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<p>16. Abstract</p> <p>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 1988.</p> <p>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 1988 accidents to enable comparison with prior years.</p>			
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INTRODUCTION

This report presents a statistical compilation and review of air carrier accidents that occurred in 1988, 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, which 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 1988 and for the 4 preceding years. Several tables then present accident parameters for 1988 only. Each section concludes with tabulations that present comparative statistics for 1988 and for the 5-year period 1983-87.

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. The reader should avoid placing undue significance on a change that may be due primarily to chance.

14 CFR 121, 125, 127 OPERATIONS

In 1988, there were 29 accidents involving Part 121, 125, 127 operations. The overall accident rate for 1988 was .251 per 100,000 hours flown, a 24.2 percent decrease over the 1987 rate of .331. The 1988 rate was also 16.6 percent lower than the overall rate of .301 for the period from 1978 - 1987.

There were three fatal accidents, in this category during 1988, involving 285 fatalities. The most serious of these accidents, resulting in 270 fatalities, involved the sabotage of a Boeing 747 over Lockerbie, Scotland.

Table 1 - SUMMARY OF LOSSES
14 CFR 121, 125, 127 OPERATIONS
1984 - 1988

	1984	1985	1986	1987	1988
-----	----	----	----	----	----
Accidents					

Fatal	1	7	3	5	3
Involved Serious Injury	10	8	15	12	16
Involved Minor or No Injury	6	7	6	19	10
-----	----	----	----	----	----
Total	17	22	24	36	29
Fatalities					

Passenger	1	486	4	212	255
Crew	3	39	3	17	19
Other Persons	0	1	1	3	11
-----	----	----	----	----	----
Total	4	526	8	232	285
Aircraft Damaged (14 CFR 121, 125, 127)					

Destroyed	2	9	2	5	3
Substantial	8	8	8	17	12
Minor	2	0	4	4	0
None	5	5	10	12	14
-----	----	----	----	----	----
Total	17	22	24	38	29

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

	1984	1985	1986	1987	1988
-----	-----	-----	-----	-----	-----
Aircraft Miles Flown (Thousands)	3,428,063	3,631,017	4,063,251	4,345,122	4,503,554
Aircraft Hours Flown	8,165,124	8,709,894	9,973,872	10,588,696	11,141,531
Departures Flown	5,898,852	6,306,759	7,226,306	7,558,235	7,622,365
Accident Rates *					

Per Million Miles Flown	0.0050	0.0061	0.0057	0.0081	0.0062
Per Hundred Thousand Hours Flown	0.208	0.253	0.231	0.331	0.251
Per Hundred Thousand Departures Flown	0.288	0.349	0.318	0.463	0.367
Fatal Accident Rates *					

Per Million Miles Flown	0.0003	0.0019	0.0005	0.0009	0.0004
Per Hundred Thousand Hours Flown	0.012	0.080	0.020	0.038	0.018
Per Hundred Thousand Departures Flown	0.017	0.111	0.028	0.053	0.026

* The 12/21/88 sabotage involving a Pan Am B747-100, 12/7/87 suicide/sabotage involving a PSA BAe-146 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
1988

