a Boeing 727 and a McDonnell Douglas DC-9 in Romulus, Michigan (8 fatalities).

Table 1 - SUMMARY OF LOSSES
14 CFR 121, 125, 127 OPERATIONS
1986 - 1990

	1986	1987	1988	1989	1990
Accidents					
Fatal	3	5	3	11	6
Involved Serious Injury	15	12	16	5	11
Involved Minor or No Injury	6	19	10	12	7
Total	24	36	29	28	24
Fatalities					
Passenger	4	213	255	259	8
Crew	3	17	19	17	4
Other Persons	1	2	11	2	25
Total	8	232	285	278	37
Aircraft Damage (14 CFR 121, 125, 127)					
Destroyed	2	5	3	7	3
Substantial	8	18	12	11	8
Minor	4	4	0	0	4
None	10	12	14	10	10
Total	24	39	29	28	25

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

	1986	1987	1988	1989	1990
Aircraft Miles Flown (Thousands)	4,017,626	4,360,521	4,503,426	4,605,083	4,954,328
Aircraft Hours Flown	9,976,104	10,644,856	11,139,519	11,273,908	12,149,487
Departures Flown	7,202,027	7,601,373	7,716,061	7,645,494	8,127,133
Accident Rates *					
Per Million Miles Flown	0.0057	0.0080	0.0062	0.0061	0.0482
Per Hundred Thousand Hours Flown	0.231	0.329	0.251	0.248	0.198
Per Hundred Thousand Departures Flown	0.319	0.460	0.363	0.366	0.295
Fatal Accident Rates *					
Per Million Miles Flown	0.0005	0.0009	0.0004	0.0024	0.0012
Per Hundred Thousand Hours Flown	0.020	0.038	0.018	0.098	0.049
Per Hundred Thousand Departures Flown	0.028	0.053	0.026	0.144	0.074

* The 12/21/88 sabotage involving a Pan Am B747-100, 12/7/87 suicide/sabotage involving a PSA BAe-146e and the 4/2/86 sabotage of a TWA B727-200 are excluded from accident rate computations.

Table 3 - LIST OF ACCIDENTS
14 CFR 121, 125, 127 OPERATIONS
1990

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/02	Baltimore, MD	Sch Passenger	American	McD-Doug DC-10	None	Serious	Airframe/component/system failure/malfunction
1/16	New York, NY	Sch Passenger	United	Boeing 757-222	Substantial	None	On ground collision with terrain
1/18	Atlanta, GA	Sch Passenger	Eastern	Boeing 727	Substantial	Fatal (1)	On ground collision with object
1/20	San Juan, PR	Sch Passenger	American	McD-Doug DC-10-10	None	Serious	In flight encounter with weather
1/31	Indianapolis, IN	Sch Cargo	Federal Exp.	Boeing 727	Minor	Fatal (1)	On ground collision with object
3/13	Phoenix, AZ	Sch Passenger	Alaska	Boeing 727-227	Minor	Fatal (1)	On ground collision with object
3/16	Santa Ana, CA	Sch Passenger	America West	Boeing 737-300	Substantial	None	On ground collision with terrain
4/18	Los Angeles, CA	Sch Cargo	Federal Exp.	McD-Doug DC-10-10	Substantial	None	On ground collision with terrain
5/05	Guatemala City	Sch Cargo	Aerial Trans.	McD-Doug DC-6	Destroyed	Fatal (25)	Loss of power
5/11	Washington, DC	Sch Passenger	United	Boeing B-737	None	Serious	In flight encounter with weather
6/02	Unalakleet, AK	Sch Pax/Cargo	Markair	Boeing 737-2X6C	Destroyed	Serious	In flight collision with terrain
6/16	Jamaica, NY	Sch Pax/Cargo	US Air	Fokker FK-28-10	Substantial	None	On ground collision with object
6/21	Charleston, SC	Sch Passenger	US Air	Boeing 727-281	None	Serious	Airframe/component/system failure/malfunction

Table 3 - LIST OF ACCIDENTS (Continued)
14 CFR 121, 125, 127 OPERATIONS
1990

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
7/14	Caribbean Sea	Nonsch Cargo	TPI Intl	Lockheed L-188A	Substantial	None	Airframe/component/system failure/malfunction
7/18	Fort Myers, FL	Sch Passenger	American	Boeing 727-223	None	Serious	In flight encounter with weather
7/22	Kinston, NC	Sch Passenger	US Air	Boeing 737-222	Substantial	Minor	Airframe/component/system failure/malfunction
7/27	Bharu, Malaysia	Nonsch Passeng	World Airways	McD-Doug DC-10-30	None	Serious	Propeller blast or jet exhaust/suction
8/03	Coeur D'Alene, ID	Sch Passenger	United	McD-Doug DC-10-10	None	Serious	Miscellaneous/other
8/09	Corpus Christi, TX	Sch Passenger	NNB Lone Star	Boeing B737-300	None	Serious	In flight encounter with weather
8/12	Paris, France	Sch Passenger	Pan Am	Airbus A-310	None	Serious	Airframe/component/system failure/malfunction
9/28	Detroit, MI	Sch Pax/Cargo	Northwest	Boeing 727-251	Minor	Serious	Fire/explosion
10/03	Cape Canaveral, FL	Sch Passenger	Eastern	McD-Doug DC-9-31	None	Fatal (1)	In flight encounter with weather
10/29	Columbus, OH	Sch Pax/Cargo	US Air	McD-Doug DC-9-31	Minor	None	On ground collision with object
12/03	Romulus, MI	Sch Passenger Sch Passenger	Northwest Northwest	McD-Doug DC-9-14 Boeing 727-251	Destroyed Substantial	Fatal (8) None	On ground collision

Table 4 - ACCIDENTS AND RATES BY TYPE OF OPERATION
14 CFR 121, 125, 127 OPERATIONS
1990

	Type of Operation				
	Scheduled				
	Passenger/ Cargo	All Cargo	All	All Non-Scheduled	All
Accidents	19	3	22	2	24
Fatal Accidents	4	2	6	0	6
Aircraft Miles Flown (Thousands)	4,509,748	186,652	4,696,400	257,928	4,954,328
Aircraft Hours Flown	10,989,612	535,114	11,524,726	624,761	12,149,487
Departures Flown	7,462,755	370,732	7,833,487	293,646	8,127,133
Accident Rates					
Per Million Miles Flown	0.0042	0.0161	0.0047	0.0078	0.0048
Per Hundred Thousand Hours Flown	0.173	0.561	0.191	0.320	0.198
Per Hundred Thousand Departures Flown	0.255	0.809	0.281	0.681	0.295
Fatal Accident Rates					
Per Million Miles Flown	0.0009	0.0107	0.0013	0.	0.0012
Per Hundred Thousand Hours Flown	0.036	0.374	0.052	0.	0.049
Per Hundred Thousand Departures Flown	0.054	0.539	0.077	0.	0.074

Table 5 - PERSONS BY ROLE AND DEGREE OF INJURY
14 CFR 121 125 127 OPERATIONS
1990

	Degree of Injury				
Role of Person	Fatal	Serious	Minor	None	Total
Pilot	1	0	2	22	25
Copilot	1	0	2	22	25
Check pilot	0	0	0	2	2
Flight engineer	1	0	0	11	12
Cabin attendants	1	4	2	58	65
Other crew	0	0	0	7	7
Passenger	8	23	100	1997	2128
Total aboard	12	27	106	2119	2264
Other aircraft*	1	1	0	77	79
Other ground	24	1	3	0	28
Grand total	37	29	109	2196	2371
Percent	1.6	1.2	4.6	92.6	

* 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
1990

	Degree of injury				Aircraft	
Aircraft damage	None	Minor	Ser	Fatal	No.	Percent
None	0	0	9	1	10	40.0
Minor	1	0	1	2	4	16.0
Substantial	6	1	0	1	8	32.0
Destroyed	0	0	1	2	3	12.0
Aircraft						
Total	7	1	11	6	25	
Percent	28.0	4.0	44.0	24.0		

Table 7 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Type of first occurrence	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Airframe/component/system failure/malfunction	1	1	3	0	3	0	2	0	5	20.0
Fire/explosion	0	0	1	0	0	1	0	0	1	4.0
In flight collision with terrain	0	0	1	0	0	0	0	1	1	4.0
In flight encounter with weather	0	0	4	1	5	0	0	0	5	20.0
On ground collision with object	3	0	0	4	0	3	3	1	7	28.0
On ground collision with terrain	3	0	0	0	0	0	3	0	3	12.0
Loss of power	0	0	0	1	0	0	0	1	1	4.0
Propeller blast or jet exhaust/ suction	0	0	1	0	1	0	0	0	1	4.0
Miscellaneous/other	0	0	1	0	1	0	0	0	1	4.0
Aircraft										
Number -	7	1	11	6	10	4	8	3	25	
Percent -	28.0	4.0	44.0	24.0	40.0	16.0	32.0	12.0		

Table 8 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
14 CFR 121 125 127 OPERATIONS
1990

Type of first occurrence	Phase of operation									Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Nrept	No.	Percent
Airframe/component/system failure/malfunction	0	0	1	1	1	1	0	0	1	5	20.0
Fire/explosion	0	1	0	0	0	0	0	0	0	1	4.0
In flight collision with terrain	0	0	0	0	0	0	1	0	0	1	4.0
In flight encounter with weather	0	0	0	0	2	3	0	0	0	5	20.0
On ground collision with object	2	2	2	0	0	0	0	1	0	7	28.0
On ground collision with terrain	0	0	2	0	0	0	0	1	0	3	12.0
Loss of power	0	0	1	0	0	0	0	0	0	1	4.0
Propeller blast or jet exhaust /suction	0	1	0	0	0	0	0	0	0	1	4.0
Miscellaneous/other	0	0	0	0	1	0	0	0	0	1	4.0
Aircraft											
Number -	2	4	6	1	4	4	1	2	1	25	
Percent -	8.0	16.0	24.0	4.0	4.0	4.0	4.0	8.0	4.0		

Table 9 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1990

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	1	0	0	1	4.0
Standing - engine(s) operating	1	0	0	0	0	0	1	0	1	4.0
Taxi - to takeoff	1	0	0	1	0	1	0	1	2	8.0
Taxi - from landing	0	0	2	0	1	1	0	0	2	8.0
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	4.0
Climb - to cruise	1	0	0	0	0	0	1	0	1	4.0
Cruise	0	0	1	0	1	0	0	0	1	4.0
Cruise - normal	0	0	2	1	3	0	0	0	3	12.0
Descent - normal	0	0	4	0	4	0	0	0	4	16.0
Approach - IAF to FAF/ - outer marker (IFR)	0	0	1	0	0	0	0	1	1	4.0
Landing - flare/touchdown	1	0	0	0	0	0	1	0	1	4.0
Landing - roll	0	0	0	1	0	0	1	0	1	4.0
Not reported	0	1	0	0	0	0	1	0	1	4.0
Aircraft										
Number -	7	1	11	6	10	4	8	3	25	
Percent -	28.0	4.0	44.0	24.0	40.0	16.0	32.0	12.0		

Table 10 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
14 CFR 121 125 127 OPERATIONS
1990

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Daylight	9	4	0	13	52.0
Night (dark)	7	0	0	7	28.0
Night (bright)	2	0	0	2	8.0
Not reported	2	0	1	3	12.0
Aircraft					
Number -	20	4	1	25	
Percent -	80.0	16.0	4.0		

Table 11 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
14 CFR 121, 125, 127 OPERATIONS
1990

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	3	1	7	4	15	60.0
Scheduled Domestic Cargo	1	0	0	1	2	8.0
Scheduled Domestic Pax/Cargo	2	0	1	0	3	12.0
Scheduled International Pass.	0	0	1	0	1	4.0
Scheduled International Cargo	0	0	0	1	1	4.0
Scheduled International Pax/Cargo	0	0	1	0	1	4.0
Nonscheduled International Pass.	0	0	1	0	1	4.0
Nonscheduled International Cargo	1	0	0	0	1	4.0
Aircraft						
Number -	7	1	11	6	25	
Percent -	28.0	4.0	44.0	24.0		

Table 12 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121, 125, 127 OPERATIONS
1990

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	7	1	8	4	8	3	8	1	20	20.0
On ground	0	0	1	1	0	1	0	1	2	8.0
Other	0	0	2	1	2	0	0	1	3	12.0
Aircraft										
Number -	7	1	11	6	10	4	8	3	25	
Percent -	28.0	4.0	44.0	24.0	40.0	16.0	32.0	12.0		

Table 13 - BROAD CAUSE/FACTOR ASSIGNMENTS*
14 CFR 121 125 127 OPERATIONS
1990

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 #	0	3	0	2	0	4
Propulsion System and Controls	0	2	0	0	0	2
Landing Gear	0	1	0	0	0	1
Systems/Equipment/Instruments	0	1	0	2	0	2
Environment #	1	4	3	4	3	7
Weather	0	3	3	4	3	7
Object (trees, wires, etc.)	1	1	0	0	1	1
Light Conditions	0	0	1	1	1	1
Airport/Airways Facilities, Aids	0	0	1	2	1	2
Personnel #	4	16	3	8	5	17
Pilot	2	9	1	3	3	10
Others (Aboard)	1	4	0	0	1	4
Others (Not Aboard)	2	5	2	5	3	7
Number of Aircraft					6	25
NTSB Determined Probable Cause					5	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 14 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL 14 CFR 121 125 127 OPERATIONS
1981 - 1990

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1981	26	4	4	2	7,125,698	0.365	0.056
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	10,644,856	0.329	0.038
1988	29	3	285	274	11,139,519	0.251	0.018
1989	28	11	278	276	11,273,908	0.248	0.098
1990	24	6	37	12	12,149,487	0.198	0.049