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/10	DFW Airport, TX	Sch Passenger	American	McD-Doug DC-10	None	Serious	Miscellaneous/other
1/13	Bogota, Columbia	Sch Cargo	Challenge Air	Boeing 707-330C	Substantial	None	Not reported
1/19	Chicago, IL	Sch Pax + Cargo	American	Boeing 767-200	None	Serious	Altitude deviation, uncontrolled
1/19	Hickman, KY	Sch Passenger	TWA	McD-Doug DC-9-82	None	Serious	In flight encounter with weather
1/25	Block Island, RI	Sch Passenger	Delta	Boeing 767-332	None	Serious	In flight encounter with weather
1/27	Decatur, MI	Sch Pax + Cargo	American	McD-Doug DC-9-82	None	Serious	Miscellaneous/other
2/02	Durango, CO	Sch Passenger	Aspen Airways	Convair 580	Substantial	Minor	On ground collision with object
3/29	Miami, FL	Nonsch Cargo	Aerial Trans.	McD-Doug DC-68	None	None	On ground collision with object
4/03	Sarasota, FL	Sch Passenger	Continental	Boeing 727-224	None	Serious	Miscellaneous/other
4/14	Charleston, WV	Sch Passenger	Piedmont	Fokker F-28-4000	Substantial	Minor	Loss of power(total) - mech failure/malfunction
4/15	Seattle, WA	Sch Passenger	Horizon Air	DeHavilland DHC-8	Destroyed	Serious	Fire/explosion
4/16	Costa Rica	Sch Passenger	Eastern	Boeing 757-225	None	Serious	Not reported
4/28	Maui, HI	Sch Passenger	Aloha	Boeing 737-297	Substantial	Fatal (1)	Airframe/component/system failure/malfunction
5/21	DFW Airport, TX	Sch Pax + Cargo	American	McD-Doug DC-10-30	Substantial	Serious	Airframe/component/system failure/malfunction
6/26	Salisbury, MD	Sch Pax + Cargo	United	Boeing 737	None	Serious	In flight encounter with weather
7/11	St. Paul, MN	Sch Pax + Cargo	Northwest	Boeing 727	Substantial	None	On ground collision with object
8/10	Little Rock, AR	Sch Passenger	United	Boeing 737-222	None	Serious	Loss of power(partial) - mech failure/malfunction
8/26	Charleston, SC	Sch Passenger	Delta	Boeing 767	None	Serious	In flight encounter with weather

Table 3 - LIST OF ACCIDENTS (Continued)
14 CFR 121, 125, 127 OPERATIONS
1988

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
8/27	Chicago, IL	Sch Passenger	TWA	Boeing 727-31	Substantial	Minor	Airframe/component/system failure/malfunction
8/31	Dallas/Ft Worth, TX	Sch Passenger	Delta	Boeing 727-232	Destroyed	Fatal (14)	Loss of control - in flight
9/09	Minneapolis, MN	Sch Pax + Cargo	Northwest	Boeing 727-200	Substantial	None	On ground collision with object
9/12	Denver, CO	Sch Passenger	United	McD-Doug DC-10-10	Substantial	Minor	Airframe/component/system failure/malfunction
9/21	Albany, NY	Sch Passenger	Pan Am Ex.	DeHavilland DH-7-58C	Substantial	Serious	Loss of power(total) - mech failure/malfunction
10/30	Memphis, TN	Sch Passenger	Northwest	McD-Doug DC-9-31	Substantial	None	On ground collision with object
11/03	Barbados	Sch Pax + Cargo	Pan American	Boeing 747-123	None	Serious	Miscellaneous/other
11/14	Panama City	Sch Passenger	Pan American	Airbus A300B4-203	None	Serious	Not reported
12/16	Hong Kong	Sch Cargo	Flying Tiger	Boeing 747-124	Substantial	None	Not reported
12/21	Lockerbie, Scotland	Sch Pax + Cargo	Pan American	Boeing 747-100	Destroyed	Fatal (270)	Sabotage
12/23	38.54N, 173.24W, PO	Sch Pax + Cargo	United	Boeing 747SP-21	None	Serious	In flight encounter with weather

Table 4 - ACCIDENTS AND RATES BY TYPE OF OPERATION *
14 CFR 121, 125, 127 OPERATIONS
1988

	Type of Operation				
	Scheduled				
	Passenger/ Cargo	All Cargo	All	All Non- Scheduled	All
	26 3	2 0	28 3	1 0	29 3
Accidents					
Fatal Accidents					
Aircraft Miles Flown (Thousands)	4,059,637	200,354	4,259,991	243,564	4,503,555
Aircraft Hours Flown	9,875,519	644,571	10,520,090	621,441	11,141,531
Departures Flown	6,736,411	519,006	7,255,417	366,948	7,622,365
Accident Rates					
Per Million Miles Flown	0.0062	0.0100	0.0063	0.0041	0.0062
Per Hundred Thousand Hours Flown	0.253	0.310	0.257	0.161	0.251
Per Hundred Thousand Departures Flown	0.371	0.385	0.372	0.273	0.367
Fatal Accident Rates					
Per Million Miles Flown	0.0005	0.0	0.0005	0.0	0.0004
Per Hundred Thousand Hours Flown	0.020	0.0	0.019	0.0	0.018
Per Hundred Thousand Departures Flown	0.030	0.0	0.028	0.0	0.026

* The 12/21/88 sabotage involving a Pan Am Boeing 747 is excluded from accident rate computations.