* 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

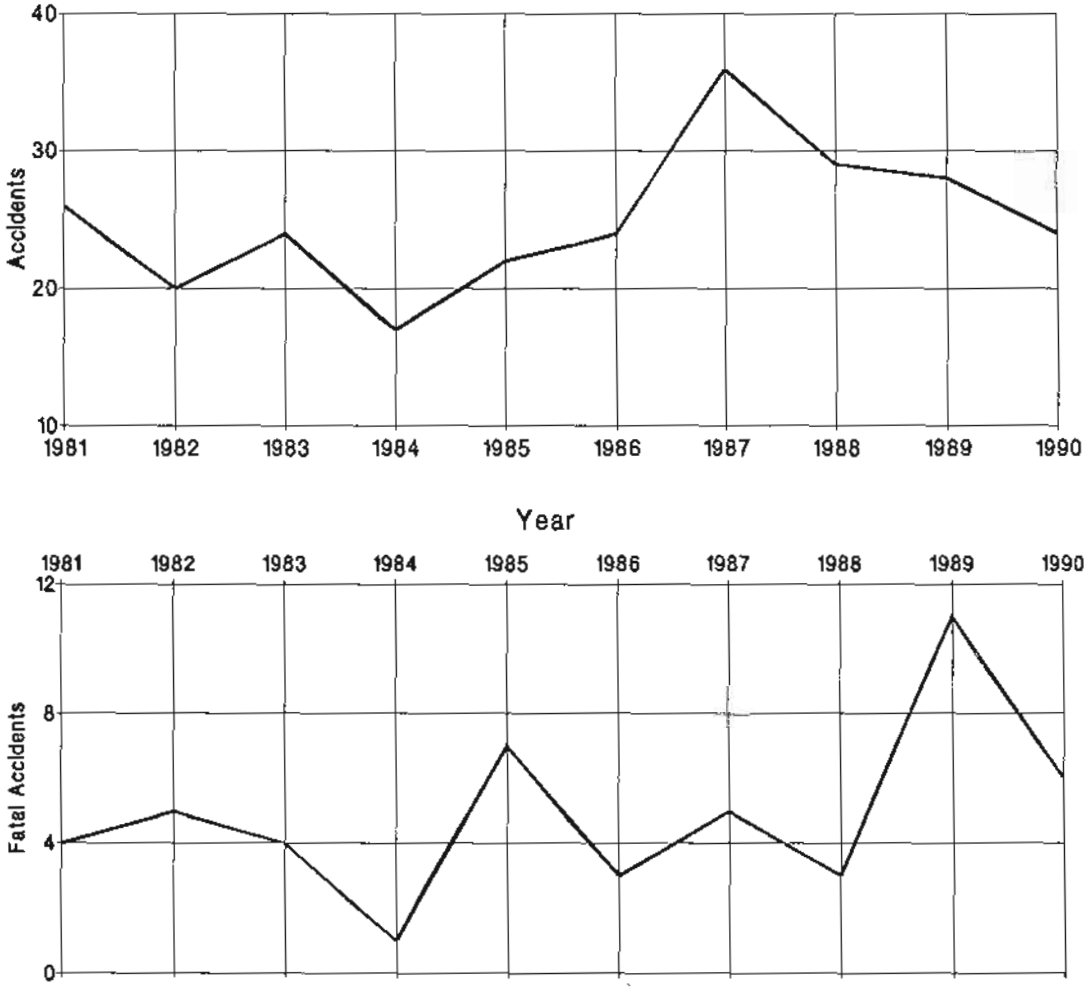

Figure 2 - NUMBER OF FATALITIES
ALL 14 CFR 121, 125, 127 OPERATIONS

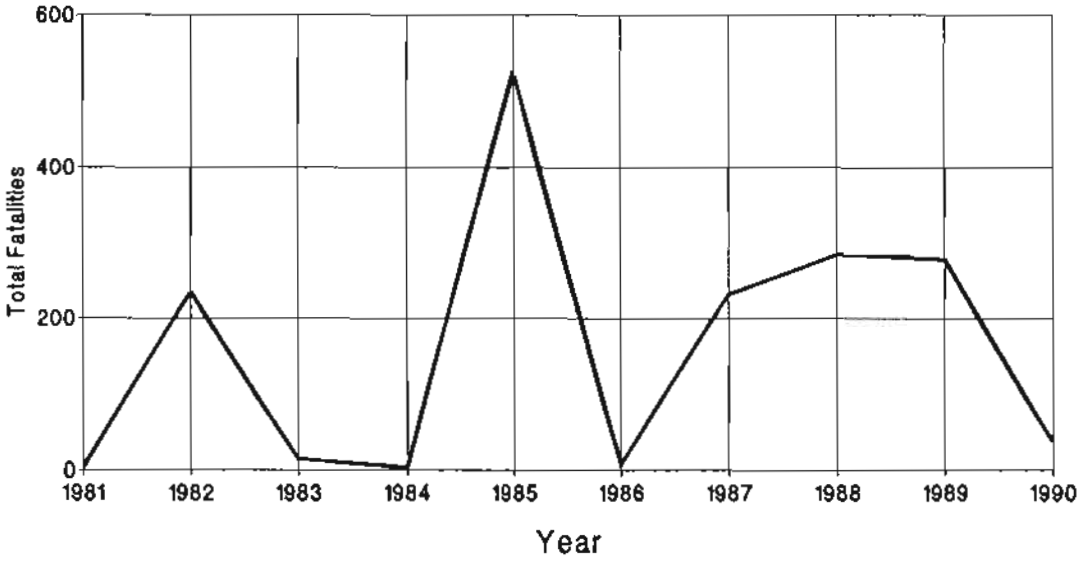

Figure 3 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL 14 CFR 121, 125, 127 OPERATIONS

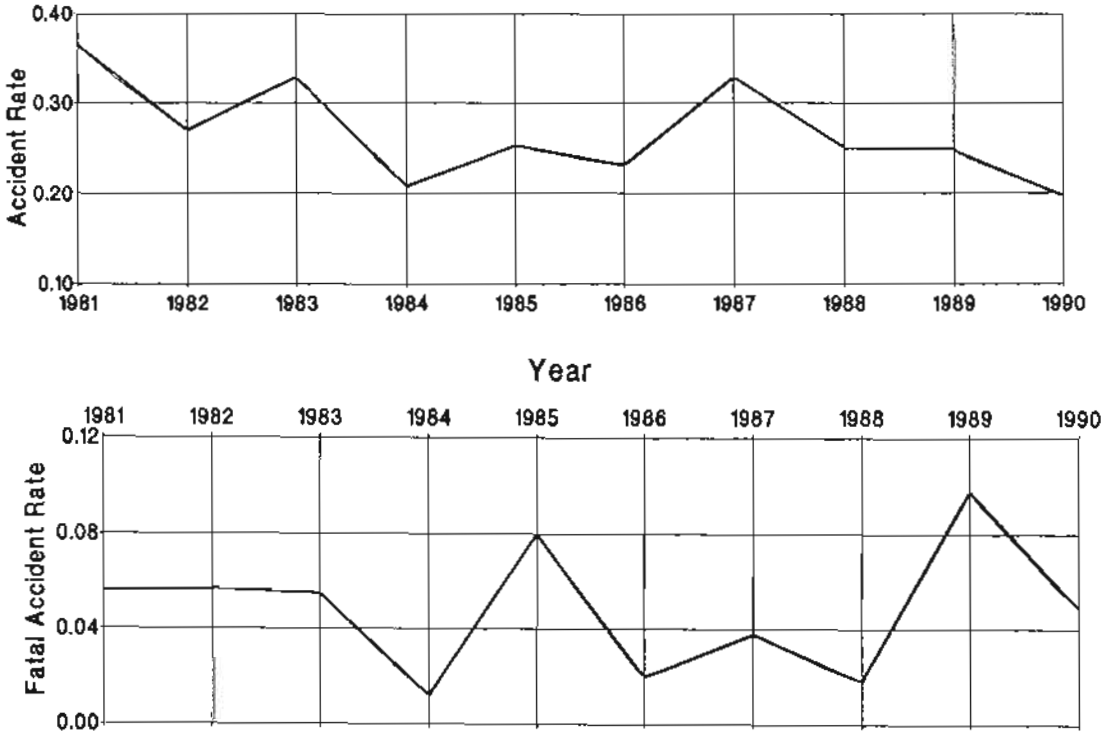

Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 121 125 127 OPERATIONS
1981 - 1990

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1981	25	4	4	2	6,834,140	0.366	0.059
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	10,115,653	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	37	12	11,524,726	0.191	0.052

* 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

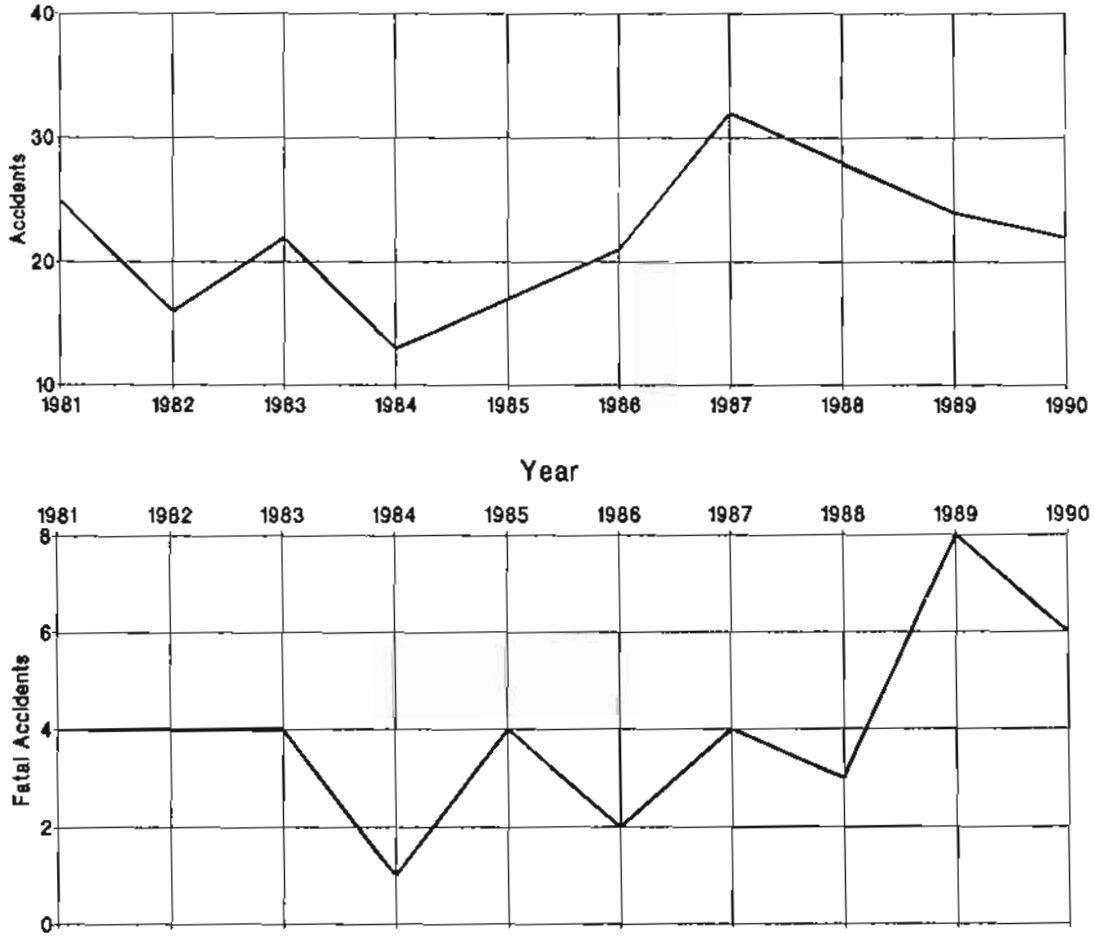

Figure 5 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

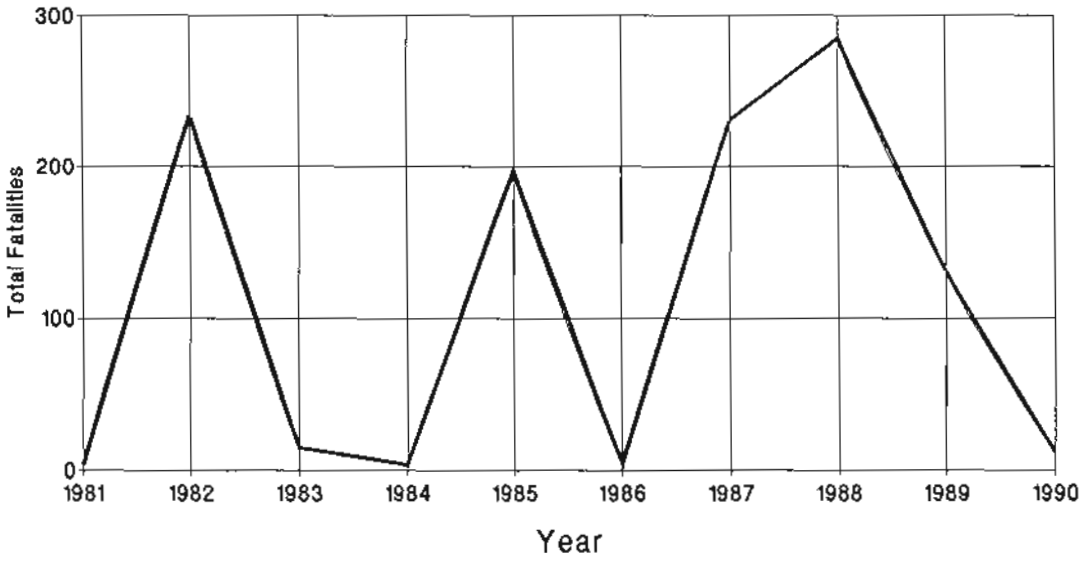

Figure 6 - ACCIDENTS PER 100,000 HOURS FLOWN
SCHEDULED CFR 121, 125, 127 OPERATIONS

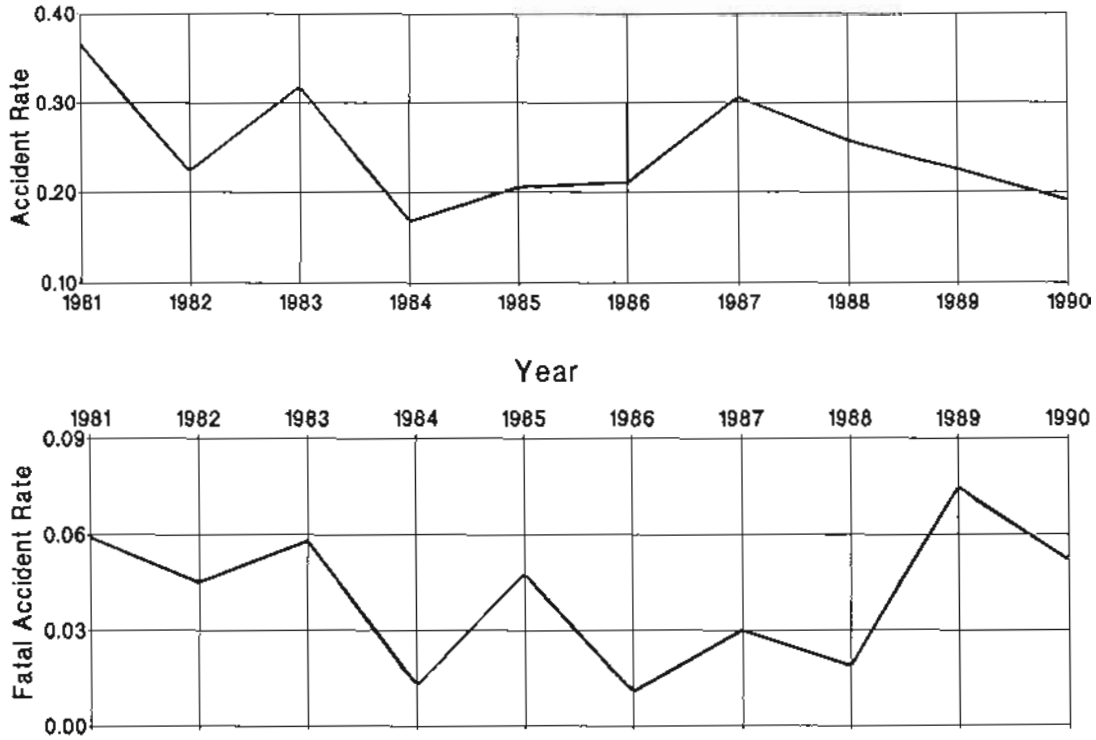

Table 16 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCHEDULED 14 CFR 121 125 127 OPERATIONS
1981 - 1990

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1981	1	0	0	0	291,558	0.343	0.000
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	529,203	0.756	0.189
1988	1	0	0	0	618,467	0.162	0.000
1989	4	3	147	146	675,986	0.592	0.444
1990	2	0	0	0	624,761	0.320	0.000

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

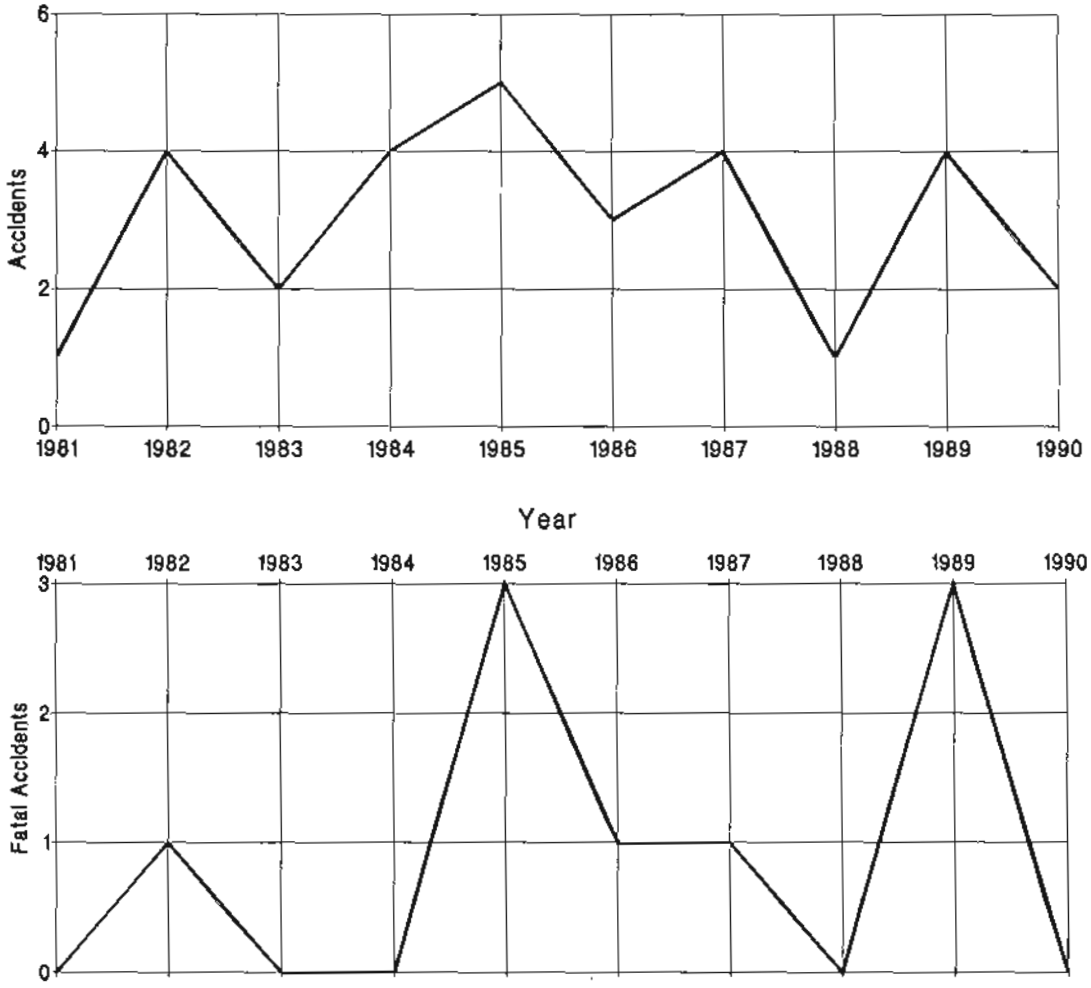

Figure 8 - NUMBER OF FATALITIES
NONSCHEDULED 121, 125, 127 OPERATIONS

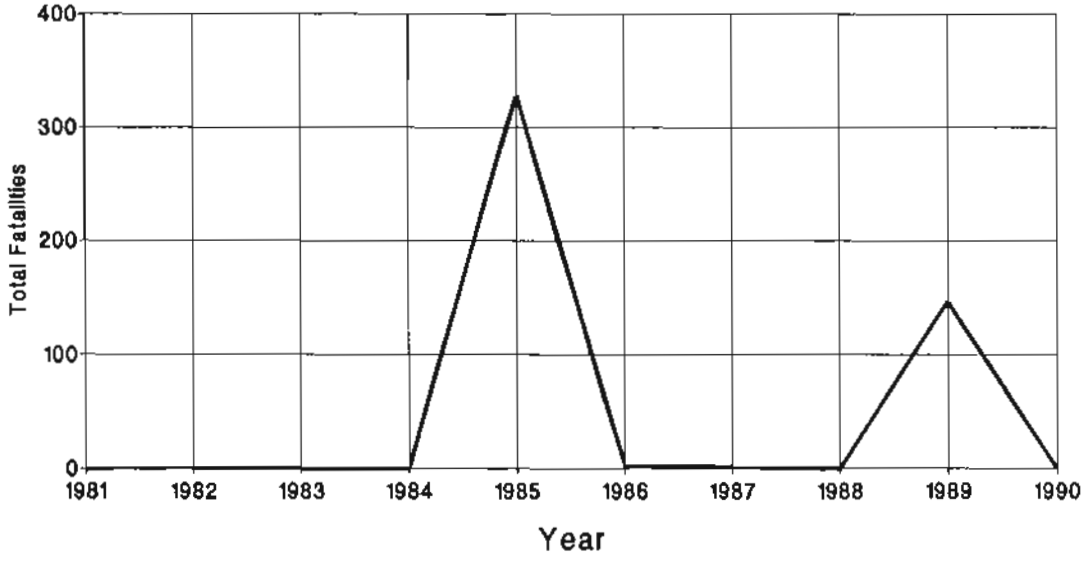

Figure 9 - ACCIDENTS PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 121, 125, 127

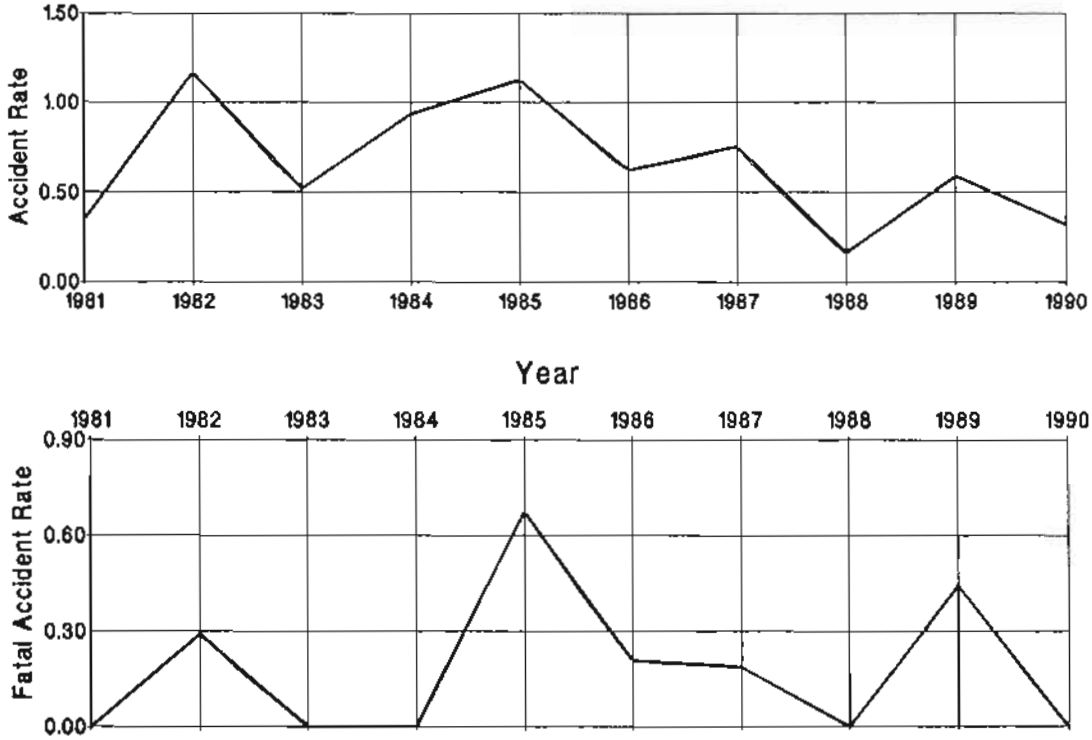

Table 17 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Type of Occurrence	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
In flight encounter with weather	5	20.0	6.0	21.3	1	16.7	.2	13.6
Airframe/component/system fail/mal	5	20.0	4.8	17.0	0	.0	.8	14.3
On ground collision with object	7	28.0	3.0	10.6	4	66.7	.4	7.1
Miscellaneous/other	1	4.0	3.0	10.6	0	.0	.6	10.7
Not reported	0	.0	1.6	5.7	0	.0	.6	10.7
Loss of control - in flight	0	.0	1.4	5.0	0	.0	1.2	21.4
In flight collision w/terrain	1	4.0	1.0	3.5	0	.0	.6	10.7
In flight collision with object	0	.0	.8	2.8	0	.0	.2	3.6
Hard landing	0	.0	.6	2.1	0	.0	.0	.0
Loss of engine power(total) - mech failure/malfunction	0	.0	.6	2.1	0	.0	.0	.0
Loss of engine power(partial) - mech failure/malfunction	0	.0	.6	2.1	0	.0	.2	3.6
Loss of engine power(total) - non-mechanical	0	.0	.6	2.1	0	.0	.2	3.6
Fire/explosion	1	4.0	.4	1.4	0	.0	.0	.0
Fire	0	.0	.4	1.4	0	.0	.0	.0
Main gear collapsed	0	.0	.4	1.4	0	.0	.0	.0
Loss of control - on ground	0	.0	.4	1.4	0	.0	.2	3.6
On ground encounter with weather	0	.0	.4	1.4	0	.0	.2	3.6
Overrun	0	.0	.4	1.4	0	.0	.0	.0
Altitude deviation,uncontrolled	0	.0	.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
Near collision between aircraft	0	.0	.2	.7	0	.0	.0	.0
On ground collision w/terrain	3	12.0	.2	.7	0	.0	.0	.0
Loss of engine power	1	4.0	.2	.7	1	16.7	.0	.0
Propeller blast or jet exhaust	1	4.0	.2	.7	0	.0	.0	.0
Propeller/rotor contact to person	0	.0	.2	.7	0	.0	.0	.0
Undershoot	0	.0	.2	.7	0	.0	.0	.0
Total	25	100.0	28.2	100.0	6	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
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Phase of Operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Cruise	4	16.0	5.6	19.9	1	16.7	1.0	17.9
Takeoff	7	28.0	4.6	16.3	2	33.3	1.6	28.6
Landing	2	8.0	3.8	13.5	1	16.7	.0	.0
Taxi	4	16.0	3.0	10.6	1	16.7	0.6	10.7
Descent	4	16.0	3.0	10.6	0	.0	.2	3.6
Standing	2	8.0	2.8	9.9	1	16.7	0.2	3.6
Approach	1	4.0	1.8	6.4	0	.0	1.0	17.9
Climb	1	4.0	2.0	7.1	0	.0	0.4	7.1
Not reported	0	.0	1.6	5.7	0	.0	.6	10.7
Maneuvering	0	.0	.0	.0	0	.0	.0	.0
Other	0	.0	.0	.0	0	.0	.0	.0
Total	25	100.0	28.2	100.0	6	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
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	10	40.0	10.8	38.3	3	50.0	2.6	46.4
Other Person (Not Aboard)	7	28.0	11.6	41.1	3	50.0	2.8	50.0
Weather	7	28.0	8.4	29.8	3	50.0	.8	14.3
Other Person (Aboard)	4	16.0	5.8	20.6	1	16.7	.2	3.6
Systems/Equipment/ Instruments	2	8.0	4.8	17.0	0	.0	1.2	21.4
Propulsion System and Controls	2	8.0	3.4	12.1	0	.0	.6	10.7
Landing Gear	1	4.0	2.2	7.8	0	.0	.0	.0
Light Conditions	1	4.0	2.4	8.5	1	16.7	.6	10.7
Object (tree,wires,etc)	1	4.0	2.8	9.9	1	16.7	.6	10.7
Airframe	0	.0	2.6	9.2	0	.0	1.0	17.9
Terrain/Runway Condition	0	.0	2.0	7.1	0	.0	.2	3.6
Flight Control System	0	.0	1.0	3.5	0	.0	.4	7.1
Airport/Airways Facilities, Aids	2	8.0	.4	1.4	1	16.7	.0	.0
Total Aircraft	25	100.0	28.2	100.0	6	100.0	5.6	100.0
NTSB Determined Probable Cause	22		25.8		5		4.4	

Scheduled 14 CFR 135 Operations

There were 16 accidents involving scheduled 14 CFR 135 operations in 1990. The average number of accidents per year in this category for the years 1981 through 1989 is 22.3. The accident rate per 100,00 hours flown for 1990 is 0.685, compared with an overall rate of 1.294 for the period 1981 through 1989. This accident rate is the lowest of any year presented in this review.

Of the 16 accidents in this category, four accidents were fatal involving a total of 7 fatalities. During the period 1981 through 1989, there were an average of 5.4 fatal accidents and 28.8 fatalities per year in Scheduled 14 CFR 135 operations, with a fatal accident rate of 0.171 accidents per 100,000 hours flown.

Table 20 - SUMMARY OF LOSSES
SCHEDULED 14 CFR 135 OPERATIONS
1986 - 1990

	1986	1987	1988	1989	1990
Accidents					
Fatal	2	10	2	5	4
Involved Serious Injury	2	5	2	1	2
Involved Minor or No Injury	11	17	15	12	10
Total	15	32	19	18	16
Fatalities					
Passenger	3	42	17	25	3
Crew	1	15	4	6	2
Other Persons	0	2	0	0	2
Total	4	59	21	31	7
Aircraft Damage (Scheduled 14 CFR 135)					
Destroyed	1	11	3	5	3
Substantial	13	8	15	13	12
Minor	1	2	1	0	1
None	1	1	0	1	0
Total	16	32	19	19	16

Table 21 - ACCIDENT RATES
SCHEDULED 14 CFR 135 OPERATIONS

	1986	1987	1988	1989	1990
Aircraft Miles Flown (Thousands)	307,393	350,879	380,237	393,619	450,067
Aircraft Hours Flown	1,724,586	1,946,349	2,092,689	2,240,555	2,336,952
Departures Flown	2,798,811	2,909,005	2,809,918	2,818,520	3,159,763
Accident Rates					
Per Million Miles Flown	0.049	0.091	0.050	0.046	0.036
Per Hundred Thousand Hours Flown	0.870	1.644	0.908	0.803	0.685
Per Hundred Thousand Departures Flown	0.536	1.139	0.653	0.639	0.506
Fatal Accident Rates					
Per Million Miles Flown	0.007	0.028	0.005	0.013	0.009
Per Hundred Thousand Hours Flown	0.116	0.514	0.096	0.223	0.171
Per Hundred Thousand Departures Flown	0.071	0.356	0.069	0.177	0.127

Table 22 - LIST OF ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/15	Elko, NV	Passenger	Skywest Airlines	Swearingen SA-227AC	Substantial	Serious	In flight collision with terrain
1/24	Morrisville, NC	Passenger	AMR Corporation	Swearingen SA-226TC	Substantial	None	Gear not extended
1/30	Coeur D'Alene, ID	Passenger	Empire Airlines	Swearingen SA-226TC	Substantial	None	In flight encounter with weather
2/27	Takotna, AK	Passenger	Markair Express	Cessna 207	Substantial	None	Overrun
3/29	Chevak, AK	Pax and Cargo	ERA Aviation	DeHavilland DHC-6	Substantial	None	Hard landing
4/09	Gadsden, AL	Passenger	Atlantic Southeast	Embraer EMB-120	Substantial	Fatal (2)	Midair collision
4/16	Ft. Lauderdale, FL	Passenger	Comair	Embraer EMB-110	Substantial	None	On ground collision with object
5/24	Uganik Bay, AK	Pax and Cargo	Markair Express	Cessna 185	Substantial	None	Loss of control - inflight
5/25	Blue Bell, PA	Pax and Cargo	Pennsylvania Aviation	Britten-Norman BN2A-2F	Substantial	Minor	In flight collision with object
6/17	Grand Canyon, AZ	Passenger	Air Nevada Airlines	Cessna T207A	Substantial	None	On ground collision with object
7/27	Ruidoso, NM	Passenger	Mesa Airlines	Cessna 208A	Substantial	None	Loss of power(total)-mech fail/malf.
9/03	Kaltag, AK	Passenger	Frontier Flying Serv.	Piper PA-31-325	Destroyed	Fatal (3)	Loss of power
10/01	St. Louis, MO	Pax and Cargo	Air Midwest	British Aerospace 3201	Minor	Serious	Propeller/rotor contact
11/20	Albion, ID	Cargo	Regional Express	Piper PA-34-200T	Destroyed	Fatal (1)	In flight encounter with weather
12/21	False Pass, AK	Pax and Cargo	Markair Express	Cessna 208	Destroyed	Fatal (1)	In flight collision with terrain
12/31	Kaliapell, MT	Pax and Cargo	Horizon Airlines	Swearingen SA-227	Substantial	None	Loss of control - on ground

Table 23 - PERSONS BY ROLE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1990