Table 5 - PERSONS BY ROLE AND DEGREE OF INJURY
14 CFR 121 125 127 OPERATIONS
1988

Role of Person	Degree of Injury				Total
	Fatal	Serious	Minor	None	
Pilot	1	1	2	25	29
Copilot	1	2	1	25	29
Flight engineer	1	1	1	12	15
Cabin attendants	16	8	12	104	140
Other crew	0	0	3	3	6
Passenger	255	44	165	2731	3195
Total aboard	274	56	184	2900	3414
Other aircraft*	0	0	0	2	2
Other ground	11	3	0	8	22
Grand total	285	59	184	2910	3438
Percent	8.3	1.7	5.4	84.6	

* 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
1988

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
None	1	0	13	0	14	48.3
Substantial	5	4	2	1	12	41.4
Destroyed	0	0	1	2	3	10.3
Aircraft						
Number -	6	4	16	3	29	
Percent -	20.7	13.8	55.2	10.3		

Table 7 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1988

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Altitude deviation,uncontrolled	0	0	1	0	1	0	0	0	1	3.4
Airframe/component/system failure/malfunction	0	2	1	1	0	0	4	0	4	13.8
Fire/explosion	0	0	1	0	0	0	0	1	1	3.4
Explosion	0	0	0	1	0	0	0	1	1	3.4
In flight encounter with weather	0	0	5	0	5	0	0	0	5	17.2
Loss of control - in flight	0	0	0	1	0	0	0	1	1	3.4
On ground collision with object	4	1	0	0	1	0	4	0	5	17.2
Loss of power(total) - mech failure/malfunction	0	1	1	0	0	0	2	0	2	6.9
Loss of power(partial) - mech failure/malfunction	0	0	1	0	1	0	0	0	1	3.4
Miscellaneous/other	0	0	4	0	4	0	0	0	4	13.8
Not reported	2	0	2	0	2	0	2	0	4	13.8
Aircraft										
Number -	6	4	16	3	14	0	12	3	29	
Percent -	20.7	13.8	55.2	10.3	48.3	.0	41.4	10.3		

Table 8 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
14 CFR 121 125 127 OPERATIONS
1988

Type of first occurrence	Phase of operation										Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Nrept		No.	Percent
Altitude deviation,uncontrolled	0	0	0	0	0	1	0	0	0		1	3.4
Airframe/component/system failure/malfunction	0	0	1	0	1	0	1	1	0		4	13.8
Fire/explosion	0	0	0	1	0	0	0	0	0		1	3.4
Explosion	0	0	0	0	1	0	0	0	0		1	3.4
In flight encounter with weather	0	0	0	0	3	2	0	0	0		5	17.2
Loss of control - in flight	0	0	1	0	0	0	0	0	0		1	3.4
On ground collision with object	0	4	0	0	0	0	0	1	0		5	17.2
Loss of power(total) - mech failure/malfunction	0	0	0	0	2	0	0	0	0		2	6.9
Loss of power(partial) - mech failure/malfunction	0	0	1	0	0	0	0	0	0		1	3.4
Miscellaneous/other	2	0	0	0	2	0	0	0	0		4	13.8
Not reported	0	0	0	0	0	0	0	0	4		4	13.8
Aircraft Number -	2	4	3	1	9	3	1	2	4		29	
Percent -	6.9	13.8	10.3	3.4	31.0	10.3	3.4	6.9	13.8			