Role of Person	Degree of Injury				
	Fatal	Serious	Minor	None	Total
Pilot	2	2	0	12	16
Copilot	0	1	0	8	9
Cabin attendants	0	0	0	1	1
Passenger	3	7	10	91	111
Total aboard	5	10	10	112	137
Other aircraft*	2	0	1	0	3
Other ground	0	1	0	0	1
Grand total	7	11	11	112	141
Percent	5.0	7.8	7.8	79.4	

* 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
1990

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
Minor	0	0	1	0	1	6.3
Substantial	9	1	1	1	12	75.0
Destroyed	0	0	0	3	3	18.8
Aircraft						
Number -	9	1	2	4	16	
Percent -	56.3	6.3	12.5	25.0		

Table 25 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1990

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Gear not extended	1	0	0	0	0	0	1	0	1	6.3
Hard landing	1	0	0	0	0	0	1	0	1	6.3
In flight collision w/obj.	0	1	0	0	0	0	1	0	1	6.3
In flight collision w/ter.	0	0	1	1	0	0	1	1	2	12.5
In flight encounter w/wx.	1	0	0	1	0	0	1	1	2	12.5
Loss of control - in flight	1	0	0	0	0	0	1	0	1	6.3
Loss of control - on ground	1	0	0	0	0	0	1	0	1	6.3
Midair collision	0	0	0	1	0	0	1	0	1	6.3
On ground collision w/obj.	2	0	0	0	0	0	2	0	2	12.5
Overrun	1	0	0	0	0	0	1	0	1	6.3
Loss of power	0	0	0	1	0	0	0	1	1	6.3
Loss of power(total) - mech failure/malfunction	1	0	0	0	0	0	1	0	1	6.3
Propeller/rotor contact	0	0	1	0	0	1	0	0	1	6.3
Aircraft										
Number -	9	1	2	4	0	1	12	3	16	
Percent -	56.3	6.3	12.5	25.0	.0	6.3	75.0	18.8		

Table 26 - AIRCRAFT BY FIRST OCCURANCE AND BROAD PHASE OF OPERATION
SCHEDULED 14 CFR AND 135 OPERATIONS
1990

Type of first occurrence	Phase of opertation								Aircraft	
	Stndg	Taxi	Tkoff	Cruis	Dscnt	Aprch	Landg	Manvr	No.	Percent
Gear not extended	0	0	0	0	0	0	1	0	1	6.3
Hard landing	0	0	0	0	0	0	1	0	1	6.3
In flight collision with object	0	0	0	0	0	1	0	0	1	6.3
In flight collision with terrain	0	0	0	0	0	1	0	1	2	12.5
In flight encounter with weather	0	0	0	1	0	0	1	0	2	12.5
Loss of control - in flight	0	0	1	0	0	0	0	0	1	6.3
Loss of control - on ground	0	0	0	0	0	0	1	0	1	6.3
Midair collision	0	0	0	1	0	0	0	0	1	6.3
On ground collision with object	0	2	0	0	0	0	0	0	2	12.5
Overrun	0	0	0	0	0	0	1	0	1	6.3
Loss of power	0	0	0	1	0	0	0	0	1	6.3
Loss of power(total) - mech failure/malfunction	0	0	0	0	1	0	0	0	1	6.3
Propeller/rotor contact	1	0	0	0	0	0	0	0	1	6.3
Aircraft										
Number -	1	2	1	3	1	2	5	1	16	
Percent -	6.3	12.5	6.3	18.8	16.3	12.5	31.3	6.3		

Table 27 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1990

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing	0	0	1	0	0	1	0	0	1	6.3
Taxi - to takeoff	2	0	0	0	0	0	2	0	2	12.5
Takeoff - initial climb	1	0	0	0	0	0	1	0	1	6.3
Cruise	0	0	0	2	0	0	1	1	2	12.5
Cruise - normal	0	0	0	1	0	0	0	1	1	6.3
Descent - normal	1	0	0	0	0	0	1	0	1	6.3
Approach - VFR pattern final approach	0	1	0	0	0	0	1	0	1	6.3
Approach - IAF to FAF/ outer marker (IFR)	0	0	1	0	0	0	1	0	1	6.3
Landing	1	0	0	0	0	0	1	0	1	6.3
Landing - flare/touchdown	2	0	0	0	0	0	2	0	2	12.5
Landing - roll	2	0	0	0	0	0	2	0	2	12.5
Maneuvering	0	0	0	1	0	0	0	1	1	6.3
Aircraft										
Number -	9	1	2	4	0	1	12	3	16	
Percent -	56.3	6.3	12.5	25.0	.0	6.3	75.0	18.8		

Table 28 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
SCHEDULED 14 CFR 135 OPERATIONS
1990

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Daylight	8	4	1	13	81.3
Night (dark)	0	1	0	1	6.3
Dusk	2	0	0	2	12.5
Aircraft					
Number -	10	5	1	16	
Percent -	62.5	31.3	6.3		

Table 29 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1990

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	6	0	1	2	9	56.3
Scheduled Domestic Cargo	0	0	0	1	1	6.3
Scheduled Domestic Pass/Cargo	3	1	1	1	6	37.5
Aircraft						
Number -	9	1	2	4	16	
Percent -	56.3	6.3	12.5	25.0		

Table 30 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
SCHEDULED 14 CFR 135 OPERATIONS
1990

Accident location	Flight Plan				Aircraft	
	None	VFR	IFR	Cmpny VFR	No.	Percent
Off airport/airstrip	1	1	3	3	8	50.0
On Airport	0	0	5	2	7	43.8
On Airstrip	0	1	0	0	1	6.3
Aircraft						
Number -	1	2	8	5	16	
Percent -	6.3	12.5	50.0	31.3		

Table 31 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Aircraft fire	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	9	1	2	3	0	1	12	2	15	93.8
On ground	0	0	0	1	0	0	0	1	1	6.3
Aircraft										
Number -	9	1	2	4	0	1	12	3	16	
Percent -	56.3	6.3	12.5	25.0	.0	6.3	75.0	18.8		

Table 32 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Type of aircraft	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Fixed Wing Single Recip. Engine	3	0	0	0	0	0	3	0	3	18.8
Fixed Wing Multiple Recip. Engine	0	1	0	2	0	0	1	2	3	18.8
Fixed Wing Turboprop	5	0	2	1	0	1	6	1	8	50.0
Fixed Wing Turboshaft	1	0	0	1	0	0	2	0	2	12.5
Aircraft										
Number -	9	1	2	4	0	1	12	3	16	
Percent -	56.3	6.3	12.5	25.0	.0	6.3	75.0	18.8		

Table 33 - BROAD CAUSE/FACTOR ASSIGNMENTS*
SCHEDULED 14 CFR 135 OPERATIONS
1990

	Cited as a Cause		Cited as a Factor		Cited as Either a Cause or a Factor (or Both)	
Cause/Factor	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents
Aircraft #	0	2	0	1	0	3
Propulsion System and Controls	0	1	0	0	0	1
Landing Gear	0	1	0	1	0	2
Environment #	0	2	4	13	4	13
Weather	0	1	3	7	3	7
Light Conditions	0	0	1	3	1	3
Object (trees, wires, etc.)	0	1	0	0	0	1
Airport/Airways Facilities, Aids	0	0	0	1	0	1
Terrain/Runway Condition	0	0	1	6	1	6
Personnel #	4	13	2	7	4	14
Pilot	4	11	1	3	4	11
Others (Not Aboard)	1	4	1	4	1	5
Number of Aircraft					4	16
NTSB Determined Probable Cause					4	16

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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
1981 - 1990

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1981	31	9	34	32	1,240,764	2.498	0.725
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	16	4	7	5	2,336,952	0.685	0.171

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

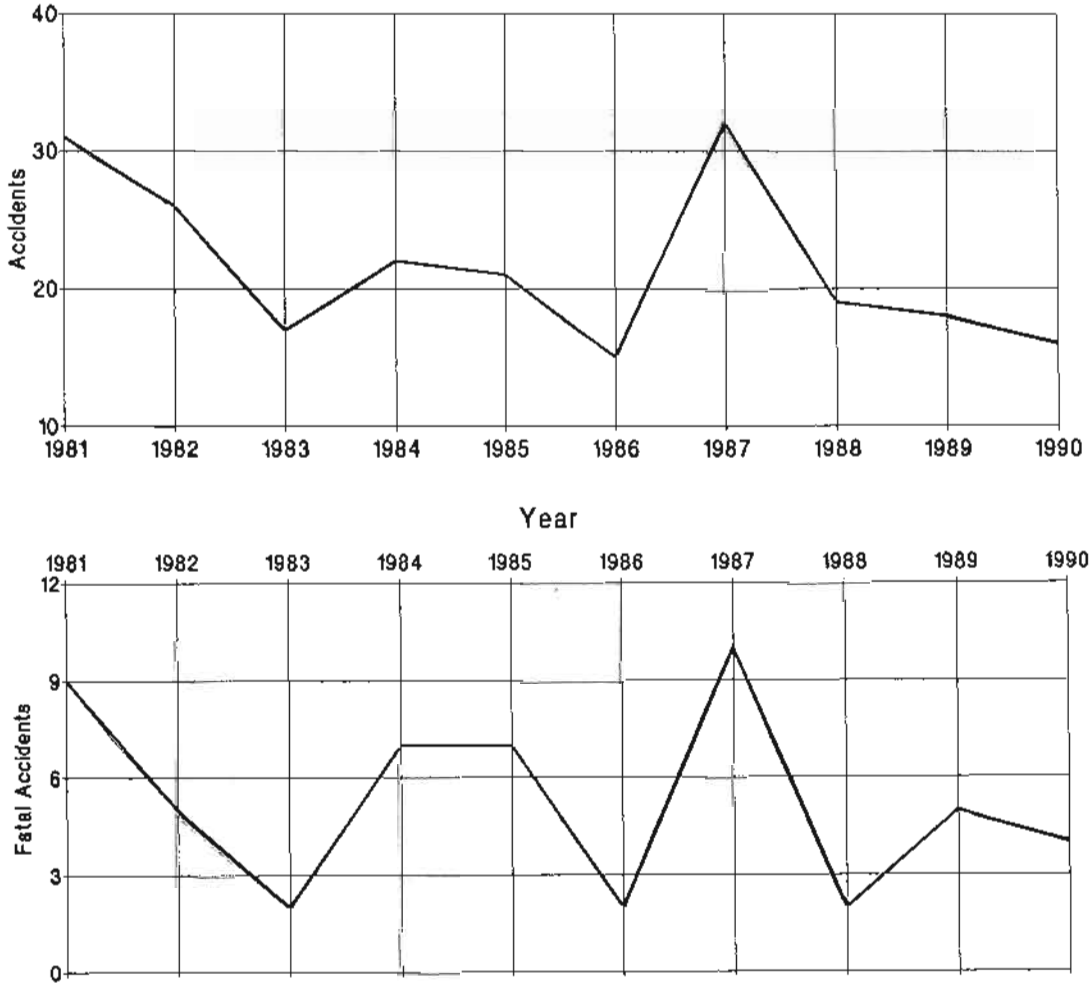

Figure 11 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 135 OPERATIONS

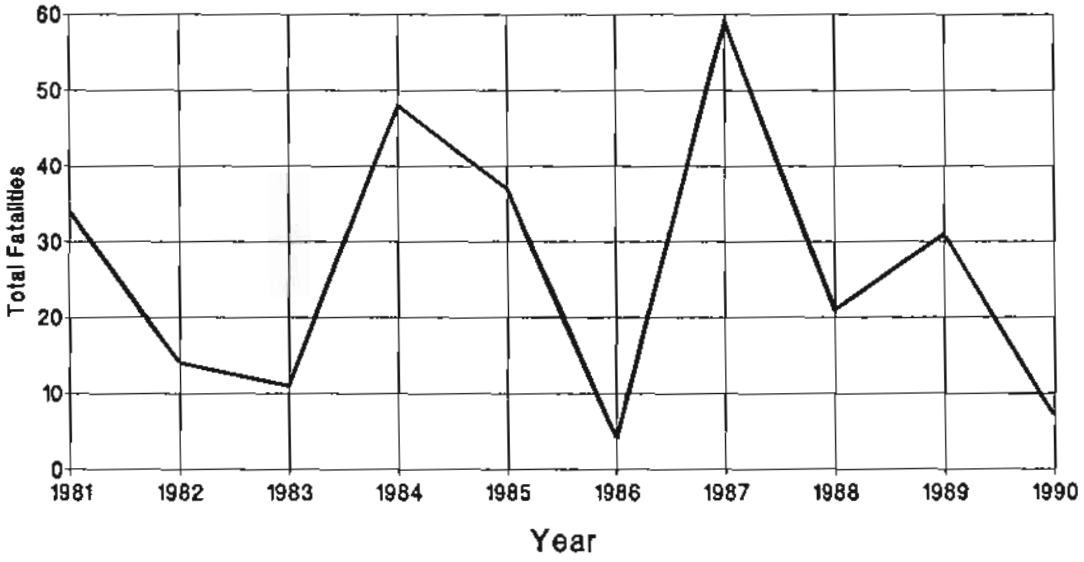

Figure 12 - ACCIDENT RATE PER 100,000 HOURS FLOWN
SCHEDULED 14 CFR 135 OPERATIONS

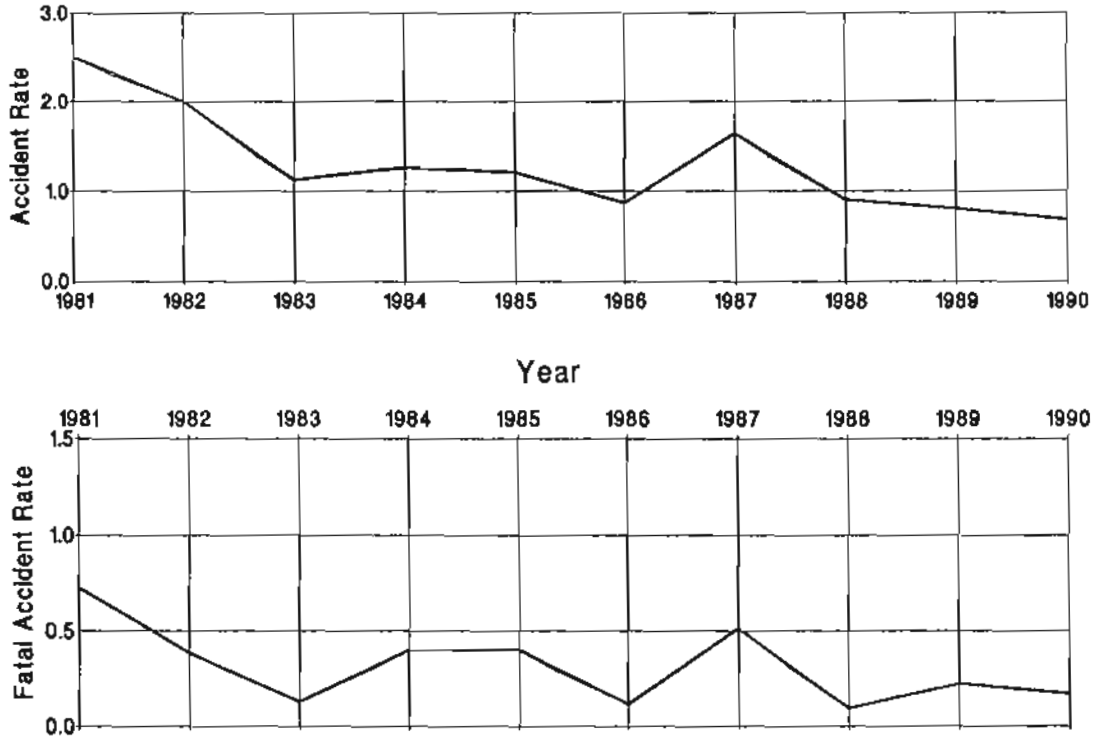

Table 35 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Type of Occurrence	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
On ground collision with object	2	12.5	2.8	13.1	0	.0	.2	3.8
Airframe/component/system fail/malf	0	.0	2.6	12.1	0	.0	.4	7.7
In flight encounter with weather	2	12.5	2.4	11.2	1	25.0	1.4	26.9
Loss of control - in flight	1	6.3	1.6	7.5	0	.0	1.0	19.2
Loss of engine power(total) - non-mechanical	0	.0	1.4	6.5	0	.0	.4	7.7
In flight collision w/terrain	2	12.5	1.2	5.6	1	25.0	.4	7.7
Loss of control - on ground	1	6.3	1.2	5.6	0	.0	.0	.0
In flight collision with object	1	6.3	1.0	4.7	0	.0	.4	7.7
Loss of engine power(partial) - non-mechanical	0	.0	.8	3.7	0	.0	.0	.0
Complete gear collapsed	0	.0	.6	2.8	0	.0	.0	.0
Hard landing	1	6.3	.6	2.8	0	.0	.0	.0
Midair collision	1	6.3	.6	2.8	1	25.0	.2	3.8
Miscellaneous/other	0	.0	.6	2.8	0	.0	.0	.0
On ground collision w/terrain	0	.0	.4	1.9	0	.0	.0	.0
Loss of engine power	1	6.3	.4	1.9	1	25.0	.4	7.7
Loss of engine power(total) - mech failure/malfunction	1	6.3	.4	1.9	0	.0	.0	.0
Loss of engine power(partial) - mech failure/malfunction	0	.0	.4	1.9	0	.0	.2	3.8
Undershoot	0	.0	.4	1.9	0	.0	.0	.0
Vortex turbulence encountered	0	.0	.4	1.9	0	.0	.0	.0
Not reported	0	.0	.2	0.9	0	.0	.2	3.8
Dragged wing, rotor, pod, or float	0	.0	.2	0.9	0	.0	.0	.0
Explosion	0	.0	.2	0.9	0	.0	.0	.0
Main gear collapsed	0	.0	.2	0.9	0	.0	.0	.0
Nose gear collapsed	0	.0	.2	0.9	0	.0	.0	.0
Gear not extended	1	6.3	.2	0.9	0	.0	.0	.0
Propeller/rotor contact to person	1	6.3	.2	0.9	0	.0	.0	.0
Undetermined	0	.0	.2	0.9	0	.0	.0	.0
Overrun	1	6.3	.0	0.0	0	.0	.0	.0
Total	16	100.0	21.4	100.0	4	100.0	5.2	100.0