Table 9 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1988

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing - engine(s) not operating	0	0	2	0	2	0	0	0	2	6.9
Taxi - pushback/tow	1	0	0	0	0	0	1	0	1	3.4
Taxi - to takeoff	2	0	0	0	1	0	1	0	2	6.9
Taxi - from landing	1	0	0	0	0	0	1	0	1	3.4
Takeoff	0	0	1	0	0	0	1	0	1	3.4
Takeoff - ground run	0	0	1	0	1	0	0	0	1	3.4
Takeoff - initial climb	0	0	0	1	0	0	0	1	1	3.4
Climb - to cruise	0	0	1	0	0	0	0	1	1	3.4
Cruise	0	0	1	1	0	0	1	1	2	6.9
Cruise - normal	0	1	5	1	5	0	2	0	7	24.1
Descent - normal	0	0	3	0	3	0	0	0	3	10.3
Approach - FAF/outer marker to threshold (IFR)	0	1	0	0	0	0	1	0	1	3.4
Landing - roll	0	2	0	0	0	0	2	0	2	6.9
Not reported	2	0	2	0	2	0	2	0	4	13.8
Aircraft Number -	6	4	16	3	14	0	12	3	29	
Percent -	20.7	13.8	55.2	10.3	48.3	.0	41.4	10.3		

Table 10 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
14 CFR 121 125 127 OPERATIONS
1988

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not repth	No.	Percent
Dawn	0	0	1	1	3.4
Daylight	16	1	0	17	58.6
Night (dark)	4	1	0	5	17.2
Dusk	0	0	1	1	3.4
Not reported	1	1	3	5	17.2
Aircraft					
Number -	21	3	5	29	
Percent -	72.4	10.3	17.2		

Table 11 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
14 CFR 121, 125, 127 OPERATIONS
1988

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	1	4	7	2	14	48.3
Scheduled Domestic Pass/Cargo	1	0	3	0	4	13.8
Scheduled International Pass.	0	0	3	0	3	10.3
Scheduled International Cargo	2	0	0	0	2	6.9
Scheduled International Pass/Cargo	1	0	3	1	5	17.2
Nonscheduled International Cargo	1	0	0	0	1	3.4
Aircraft						
Number -	6	4	16	3	29	
Percent -	20.7	13.8	55.2	10.3		

Table 12 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121, 125, 127 OPERATIONS
1988

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	4	4	12	1	11	0	10	0	21	72.4
In-flight	0	0	1	0	0	0	0	1	1	3.4
On ground	0	0	1	1	1	0	0	1	2	6.9
Other	2	0	2	1	2	0	2	1	5	17.2
Aircraft										
Number -	6	4	16	3	14	0	12	3	29	
Percent -	20.7	13.8	55.2	10.3	48.3	.0	41.4	10.3		

Table 13 - BROAD CAUSE/FACTOR ASSIGNMENTS*
14 CFR 121 125 127 OPERATIONS
1988

Cause/Factor -----	Cited as a Cause -----		Cited as a Factor -----		Cited as Either a Cause or a Factor (or Both) -----	
	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents
Aircraft #	2	8	0	7	2	10
Propulsion System and Controls	0	4	0	4	0	5
Flight Control System	0	0	0	2	0	2
Airframe	1	1	0	2	1	3
Landing Gear	0	1	0	0	0	1
Systems/Equipment/Instruments	1	3	0	1	1	4
Environment #	0	2	0	7	0	9
Weather	0	2	0	4	0	6
Light Conditions	0	0	0	1	0	1
Object(trees,wires,etc.)	0	0	0	2	0	2
Airport/Airways Facilities,Aids	0	0	0	1	0	1
Terrain/Runway Condition	0	0	0	1	0	1
Personnel #	1	20	2	10	2	22
Pilot	1	8	0	2	1	8
Others (Aboard)	0	8	0	2	0	9
Others (Not Aboard)	0	6	2	7	2	10
Number of Aircraft					3	29
NTSB Determined Probable Cause					2	23