Table 36 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Phase of operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Approach	2	12.5	4.8	22.4	0	.0	2.2	42.3
Landing	5	31.3	3.6	16.8	0	.0	.0	.0
Takeoff	1	6.3	2.6	12.1	0	.0	.8	15.4
Taxi	2	12.5	3.4	15.9	0	.0	.2	3.8
Climb	0	.0	.8	3.7	0	.0	.2	3.8
Cruise	3	18.8	2.0	9.3	3	75.0	.8	15.4
Descent	1	6.3	1.4	6.5	0	.0	.0	.0
Standing	1	6.3	1.2	5.6	0	.0	.0	.0
Maneuvering	1	6.3	.8	3.7	1	25.0	.6	11.5
Other	0	.0	.6	2.8	0	.0	.2	3.8
Not Reported	0	.0	.2	.9	0	.0	.2	3.8
Total Aircraft	16	100.0	21.4	100.0	4	100.0	5.2	100.0

Table 37 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	11	68.8	16.6	77.6	4	100.0	4.6	88.5
Other Person (Not Aboard)	5	31.3	9.6	44.9	1	25.0	2.6	50.0
Weather	7	43.8	6.2	29.0	3	75.0	2.4	46.2
Terrain/Runway Condition	6	37.5	5.4	25.2	1	25.0	1.8	34.6
Propulsion System and Controls	1	6.3	3.8	17.8	0	.0	1.0	19.2
Systems/Equipment/ Instruments	0	.0	3.4	15.9	0	.0	1.2	23.1
Object (tree,wires,etc)	1	6.3	3.0	14.0	0	.0	.4	7.7
Light Conditions	3	18.8	3.4	15.9	1	25.0	.8	15.4
Landing Gear	2	12.5	1.6	7.5	0	.0	.0	.0
Airframe	0	.0	1.6	7.5	0	.0	.6	11.5
Airport/Airways Facilities, Aids	1	6.3	1.0	4.7	0	.0	.4	7.7
Flight Control System	0	.0	.4	1.9	0	.0	.4	7.7
Other Person (Aboard)	0	.0	.4	1.9	0	.0	.2	3.8
Total Aircraft	16	100.0	21.4	100.0	4	100.0	5.2	100.0
NTSB Determined Probable Cause	16		21.0		5		5.0	

Nonscheduled 14 CFR 135 Operations

During 1990 there were 106 accidents involving nonscheduled 14 CFR 135 aircraft. This represents a decrease of 17.4 percent from the average of 128.4 accidents per year in this category during the period 1981 through 1989. The average accident rate for the period 1981 - 1989 was 4.71 accidents per 100,000 hours flown. The 1990 rate of 4.73 is slightly higher than the nine year average.

There were 28 fatal accidents in this category which were responsible for 50 fatalities in 1990. During the period 1981 through 1989, there were an average of 30 fatal accidents and 69.7 fatalities per year. The overall rate for 1990 was 1.25 fatal accident per 100,000 hours flown.

Two of the accidents reported in this section involved an on-ground and midair collision between two non-scheduled 14 CFR 135 aircraft. Therefore, this section lists 106 accidents involving 108 aircraft.

Table 38 - SUMMARY OF LOSSES
NONSCHEDULED 14 CFR 135 OPERATIONS
1986 - 1990

	1986	1987	1988	1989	1990
Accidents					
Fatal	31	30	28	25	28
Involved Serious Injury	13	9	15	13	14
Involved Minor or No Injury	73	58	58	73	64
Total	117	97	101	111	106
Fatalities					
Passenger	39	26	31	22	20
Crew	36	35	32	33	28
Other Persons	1	4	2	4	2
Total	76	65	65	59	50
Aircraft Damage (Nonscheduled 14 CFR 135)					
Destroyed	50	38	34	37	38
Substantial	104	77	62	62	68
Minor	2	1	4	1	1
None	1	2	0	1	1
Total	157	118	100	101	108

Table 39 - ACCIDENT RATES
NONSCHEDULED 14 CFR 135 OPERATIONS

	1986	1987	1988	1989	1990
Aircraft Hours Flown	2,690,000	2,657,000	2,632,000	3,020,000	2,241,000
Accident Rates *					
All Accidents	4.35	3.65	3.84	3.68	4.73
Fatal Accidents	1.15	1.13	1.06	0.83	1.25

*Per Hundred Thousand Hours Flown

Table 40 - LIST OF ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/12	Nondalton, AK	Passenger	Cessna 207A	Substantial	None	On ground collision with terrain
1/12	Ocala, FL	Cargo	Cessna 210M	Substantial	None	Loss of power (partial) - mech failure/malfunction
1/15	Anchorage, AK	Cargo	Beech E18F	Substantial	None	Loss of control - in flight
1/16	Appleton, WI	Cargo	Cessna 402B	Destroyed	Fatal (1)	In flight collision with terrain
1/16	Mosinee, WI	Cargo	Cessna 402A	Destroyed	Serious	In flight collision with object
1/17	Leadville, CO	Cargo	Cessna 208A	Destroyed	Fatal (1)	In flight collision with terrain
1/21	Palos Verdes, CA	Passenger	Bellanca 14-19-2	Destroyed	None	Loss of power
1/23	Nashville, TN	Cargo	Mitsubishi MU-2B-20	Substantial	None	Gear not extended
1/25	Oak Creek, WI	Cargo	Beech E18S	Substantial	None	In flight encounter with weather
1/29	Schuyler Falls, NY	Cargo	Cessna 208B	Destroyed	Fatal (1)	Loss of control - in flight
1/29	Williston, VT	Cargo	Cessna 208B	Destroyed	Fatal (2)	Loss of control - in flight
2/04	Winthrop, WA	Passenger	Bell 206B	Substantial	None	Loss of control - on ground
2/05	Baker, OR	Cargo	Cessna 402B	Destroyed	Fatal (1)	In flight encounter with weather
2/09	Teterboro, NJ	Cargo Cargo	Mitsubishi MU-2B-35 Mitsubishi MU-2B-35	Substantial Substantial	None None	On ground collision
2/09	Rapid City, SD	Passenger	Mitsubishi MU-2B-60	Substantial	Fatal (1)	Loss of power (total) - mech failure/malfunction
2/15	Wheeling, IL	Cargo	Cessna T310R	Substantial	None	Loss of control - on ground
2/17	Cold Bay, AK	Cargo	Piper PA-31-350	Destroyed	Fatal (1)	In flight encounter with weather
2/21	Hungry Horse, MT	Cargo	Cessna T207	Destroyed	Minor	Loss of power (total) - mech failure/malfunction
2/21	Carrollton, TX	Cargo	Beech S35	Substantial	Minor	Loss of power (total) - non-mechanical
2/26	Sarasota, FL	Cargo	Cessna 210-M	Destroyed	Serious	Loss of power (total) - mech failure/malfunction

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
2/27	Denver, CO	Cargo	Cessna 208A	Destroyed	Fatal (1)	In flight encounter with weather
3/06	Benton, AL	Passenger	MMB BO-105S	Substantial	None	In flight collision with object
3/06	Lanai, HI	Cargo	Cessna 208B	Substantial	None	Loss of power(total) - non-mechanical
3/06	Alamogordo, NM	Cargo	Cessna 402B	Substantial	None	Airframe/component/system failure/malfunction
3/08	Miami, FL	Pax and Cargo	Aerospatiale 350D	Destroyed	Fatal (2)	Loss of power(total) - mech failure/malfunction
3/15	Lake Butler, FL	Cargo	Piper Aerostar 601	Destroyed	Minor	Loss of power(total) - mech failure/malfunction
3/15	Anderson, SC	Passenger	Learjet 24	Substantial	Serious	Airframe/component/system failure/malfunction
3/16	Almautlak, AK	Cargo	Piper PA-32-301	Destroyed	Fatal (1)	Loss of control - in flight
4/01	Boulder, CO	Passenger	Cessna 421-C	Destroyed	Fatal (2)	Loss of control - in flight
4/01	Saipan, PO	Passenger	Aerospatiale AS350B	Destroyed	None	Airframe/component/system failure/malfunction
4/12	Yuba City, CA	Passenger	Beech F33A	Substantial	None	On ground collision with object
4/13	Grand Canyon, AZ	Passenger	Cessna T207	Destroyed	Serious	Loss of power(total) - non-mechanical
4/14	Drift River, AK	Passenger	Bell 206B	Substantial	None	Loss of control - on ground
4/16	Deadhorse, AK	Cargo	Piper PA-31-350	Substantial	None	Airframe/component/system failure/malfunction
4/17	E. Island Blk15, GM	Pax and Cargo	Bell 206L1	None	Serious	Loss of power(total) - mech failure/malfunction
4/20	Dallas, TX	Cargo	Beech 58	Destroyed	Fatal (1)	Loss of power(total) - non-mechanical
4/21	Williamsport, AK	Passenger	Bell 206B3	Substantial	None	Loss of power(total) - mech failure/malfunction
4/22	Prnc Frederick, MD	Passenger	Robinson R22	Substantial	Minor	Loss of control - on ground
4/27	Tulas, OK	Cargo	Piper PA-32-260	Destroyed	Minor	Loss of power(total) - mech failure/malfunction
5/04	Glennallen, AK	Passenger	Piper PA-18	Substantial	Serious	In flight collision with terrain
5/04	Wilmington, NC	Cargo	Nomad N-24A	Destroyed	Fatal (2)	In flight collision with object

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
5/08	Kaplan, LA	Passenger	Bell 206BIII	Substantial	None	Roll over
5/29	Chatham, AK	Passenger	DeHavilland DHC-2	Substantial	Minor	Loss of power
5/29	Ketchikan, AK	Pax and Cargo	DeHavilland DHC-2	Substantial	None	On ground collision with object
6/01	Las Cruces, NM	Passenger	Hughes 369HS	Substantial	Serious	Loss of power
6/05	Marble Canyon, AZ	Passenger	Cessna T210L	Substantial	Serious	Overrun
6/06	Fresno, CA	Cargo	Cessna 208A	Destroyed	Serious	Loss of power(total) - mech failure/malfunction
6/07	Toledo, OH	Passenger	Cessna 207	Substantial	None	In flight collision with object
6/09	Bethel, AK	Cargo	Piper PA-32	Substantial	Fatal (1)	Loss of power(total) - non-mechanical
6/15	Challis, ID	Cargo	Cessna TU206G	Destroyed	Fatal (2)	In flight collision with object
6/17	Taku, AK	Passenger Passenger	Cessna 206U Cessna 206G	Minor Substantial	None None	Midair collision
6/23	Kako Mine Strip, AK	Cargo	Shorts SH-7	Substantial	None	Loss of control - on ground
6/25	Aialak Bay, AK	Passenger	Cessna 207A	Destroyed	Fatal (5)	In flight collision with terrain
6/26	Panama City, FL	Passenger	Piper PA-31	Destroyed	Fatal (2)	Loss of power(partial) - non-mechanical
6/27	Caribou Lake, AK	Pax and Cargo	DeHavilland DHC-2	Substantial	None	Loss of power(total) - mech failure/malfunction
6/30	Beaver Village, AK	Pax and Cargo	DeHavilland DHC-3	Substantial	Minor	Loss of power(partial)-mech failure/malfunction
6/30	Glacier, WA	Passenger	Aerospatiale AS350B	Substantial	Fatal (1)	Propeller/rotor contact
7/02	King Salmon, AK	Passenger	Cessna 185	Substantial	None	Loss of power(total)-mech failure/malfunction
7/02	Ashford, WA	Passenger	Cessna T210L	Destroyed	Fatal (5)	In flight collision with terrain
7/10	Teterboro, NJ	Pax and Cargo	Bell 206B3	Substantial	None	Loss of power(total) - mech failure/malfunction
7/12	Pinon, AZ	Passenger	Cessna T210N	Destroyed	Fatal (3)	In flight collision with object
7/14	Farewell, AK	Pax and Cargo	Bell 206L1	Substantial	Serious	Loss of power(total) - mech failure/malfunction

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
7/18	Goodnews Bay, AK	Passenger	Bell 206B	Substantial	None	Roll over
7/23	Plymouth, MI	Cargo	Piper PA-60-600	Destroyed	Fatal (3)	Midair collision
7/24	Sarasota, FL	Passenger	Bell 206B	Substantial	Minor	Loss of control - in flight
7/25	Quincy, CA	Passenger	Bell 206B	Substantial	None	Loss of power(total) - non-mechanical
7/27	Holy Cross, AK	Passenger	Cessna 206G	Substantial	None	Loss of power
8/02	Tucson, AZ	Cargo	Cessna 180	Substantial	None	Propeller blast or jet exhaust/suction
8/02	Chicopee, MA	Pax and Cargo	Beech 58P	Substantial	None	Loss of power(total) - non-mechanical
8/03	Falls Creek, AK	Passenger	Piper PA-18	Substantial	None	Loss of control - in flight
8/05	Tetlin, AK	Passenger	Cessna 207	Substantial	Serious	Loss of control - on ground
8/07	Athens, OH	Passenger	Bell 206	Substantial	Minor	In flight collision with object
8/08	Talkeetna, AK	Pax and Cargo	Cessna 185	Substantial	None	Airframe/component/system failure/malfunction
8/08	Arctic Village, AK	Pax and Cargo	Helio HE-3/H-295	Substantial	None	Loss of power
8/09	Greenwood, SC	Cargo	Beech E18S	Destroyed	Fatal (1)	Loss of power(total) - mech failure/malfunction
8/12	Wrangell, AK	Passenger	Cessna A185F	Destroyed	Fatal (1)	Loss of control - in flight
8/17	Juneau, AK	Passenger	Aerospatiale AS350B	Substantial	None	Loss of power(total) - mech failure/malfunction
8/19	Meeteetse, WY	Passenger	Aerospatiale SA316B	Destroyed	Serious	Loss of control - in flight
8/27	Elkhorn, WI	Passenger	Bell 206B	Destroyed	Fatal (5)	In flight collision with terrain
8/31	Alagnak River, AK	Passenger	DeHavilland DHC-2	Substantial	None	On ground collision with terrain
9/05	Weatherford, TX	Cargo	Beech C55	Substantial	None	Loss of power(total) - non-mechanical
9/07	Deering, AK	Cargo	Beech H-18S	Substantial	None	Loss of control - on ground
9/11	Monroe, MI	Pax and Cargo	Piper PA-60lP	Substantial	None	Airframe/component/system failure/malfunction
9/12	Port O'Connor, TX	Passenger	Bell B206L1	Destroyed	Fatal (1)	In flight collision with terrain

Table 40 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
9/17	Upper Colleen, AK	Passenger	Cessna 185	Substantial	None	Main gear collapsed
9/21	Flagstaff, AZ	Cargo	Piper PA-31-350	Destroyed	Fatal (1)	In flight encounter with weather
9/22	Coal Creek, AK	Pax and Cargo	Piper PA-18-150	Substantial	None	Overrun
9/22	King Salmon, AK	Cargo	DeHavilland DHC-3	Substantial	None	Overrun
9/24	Twin Falls, ID	Mail Only	Beech C-45H	Substantial	Minor	Loss of control - on ground
10/02	Seattle, WA	Passenger	Beech 58	Substantial	None	Nose gear collapsed
10/04	Kennsington, AK	Passenger	Hughes 500D	Substantial	Serious	Roll over
10/05	Minneapolis, MN	Cargo	Beech E-18	Substantial	None	Loss of control - on ground
10/05	Rolling Fork, MS	Passenger	Piper PA-28-181	Substantial	None	On ground collision with terrain
10/06	Koyuktolik, AK	Cargo	Cessna 185B	Substantial	None	Loss of control - on ground
10/29	Colubuus, OH	Cargo	Cessna 310	Substantial	None	On ground collision with object
11/08	Pocatello, ID	Cargo	Cessna 402B	Substantial	None	In flight encounter with weather
11/12	Pittsburgh, PA	Cargo	Cessna 404	Substantial	None	Nose gear collapsed
11/20	Clovis, NM	Cargo	Cessna T210L	Destroyed	Serious	In flight collision with terrain
11/27	Grand Island, NE	Cargo	Cessna 401	Substantial	None	Hard landing
12/03	Vernal, UT	Passenger	Aerospatiale SA316B	Destroyed	Minor	Airframe/component/system failure/malfunction
12/11	Kongikank, AK	Cargo	Piper PA-32	Substantial	None	Loss of control - in flight
12/17	Anacortes, WA	Passenger	Cessna 182-E	Substantial	None	Loss of control - on ground
12/18	Thompson, UT	Cargo	Cessna 182H	Destroyed	Fatal (1)	In flight collision with terrain
12/18	Evanston, WY	Cargo	Piper PA-31-350	Destroyed	Fatal (1)	In flight collision with terrain
12/26	Richland, VA	Passenger	Cessna 402	Substantial	None	Loss of control - on ground
12/28	Rock Sound, BH	Passenger	Piper PA-31-350	Destroyed	Minor	Not reported

Table 41 - PERSONS BY ROLE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of Injury				
Role of Person	Fatal	Serious	Minor	None	Total
Pilot	26	12	8	62	108
Copilot	2	0	1	5	8
Other crew	0	1	0	4	5
Passenger	20	22	23	91	156
Total aboard	48	35	32	162	277
Other aircraft*	2	0	0	0	2
Other ground	0	1	1	0	2
Grand total	50	36	33	162	281
Percent	17.8	12.8	11.7	57.7	

* 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
1990

	Degree of injury				Aircraft	
Aircraft damage	None	Minor	Ser	Fatal	No.	Percent
None	0	0	1	0	1	.9
Minor	1	0	0	0	1	.9
Substantial	51	7	7	3	68	63.0
Destroyed	2	5	6	25	38	35.2
Aircraft						
Number -	54	12	14	28	108	
Percent -	50.0	11.1	13.0	25.9		

Table 43 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED14 CFR 135 OPERATIONS
1990

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	5	1	1	0	0	0	5	2	7	6.5
Main gear collapsed	1	0	0	0	0	0	1	0	1	.9
Nose gear collapsed	2	0	0	0	0	0	2	0	2	1.9
Gear not extended	1	0	0	0	0	0	1	0	1	.9
Hard landing	1	0	0	0	0	0	1	0	1	.9
In flight collision with object	2	1	1	3	0	0	3	4	7	6.5
In flight collision with terrain	0	0	2	8	0	0	1	9	10	9.3
In flight encounter with weather	2	0	0	4	0	0	2	4	6	5.6
Loss of control - in flight	3	1	1	5	0	0	4	6	10	9.3
Loss of control - on ground	9	2	1	0	0	0	12	0	12	11.1
Midair collision	2	0	0	1	0	1	1	1	3	2.8
On ground collision with object	5	0	0	0	0	0	5	0	5	4.6
On ground collision with terrain	3	0	0	0	0	0	3	0	3	2.8
Overrun	2	0	1	0	0	0	3	0	3	2.8
Loss of power	3	1	1	0	0	0	4	1	5	4.6
Loss of power(total) - mech failure/malfunction	5	3	4	3	1	0	7	7	15	13.9
Loss of power(partial) - mech failure/malfunction	1	1	0	0	0	0	2	0	2	1.9
Loss of power(total) - non-mechanical	4	1	1	2	0	0	6	2	8	7.4
Loss of power(partial) - non-mechanical	0	0	0	1	0	0	0	1	1	.9
Propeller blast or jet exhaust/ suction	1	0	0	0	0	0	1	0	1	.9
Propeller/rotor contact	0	0	0	1	0	0	1	0	1	.9
Roll over	2	0	1	0	0	0	3	0	3	2.8
Not reported	0	1	0	0	0	0	0	1	1	.9
Aircraft										
Number -	54	12	14	28	1	1	68	38	108	
Percent -	50.0	11.1	13.0	25.9	.9	.9	63.0	35.2		

Table 44 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Type of first occurrence	Phase of operation										Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Manvr	Other	No.	Percent
Airframe/component/system failure/malfunction	0	0	2	0	2	1	0	2	0	0	7	6.5
Main gear collapsed	0	0	0	0	0	0	0	1	0	0	1	0.9
Nose gear collapsed	0	0	0	0	0	0	0	2	0	0	2	1.9
Gear not extended	0	0	0	0	0	0	0	1	0	0	1	0.9
Hard landing	0	0	0	0	0	0	0	1	0	0	1	0.9
In flight collision w/object	0	0	2	0	1	0	2	0	1	1	7	6.5
In flight collision w/terrain	0	0	1	1	2	2	3	0	1	0	10	9.3
In flight encounter w/weather	0	0	0	0	4	0	2	0	0	0	6	5.6
Loss of control - in flight	0	0	4	0	3	0	1	0	2	0	10	9.3
Loss of control - on ground	1	0	2	0	0	0	0	9	0	0	12	11.1
Midair collision	0	0	0	0	3	0	0	0	0	0	3	2.8
On ground collision w/object	1	3	0	0	0	0	0	1	0	0	5	4.6
On ground collision w/terrain	0	0	1	0	0	0	0	0	0	2	3	2.8
Overrun	0	0	2	0	0	0	0	1	0	0	3	2.8
Loss of power	0	0	1	1	2	1	0	0	0	0	5	4.6
Loss of power(total) - mech failure/malfunction	0	0	4	3	4	0	3	0	1	0	15	13.9
Loss of power(partial) - mech failure/malfunction	0	0	0	0	1	1	0	0	0	0	2	1.9
Loss of power(total) - non-mechanical	0	0	3	0	3	1	1	0	0	0	8	7.4
Loss of power(partial) - non-mechanical	0	0	1	0	0	0	0	0	0	0	1	0.9
Propeller blast or jet exhaust	0	1	0	0	0	0	0	0	0	0	1	0.9
Propeller/rotor contact	1	0	0	0	0	0	0	0	0	0	1	0.9
Roll over	0	0	3	0	0	0	0	0	0	0	3	2.8
Not reported	0	0	0	0	0	0	0	0	0	1	1	0.9
Aircraft												
Number -	3	4	26	5	25	6	12	18	5	4	108	
Percent -	2.8	3.7	24.1	4.6	23.1	5.6	11.1	16.7	4.6	3.7		

Table 45 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Phase of operation	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing - engine(s) operating	1	0	0	1	0	0	2	0	2	1.9
Standing - idling rotors	0	1	0	0	0	0	1	0	1	0.9
Taxi - to takeoff	2	0	0	0	0	0	2	0	2	1.9
Taxi - from landing	2	0	0	0	0	0	2	0	2	1.9
Takeoff	2	0	1	0	0	0	3	0	3	2.8
Takeoff - ground run	3	1	0	0	0	0	4	0	4	3.7
Takeoff - initial climb	9	0	2	8	0	0	12	7	19	17.6
Climb	2	0	0	1	0	0	2	1	3	2.8
Climb - to cruise	0	1	1	0	0	0	1	1	2	1.9
Cruise	3	2	3	3	1	0	5	5	11	10.2
Cruise - normal	7	3	0	4	0	1	6	7	14	13.0
Descent	0	2	0	2	0	0	1	3	4	3.7
Descent - normal	2	0	0	0	0	0	2	0	2	1.9
Approach	1	0	0	2	0	0	1	2	3	2.8
Approach - VFR pattern - final approach	1	0	1	0	0	0	2	0	2	1.9
Approach - go-around (VFR)	0	0	1	0	0	0	0	1	1	0.9
Approach - FAF/outer marker to threshold (IFR)	0	1	2	2	0	0	0	5	5	4.6
Approach - circling(IFR)	0	0	0	1	0	0	0	1	1	0.9
Landing	1	0	0	0	0	0	1	0	1	0.9
Landing - flare/touchdown	5	0	0	0	0	0	5	0	5	4.6
Landing - roll	10	0	2	0	0	0	12	0	12	11.1
Maneuvering	0	0	1	1	0	0	1	1	2	1.9
Maneuvering - turn to reverse direction	0	0	0	2	0	0	0	2	2	1.9
Hover	1	0	0	0	0	0	1	0	1	0.9
Not reported	0	1	0	0	0	0	0	1	1	0.9
Other	2	0	0	1	0	0	2	1	3	2.8
Aircraft										
Number -	54	12	14	28	1	1	68	38	108	
Percent -	50.0	11.1	13.0	25.9	.9	.9	63.0	35.2		

Table 46 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Dawn	3	2	1	6	5.6
Daylight	70	6	2	78	72.2
Night (dark)	14	7	1	22	20.4
Night (bright)	1	0	0	1	.9
Not Reported	1	0	0	1	.9
Aircraft					
Number -	89	15	4	108	
Percent -	82.4	13.9	3.7		

Table 47 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Domestic Passenger	24	5	8	9	46	42.6
Domestic Cargo	21	4	4	17	46	42.6
Domestic Pass/Cargo	8	1	2	0	11	10.2
Domestic Mail Contact Only	0	1	0	0	1	.9
International Passenger	0	1	0	1	2	1.9
Internatioanl Cargo	1	0	0	0	1	1.9
International Pass/Cargo	0	0	0	1	1	1.9
Aircraft						
Number -	54	12	14	28	108	
Percent -	50.0	11.1	13.0	25.9		

Table 48 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

Accident location	Flight plan					Aircraft	
	None	VFR	IFR	VFR/ IFR	Cmpny VFR	No.	Percent
Off airport/airstrip	20	12	21	0	20	73	67.6
On airport	2	10	9	1	4	26	24.1
On airstrip	1	1	2	0	4	8	7.4
Other	0	1	0	0	0	1	.9
Aircraft							
Number -	23	24	32	1	28	108	
Percent -	21.3	22.2	29.6	0.9	25.9		

Table 49 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Aircraft fire	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	52	11	10	14	1	1	63	22	87	80.6
In-flight	1	0	1	0	0	0	2	0	2	1.9
On ground	0	0	3	14	0	0	2	15	17	15.7
Other	1	1	0	0	0	0	1	1	2	1.9
Aircraft										
Number -	54	12	14	28	1	1	68	38	108	
Percent -	50.0	11.1	13.0	25.9	.9	.9	63.0	35.2		

Table 50 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Degree of injury				Aircraft damage				Aircraft	
Type of aircraft	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
All Fixed Wing *	44	8	9	24	0	1	52	32	85	78.7
Fixed Wing Single Recip. Eng.	23	5	6	8	0	1	28	13	42	38.9
Fixed Wing Multiple Recip. Eng.	15	3	1	10	0	0	16	13	29	26.9
Fixed Wing Turboprop	6	0	1	6	0	0	7	6	13	12.0
Fixed Wing Turbojet	0	0	1	0	0	0	1	0	1	.9
All Rotorcraft *	10	4	5	4	1	0	16	6	23	21.3
Rotorcraft, Recip. Engine	0	1	0	0	0	0	1	0	1	.9
Rotorcraft, Turbine Engine	10	3	5	4	1	0	15	6	22	20.4
Aircraft										
Number -	54	12	14	28	1	1	68	38	108	
Percent -	50.0	11.1	13.0	25.9	.9	.9	63.0	35.2		

* Not included in column totals

Table 51 - BROAD CAUSE/FACTOR ASSIGNMENTS*
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

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 #	4	36	2	8	6	41
Propulsion System and Controls	3	25	2	7	5	29
Airframe	1	3	0	1	1	4
Landing Gear	0	7	0	1	0	8
Systems/Equipment/ Instruments	0	4	0	0	0	4
Environment #	1	2	19	51	19	52
Weather	1	1	16	30	16	30
Light Conditions	0	0	5	7	5	7
Object(trees,wires,etc.)	0	1	3	6	3	7
Airport/Airways Facilities, Aids	0	0	0	1	0	1
Terrain/Runway Condition	0	0	6	27	6	27
Personnel #	26	79	11	28	26	84
Pilot	24	69	10	24	24	73
Others (Aboard)	2	2	0	0	2	2
Others (Not Aboard)	1	13	2	6	3	18
Number of Aircraft					28	108
NTSB Determined Probable Cause					28	107

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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
1981 - 1990

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1981	157	40	94	92	2,895,827	5.42	1.38
1982	132	31	72	72	3,008,000	4.39	1.03
1983	141	27	62	57	2,378,000	5.93	1.14
1984	146	23	52	52	2,843,000	5.14	0.81
1985	154	35	76	75	2,570,000	5.99	1.36
1986	117	31	65	61	2,690,000	4.35	1.15
1987	97	30	65	63	2,657,000	3.65	1.13
1988	101	28	59	55	2,632,000	3.84	1.06
1989	111	25	83	81	3,020,000	3.68	0.83
1990	106	28	50	48	2,241,000	4.73	1.25