* 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
1978 - 1988

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1978	22	5	160	150	6,234,628	0.353	0.080
1979	29	5	354	351	6,878,911	0.422	0.073
1980	19	1	1	0	7,379,581	0.257	0.014
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	9,973,872	0.231	0.020
1987	36	5	232	229	10,588,696	0.331	0.038
1988	29	3	285	274	11,141,531	0.251	0.018

* 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

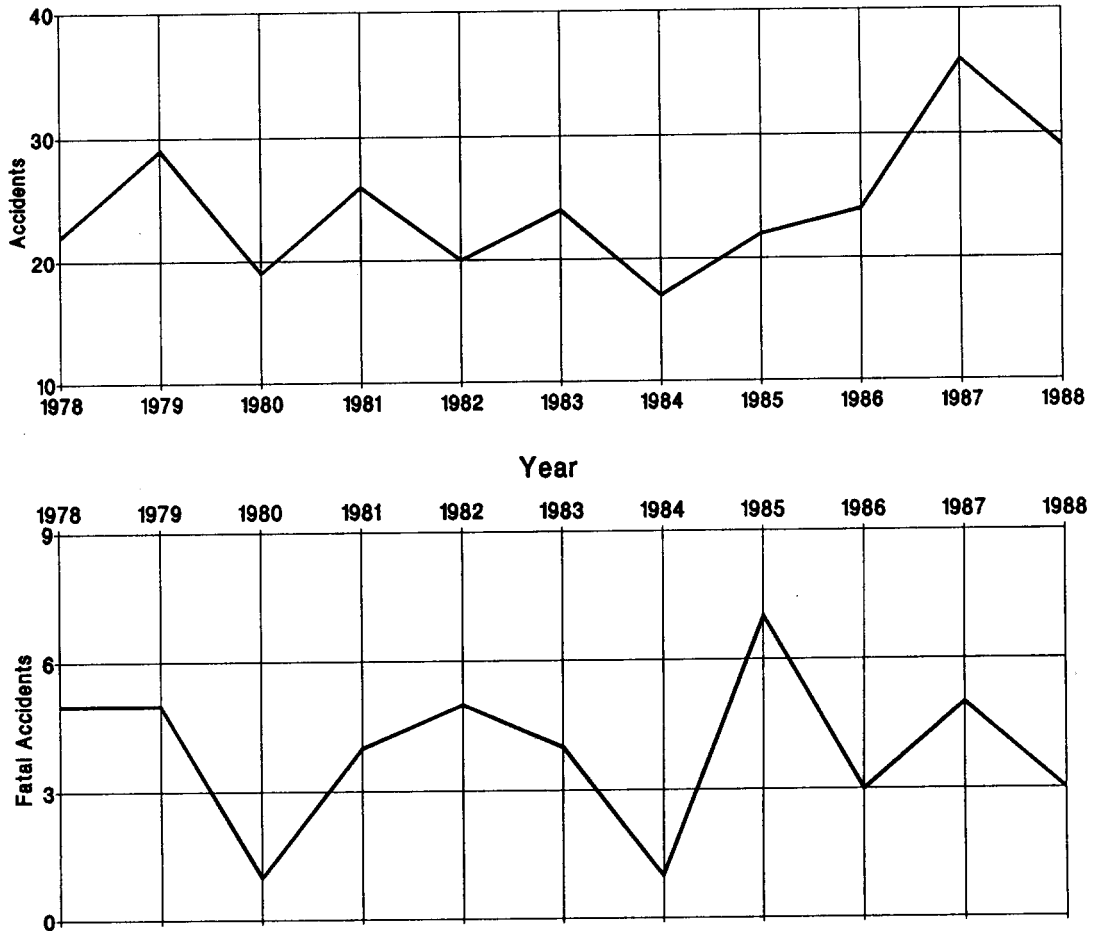


Figure 2 - NUMBER OF FATALITIES
ALL 14 CFR 121, 125, 127 OPERATIONS

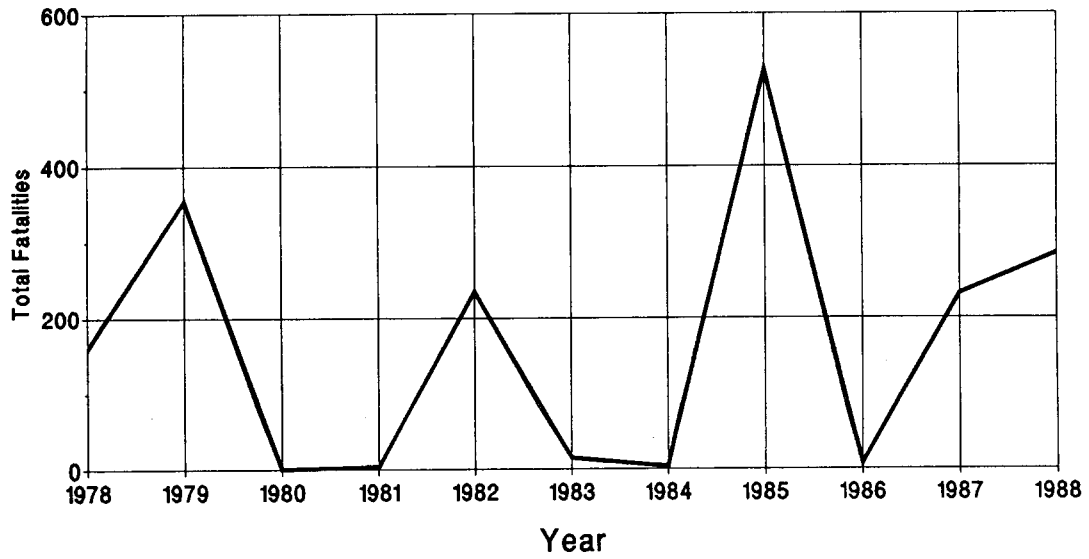