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

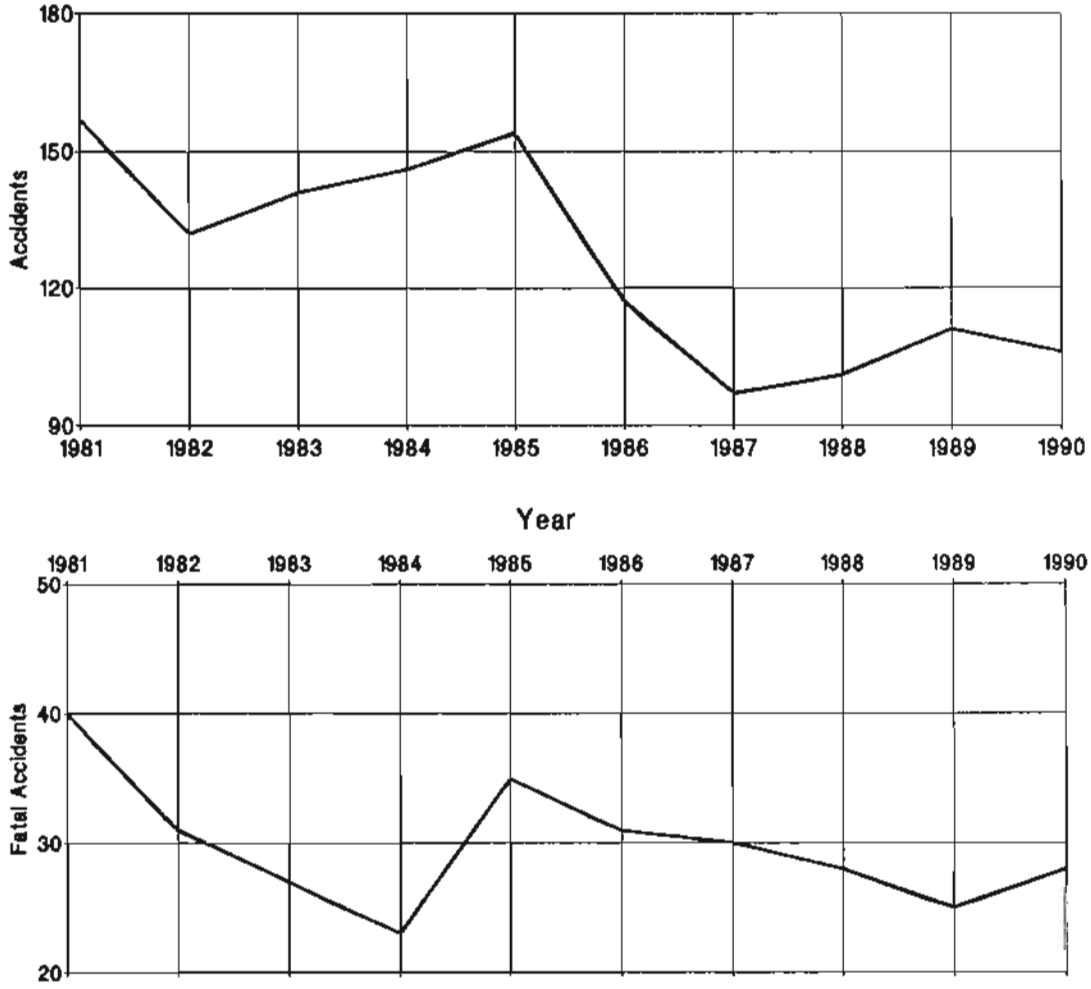

Figure 14 - NUMBER OF FATALITIES
NONSCHEDULED 14 CFR 135 OPERATIONS

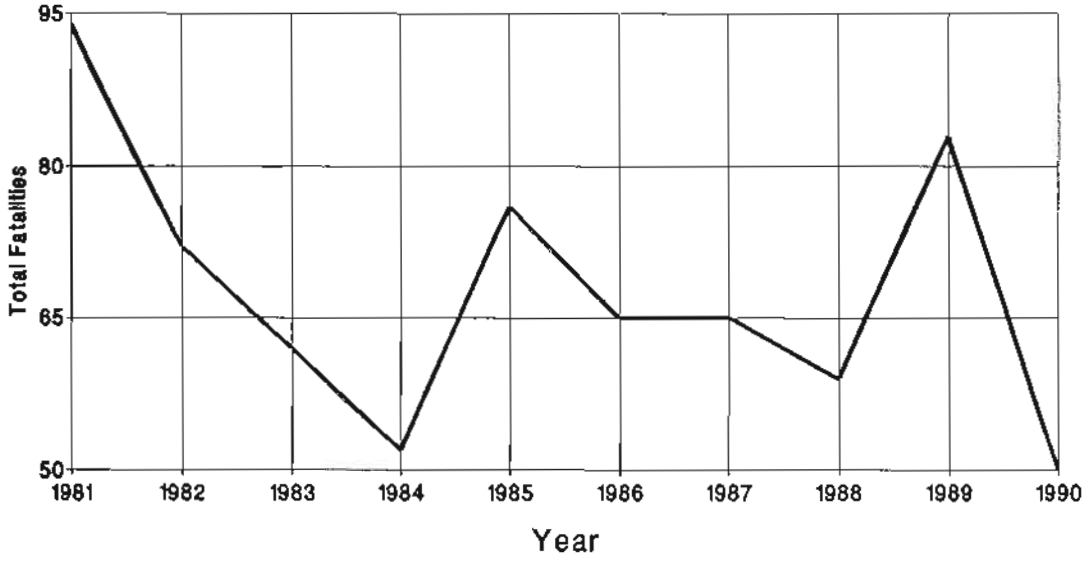

Figure 15 - ACCIDENT RATE PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 135 OPERATIONS

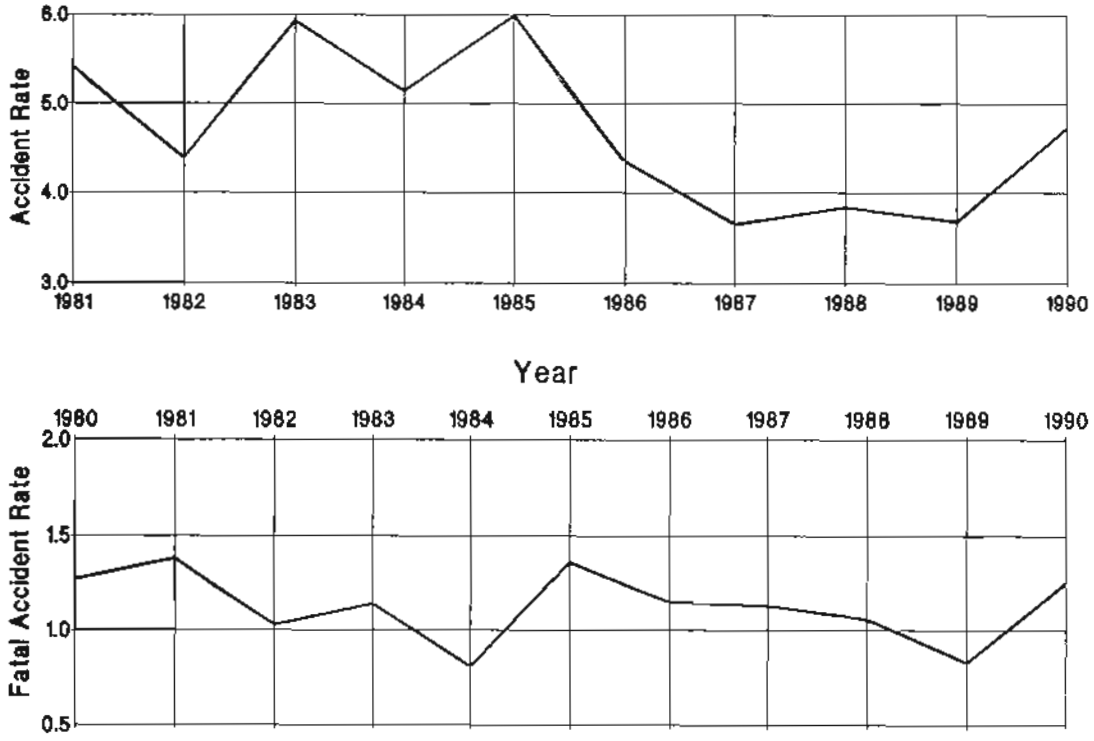

Table 53 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

Type of Occurrence	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Loss of control - in flight	10	9.3	12.6	10.7	5	17.9	6.8	22.7
Loss of control - on ground	12	11.1	10.8	9.2	0	.0	.2	.7
In flight collision w/terrain	10	9.3	10.6	9.0	8	28.6	5.2	17.3
In flight encounter with weather	6	5.6	10.0	8.5	4	14.3	4.6	15.3
Airframe/component/system failure/malfunction	7	6.5	9.0	7.7	0	.0	2.6	8.7
In flight collision with object	7	6.5	8.4	7.1	3	10.7	2.6	8.7
Loss of engine power(total) - mech failure/malfunction	15	13.9	7.4	6.3	3	10.7	1.2	4.0
Loss of engine power(total) - non-mechanical	8	7.4	6.6	5.6	2	7.1	.6	2.0
On ground collision with object	5	4.6	6.0	5.1	0	.0	.6	2.0
Loss of engine power	5	4.6	3.8	3.2	0	.0	1.2	4.0
Loss of engine power(partial) - mech failure/malfunction	2	1.9	3.6	3.1	0	.0	.8	2.7
Overrun	3	2.8	3.4	2.9	0	.0	.0	.0
On ground collision w/terrain	3	2.8	2.6	2.2	0	.0	.0	.0
Main gear collapsed	1	.9	2.2	1.9	0	.0	.0	.0
Fire	0	.0	2.0	1.7	0	.0	.8	2.7
Hard landing	1	.9	2.0	1.7	0	.0	.0	.0
Midair collision	3	2.8	1.8	1.5	1	3.6	1.0	3.3
Undershoot	0	.0	1.8	1.5	0	.0	.2	.7
Loss of engine power(partial) - non-mechanical	1	.9	1.6	1.4	1	3.6	.0	.0
Not reported	1	.9	1.2	1.0	0	.0	.0	.0
Nose over	0	.0	1.2	1.0	0	.0	.0	.0
Miscellaneous/other	0	.0	1.2	1.0	0	.0	.0	.0
Altitude deviation,uncontrolled	0	.0	1.0	.9	0	.0	.2	.7
Abrupt maneuver	0	.0	.8	.7	0	.0	.6	2.0
Explosion	0	.0	.8	.7	0	.0	.2	.7
Nose gear collapsed	2	1.9	.8	.7	0	.0	.0	.0
Gear not extended	1	.9	.8	.7	0	.0	.0	.0
Fire/explosion	0	.0	.6	.5	0	.0	.0	.0
Roll over	3	2.8	.6	.5	0	.0	.0	.0
On ground encounter with weather	0	.0	.4	.3	0	.0	.0	.0
Propeller/rotor contact to person	1	.9	.4	.3	1	3.6	.0	.0
Undetermined	0	.0	.4	.3	0	.0	.4	1.3
Dragged wing, rotor, pod, or float	0	.0	.2	.2	0	.0	.0	.0
Forced landing	0	.0	.2	.2	0	.0	.0	.0
Gear collapsed	0	.0	.2	.2	0	.0	.0	.0
Other gear collapsed	0	.0	.2	.2	0	.0	.0	.0
Gear not retracted	0	.0	.2	.2	0	.0	.0	.0
Missing aircraft	0	.0	.2	.2	0	.0	.2	.0
Propeller blast or jet exhaust	1	.9	.0	.0	0	.0	.0	.0
Total	108	100.0	117.6	100.0	28	100.0	30.0	100.0

Table 54 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Phase of operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Takeoff	28	25.9	23.4	19.9	8	28.6	4.4	14.7
Cruise	25	23.1	23.0	19.6	7	25.0	7.4	24.7
Landing	19	17.6	23.2	19.7	1	3.6	1.2	4.0
Approach	12	11.1	17.0	14.5	5	17.9	7.2	24.0
Maneuvering	5	4.6	9.8	8.3	3	10.7	4.2	14.0
Climb	5	4.6	6.0	5.1	1	3.6	2.6	8.7
Taxi	4	3.7	6.0	5.1	0	.0	.0	.0
Descent	6	5.6	4.0	3.4	2	7.1	1.8	6.0
Standing	3	2.8	2.6	2.2	1	3.6	.4	1.3
Other	1	0.9	2.6	2.2	0	.0	.8	2.7
Total Aircraft	108	100.0	117.6	100.0	28	100.0	30.0	100.0

Table 55 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1990 AND 1985 - 1989

	All Accidents				Fatal Accidents			
	1990		1985 - 1989		1990		1985 - 1989	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	73	67.6	90.8	77.2	24	85.7	25.6	85.3
Weather	30	27.8	39.8	33.8	16	57.1	13.6	45.3
Terrain/Runway Condition	27	25.0	37.4	31.8	6	21.4	8.8	29.3
Propulsion System and Controls	29	26.9	24.2	20.6	5	17.9	4.8	16.0
Other Person (Not Aboard)	18	16.7	19.4	16.5	3	10.7	8.2	27.3
Light Conditions	7	6.5	21.0	17.9	5	17.9	8.8	29.3
Object (tree,wires,etc)	7	6.5	18.4	15.6	3	10.7	5.4	18.0
Landing Gear	8	7.4	8.4	7.1	0	.0	.2	.7
Systems/Equipment/ Instruments	4	3.7	10.0	8.5	0	.0	2.8	9.3
Airframe	4	3.7	5.4	4.6	1	3.6	1.8	6.0
Flight Control System	0	.0	2.8	2.4	0	.0	1.2	4.0
Airport/Airways Facilities, Aids	1	.9	2.0	1.7	0	.0	.4	1.3
Other Person (Aboard)	2	1.9	.2	.2	2	7.1	.0	.0
Total Aircraft	108	100.0	117.6	100.0	28	100.0	30.0	100.0
NTSB Determined Probable Cause	107		115.8		28		30.0	

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ CARL W. VOGT
Chairman

/s/ SUSAN M. COUGHLIN
Vice Chairman

/s/ JOHN K. LAUBER
Member

/s/ JOHN HAMMERSCHMIDT
Member

/s/ CHRISTOPHER A. HART
Member

APPENDIX A
MIDAIR COLLISION ACCIDENTS
U.S. AIR CARRIER OPERATIONS
1981 - 1990

	Accidents			Number of Accidents by Segements of Aviation Involved		
Year	Total	Fatal	Total Fatalities	S135 and GA	N135 and N135	N135 and GA
1981	4	3	20	1	1	2
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
	22	13	68	7	5	10

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.

APPENDIX C

DETAILED CAUSE/FACTOR ASSIGNMENTS
14 CFR 121 125 127 OPERATIONS

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1990

	Cause or Factor	Cause
AIRCRAFT		
Air cond/heating/pressurization	1	1
Fire warning system,powerplant	1	0
Fuel system,pump	1	1
Landing gear,nose gear	1	1
Propeller system/accessories	1	1
Reduction gear assy	1	1
FACILITY		
Airport facilities,runway marking	2	0
Airport facilities,taxiway marking	2	0
ENVIRONMENT		
Dark night	1	0
Fog	2	0
Other person	1	1
Rain	1	0
Turbulence	1	1
Turbulence(thunderstorms)	1	0
Turbulence,clear air	2	2
FLIGHT CREW		
APU	1	1
Aborted takeoff	1	0
Airspeed	1	1
Airspeed(Vr)	1	0
Airspeed(Vref)	1	1
Crew/group coordination	3	2
Descent	1	1
Evacuation	1	1
Flight manuals	1	0
IFR procedure	1	1
Identification of aircraft visually	1	1
In-flight planning/decision	1	1
Maneuver	1	0
Miscellaneous	1	1
Monitoring	1	1
Procedures/directives	2	2
Rotation	2	2
Supervision	1	0
Visual lookout	1	1
Visual/aural perception	1	0
OTHER PERSON		
Clearance	1	1
Control tower service	3	0
Crew/group coordination	1	1
Emergency equipment	1	1
Equipment, other	1	1
IFR separation standards	1	1
Inadequate surveillance of operation	2	0
Inadequate training	1	0
Maintenance,adjustment	1	0
Maintenance,modification	1	1
Miscellaneous	1	1
Passenger briefing	1	1
Procedure inadequate	1	1
Procedures/directives	1	1
Self-induced pressure	1	0

APPENDIX D

DETAILED CAUSE/FACTOR ASSIGNMENTS
SCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
SCHEDULED 14 CFR 135 OPERATIONS
1990

	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
1990

	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

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Cause or Factor	Cause
Environment (continued)		
Low ceiling	6	0
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

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1990

	Cause or Factor	Cause
FLIGHT CREW(continued)		
Radar assistance to VFR aircraft	1	0
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

1 NTSB Accident/Incident Number

2 [1] Accident [2] Incident

3 Investigation [1] NTSB [2] FAA Delegated

4 Aircraft Registration Number	5 Flight Number ____ A Other	*For collision between aircraft, enter reg. no. and flt. no. for other aircraft*	6 Aircraft Registration Number	7 Flight Number ____ A Other

8 Nearest City/Place	9 State	10 Zip Code *(First 5 numbers only)*	11 Accident Site Elevation ____ Feet MSL

12 Date of Accident *(Nos for M, D, Y)*	13 Day of Week *(First 2 letters)*	14 Local Time *(24 hour clock)*	15 Time Zone

16 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:

17 Date *(Nos for M, D, Y)*	18 Agency	19 Name/Signature

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

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

Attach additional pages as necessary (Page 2a, 2b, 2c, etc.)

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Airport/Approach/Landing Information

24 ☐ Not applicable *(Go to block 39)*

25 Airport Name
_____
A Other

26 Airport Identifier
_____

27 Accident Location
1 ☐ Off airport/airstrip
2 ☐ On airport
3 ☐ On airstrip
A Other

28 Distance From Airport Center *(Nearest SM)*
_____ SM
A Other

29 Direction From Airport
_____ °mag
A Other

30 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
A Other

31 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
A Other

32 Runway Used Identifier
_____
A Other

33 Runway Length
_____ Feet
A Other

34 Runway Width
_____ Feet
A Other

35 Airport Elevation
_____ Ft. MSL
A Other

36 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
A Other

37 Runway/Landing Surface Condition
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
A Other

If accident occurred during approach, departure or on airport, see instructions for completing Supplement Q.

Aircraft Information

39 Aircraft Manufacturer

40 Aircraft Model/Series

41 Serial No.
_____
A Other

42 Certificated Maximum Gross Weight
_____
A Other

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

44 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
A Other

45 Home Built
1 ☐ Yes
2 ☐ No
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Aircraft Information (continued)

46 Landing Gear *(Multiple entry)*

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
A Other

48 No. of Seats
_____
A Other

49 Stall Warning System Installed
1 ☐ Yes
2 ☐ No
A Other

50 IFR Equipped
1 ☐ Yes
2 ☐ No
A Other

51 Icing Certification/Equipped *(Multiple entry)*
1 ☐ Certified
2 ☐ Not Certified
3 ☐ Equipped
4 ☐ Not Equipped
A Other

52 Engine Type
1 ☐ Reciprocating—carburetor
2 ☐ Reciprocating—fuel injected
3 ☐ Turbo prop
4 ☐ Turbo jet
5 ☐ Turbo fan
6 ☐ Turbo shaft
A Other

If not Engine powered, go to block 59

53 Engine Manufacturer

54 Engine Model and Series

55 Engine Rated Power
A _____ Horsepower
B _____ Lbs. Thrust
C Other

56 Number of Engines
_____
A Other

If 3 or more engines enter times in Supp. C

Engine Time (Hours)	A Total Time	B Time Since Inspection	C Time Since Major Overhaul	D Other
57 Engine No. 1				
58 Engine No. 2				

59 Type Maintenance Program
1 ☐ Annual
2 ☐ Manufacturer's Inspection Program
3 ☐ Other approved inspection program (AAIP)
4 ☐ Continuous airworthiness
A Other

60 Type of Last Inspection
1 ☐ Annual
2 ☐ 100 hour
3 ☐ AAIP
4 ☐ Continuous airworthiness
A Other

61 Date Last Inspection Performed *(Nos. for M, D, Y)*
_____
A Other

62 Time Since Inspection
_____ Hours
A Other

63 Airframe Total Time
_____ Hours
A Other

64 Source of Maintenance Information
1 ☐ Tach
2 ☐ Flight
3 ☐ Hobbs
4 ☐ Logbooks Records
5 ☐ Estimate
6 ☐ Pilot/Operator Report
A Other

65 Hazardous Materials on Aircraft
1 ☐ No
A *(Type)* _____
B Other

66 Hazardous Material Spill/Factor
1 ☐ Yes
2 ☐ No
A Other

Emergency Locator Transmitter (ELT)	1 Yes	2 No	A Other
67 Installed			
68 Required			
69 Operated			
70 Aided in location of accident site			

Owner/Operator Information

71 Registered Aircraft Owner
Name

72 Address

73 Operator of Aircraft 1 ☐ Same as registered owner
A Name:
B dba
C Other

74 Address 1 ☐ Same as registered owner
A _____
_____
B Other

75 Operator Certificate No.
_____
A Other

76 Operator Designator Code

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Owner/Operator Information (continued)

77 Operator Status of This Aircraft
1 Owner
2 Lessee
3 Renter
4 Borrower
5 Unauthorized
A Other

78 Pilot Status of This Aircraft
1 Owner
2 Lessee
3 Renter
4 Borrower
5 Unauthorized
6 Employee
A Other

Type of Certificate(s) Held

79 None (Go to block 83)

80 Air Carrier Operating 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

81 Operating Certificate
Other operator of large aircraft

82 Operator Certificate
1 Rotorcraft—external load operator (133)
2 Agricultural aircraft (137)

Regulation Flight Conducted Under

83 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 84a, b, c **ONLY** if flight was a revenue operation conducted under 121, 125, 127, 129, 135)

84a
1 Scheduled
2 Non-scheduled

84b
1 Domestic
2 International

84c
1 Passenger
2 Cargo
3 Passenger/cargo
4 Mail contract ONLY

(Complete 86 **ONLY** if 84a, b, c is not applicable)

86
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

87 Name (Last, First, Initial)
A Other

88 Pilot Certificate No.
A Other

89 Street Address
A Other

90 City
A Other

91 State

92 Date of Birth (Nos. for M, D, Y)
A Other

93 Age
_____ Yrs.
A Other

94 Sex
1 Male
2 Female

95 Seat Occupied
1 Left
2 Right
3 Center
4 Front
5 Rear
A Other

96 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
A Other

97 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
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

First Pilot Information *(continued)* *(Multiple entry - blocks 98-102)*

98 Ratings—Airplane
1 ☐ None
2 ☐ Single engine land
3 ☐ Multiengine land
4 ☐ Single engine sea
5 ☐ Multiengine sea

99 Rotorcraft/Glider/LTA
1 ☐ None
2 ☐ Helicopter
3 ☐ Gyroplane
4 ☐ Airship
5 ☐ Free balloon
6 ☐ Glider

100 Instrument Rating
1 ☐ None
2 ☐ Airplane
3 ☐ Helicopter

101 Instructor Rating(s)
1 ☐ None
2 ☐ Airplane SE
3 ☐ Airplane ME
4 ☐ Helicopter
5 ☐ Gyroplane
6 ☐ Glider
7 ☐ Instrument plane
8 ☐ Instrument helicopter

102 Ground Instructor
1 ☐ None
2 ☐ Basic
3 ☐ Advanced
4 ☐ Instrument

103 Type Rating Endorsement This Aircraft
1 ☐ Yes
2 ☐ No *(Go to block 105)*
A Other

104 Months Since Check/Endorsement This Aircraft
_____ Months
A Other

105 Biennial Flight Review *(Or equivalent)*
1 ☐ Yes
2 ☐ No
A Other

106 Months Since Last BFR
_____ Months
A Other

107 BFR *(or equivalent)* **Aircraft Make/Model**
A Make _____
B Model _____
C Other

108 Medical Certificate
1 ☐ None
2 ☐ Class 1
3 ☐ Class 2
4 ☐ Class 3
A Other

109 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 certificate
A Other

110 Date of Last Medical *(Nos. for M, D, Y)*
_____
A Other _____

111 Medical limitation
1 ☐ None
2 ☐ Vision
A Specify _____
B Other

112 Medical waiver
1 ☐ None
2 ☐ Vision
3 ☐ Hearing
A Specify _____
B Other

113 Statement of Demonstrated Ability
1 ☐ Yes
2 ☐ No
A Other

114 Correcting Lenses *(Multiple entry)*
1 ☐ Not required
2 ☐ Required to be in possession
3 ☐ Required, not in possession
4 ☐ Required to be worn
5 ☐ Required, not worn
6 ☐ Worn at time of accident
A Other

115 Source of Pilot Flight Time *(Multiple entry)*
1 ☐ Pilot log
2 ☐ Company
3 ☐ FAA
4 ☐ Pilot/Operator Report
5 ☐ Investigator's Estimate
6 ☐ Relative
7 ☐ Other Person
A Other

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	K Other
125 Total Time											
126 Pilot in Command (PIC)											
127 Instructor											
128 This Make/Model											
129 Last 90 Days											
130 Last 30 Days											
131 Last 24 Hours											

132 Landings—Last 90 Days All Aircraft
_____ Day
A Other

133 Landings—Last 90 Days All Aircraft
_____ Night
A Other

134 Landings—Last 90 Days This Make/Model
_____ Day
A Other

135 Landings—Last 90 Days This Make/Model
_____ Night
A Other

136 Seatbelt Available
1 ☐ Yes
2 ☐ No
A Other

137 Seatbelt Used
1 ☐ Yes
2 ☐ No
A Other

138 Shoulder Harness Available
1 ☐ Yes
2 ☐ No
A Other

139 Shoulder Harness Used
1 ☐ Yes
2 ☐ No
A Other

140 Autopsy Performed *(This pilot)*
1 ☐ Yes
2 ☐ No
A Other

141 Toxicology Performed *(This pilot)*
1 ☐ Yes
2 ☐ No
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Pilot Information (continued)

142 Person at Controls
1 Pilot in command
2 Second pilot
3 Both pilots
4 Non-pilot
5 No one
A Other

143 Simulated Instrument Flight
1 Yes
2 No
A Other

144 Vision Restricting Device Used
1 Yes
2 No
A Other

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

Flight Itinerary Information

155 Last Departure Point *(Multiple entry)*
1 Same as accident/incident location or
A Airport identifier _____
B City/Place _____
C State
D Other

156 Time of Departure
A Time _____
B Time Zone _____
C Other

157 Destination *(Multiple entry)*
1 Same as accident/incident location or
2 Local flight
A Airport Identifier _____
B City/Place _____
C State _____
D Other

158 Flight Plan Filed *(Multiple entry)*
1 None
2 Visual Flight Rules (VFR)
3 Instrument Flight Rules (IFR)
4 VFR/IFR
5 Company (VFR)
6 Military (VFR)
A Other

159 Type of Clearance
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
A Other

160 Airspace
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 Operating Area (MOA)
13 Student Jet Training Area
14 Demo Area
15 Warning area
16 FAR 93 (Special air traffic areas)
A Other

161 Control Area
1 None
2 Victor airway
3 Jet airway
4 Control airway
5 Colored airway
A Other

162 Route
1 None
2 Standard instrument departure
3 Standard terminal arrival
4 RNAV/OMEGA/LORAN/INS
5 Direct
6 Profile Descent
7 VR route (military)
8 IR route (military)
9 SR route (military)
10 Refueling route (military)
A Other

163 Last Two Way Communications Established
1 None
2 Yes
A Facility Identifier _____
B Other

Aircraft Loading Information

164 Fuel on Board at Takeoff *(Multiple entry)*
1 Estimated
2 Verified
A _____ Gallons or
B _____ Pounds
C Other

165 Fuel Types *(Multiple entry)*
1 80/87
2 100 low lead
3 100/130
4 115/145
5 Kerosene
6 JP 3, 4, 5, 6
7 Jet A
8 Jet B
9 Mixture
10 Automotive
11 Anti-ice additive added *(If known)*
A Other

166 Aircraft Weight at Takeoff *(Multiple entry)*
1 At or below max cert. gross takeoff weight
2 Above max certified gross takeoff weight
3 Estimated
4 Verified
A Other

167 Aircraft CG at Takeoff *(Multiple entry)*
1 Within limits
2 Exceeded fwd limit
3 Exceeded aft limit
4 Exceeded lateral limit
5 Estimated
6 Verified
A Other

168 Aircraft Weight at Accident *(Multiple entry)*
1 Same as takeoff
2 At or below max cert. gross takeoff weight
3 Above max certified gross takeoff weight
4 Estimated
5 Verified
A Other

169 Aircraft CG at Accident *(Multiple entry)*
1 Same as takeoff
2 Within limits
3 Exceeded fwd limit
4 Exceeded aft limit
5 Exceeded lateral limit
6 Estimated
7 Verified
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Aircraft Loading Information *(continued)*

170 Load Description *(Multiple entry)*

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
A Other

Weather Information

180 Source of Weather Briefing *(Multiple entry)*

1 ☐ No record of briefing *(Go to block 183)*
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
A Other

181 Method of Briefing *(Multiple entry)*

1 ☐ In person
2 ☐ Teletype
3 ☐ Telephone
4 ☐ Aircraft radio
5 ☐ TV/radio
A Other

182 Completeness of Weather briefing

1 ☐ Weather not pertinent
2 ☐ Full
3 ☐ Partial—limited by pilot
4 ☐ Partial—limited by briefer/forecaster
A Other

183 Investigator's Source of Weather Information

1 ☐ Pilot *(Go to block 185)*
2 ☐ Witness *(Go to block 185)*
3 ☐ Weather observation facility

184 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

185 Basic Weather Conditions at Accident Site

1 ☐ Visual Meteorological Conditions (VMC)
2 ☐ Instrument Meteorological Conditions (IMC)
A Other

186 Conditions of Light

1 ☐ Dawn
2 ☐ Daylight
3 ☐ Night (Dark)
4 ☐ Night (Bright)
5 ☐ Dusk
A Other

187 Sky/Lowest/Cloud Condition

1 ☐ Clear
2 ☐ Scattered
3 ☐ Thin broken
4 ☐ Thin overcast
5 ☐ Partial obscuration
A _____ Feet AGL
B Other

188 Lowest Ceiling

1 ☐ None
2 ☐ Broken
3 ☐ Overcast
4 ☐ Obscured
A _____ Feet AGL
B Other

189 Visibility *(decimals)*

A _____ SM
B RVR _____ Feet
C RVV _____ SM
D Other

190 Temperature

_____ ° F
A Other

191 Dew Point

_____ ° F
A Other

192 Wind (From)

1 ☐ Variable
A _____ ° Magnetic
B Other

193 Wind Speed

1 ☐ Calm
2 ☐ Light and Variable
A _____ Kts.
B Other

194 Gusts

1 ☐ None
A _____ Kts
B Other

195 Altimeter Setting

_____ " Hg
A Other

196 Density Altitude

_____ Feet
A Other

197 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)
A Other

198 Type of Precipitation

1 ☐ None *(Go to block 200)*
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)
A Other

199 Intensity of Precipitation

1 ☐ Light
2 ☐ Moderate
3 ☐ Heavy
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Accident Information

200 Aircraft Damage
1 None
2 Minor
3 Substantial
4 Destroyed

201 Aircraft Fire
1 None
2 In-flight
3 On ground
A Other

202 Explosion
1 None
2 In-flight
3 On ground
A Other

203 Damage to Property
1 None
2 Residence
3 Residential area
4 Commercial bldg
5 Vehicle(s)
6 Airport facility
7 Trees
8 Crops
9 Fence
10 Wires/poles
11 Other property

204 Injury Index *(Most critical injury)*
1 None 2 Minor 3 Serious 4 Fatal

Injury Summary *(Enter only one digit per block)*	A Fatal	B Serious	C Minor	D None	E Total
205 First Pilot					
206 Co-pilot					
207 Dual Student					
208 Check Pilot					
209 Flight Engineer					
210 Cabin Attendants					
211 Other Crew					
212 Passengers					
213 TOTAL ABOARD					
214 Other Aircraft					
215 Other Ground					
216 GRAND TOTAL					

217 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

220 Part Failure/Malfunction *(Multiple entry)*
1 None
2 Part/component #1
3 Part/component #2
4 Part/component #3
A Other _____

221 Incorrect Part *(Multiple entry)*
1 None
2 Part/component #1
3 Part/component #2
4 Part/component #3
A Other _____

	A Part/Component #1	B Part/Component #2	C Part/Component #3
222 Part Name			
223 ATA Code			
224 Manufacturer			
225 Mfg. Part #			
226 Mfg. Model #			
227 Serial #			
228 Part Condition			
229 Total Time			
230 TSO			
231 TSI			
232 Cycles Total			
233 Cycles Since Overhaul			
234 Cycles Since Inspection			
235 Service Difficulty Report or Malfunction/Defect Report Submitted	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
236 Bogus Part	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No

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