Figure 3 - ACCIDENTS PER 100,000 HOURS FLOWN
ALL 14 CFR 121, 125, 127 OPERATIONS

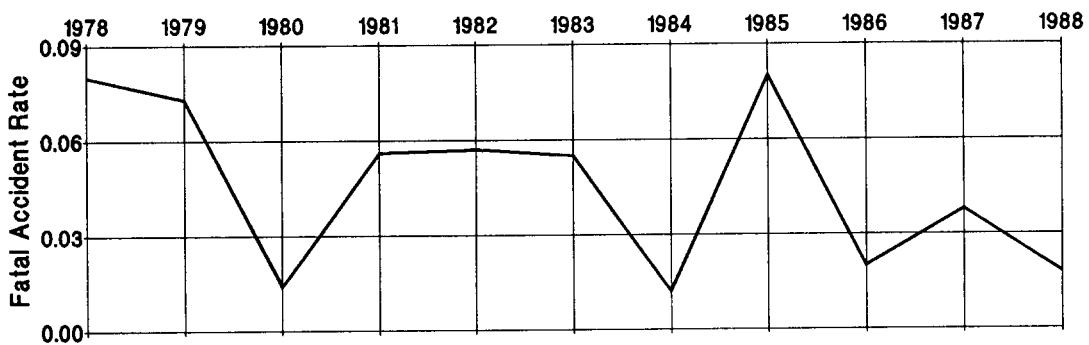
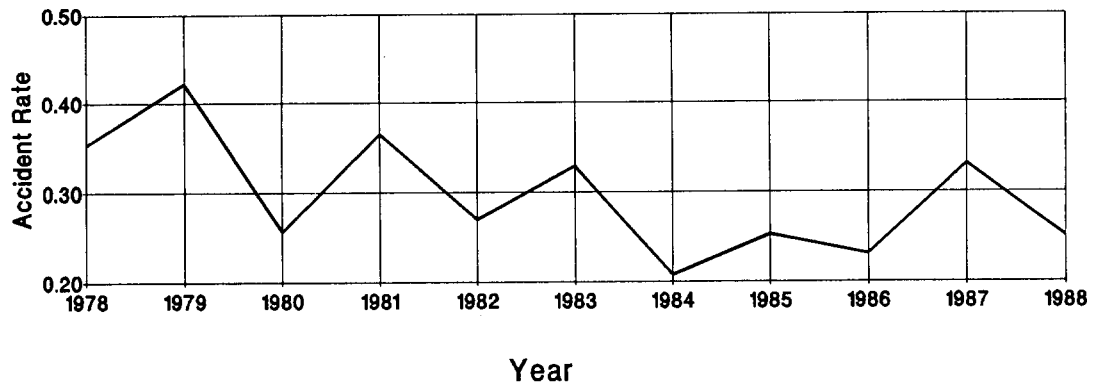
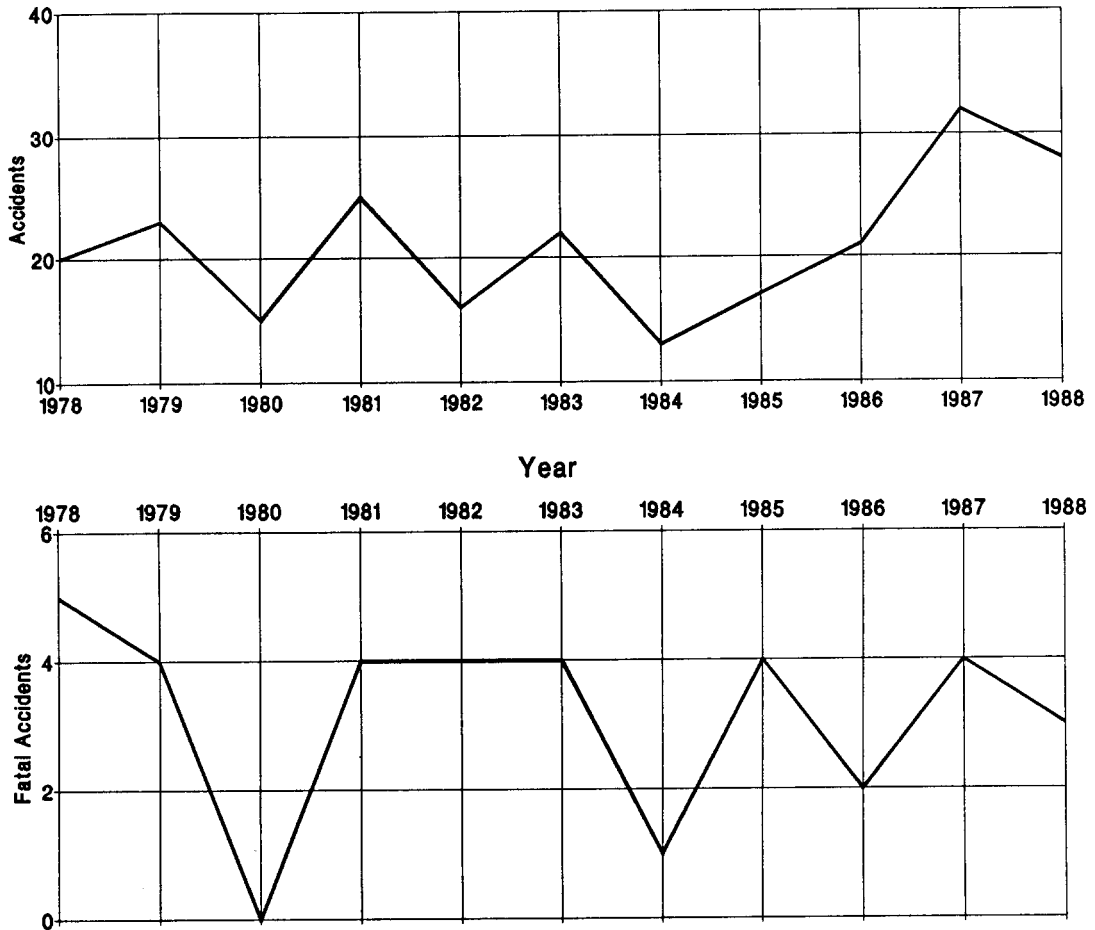


Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 121 125 127 OPERATIONS
1978 - 1988

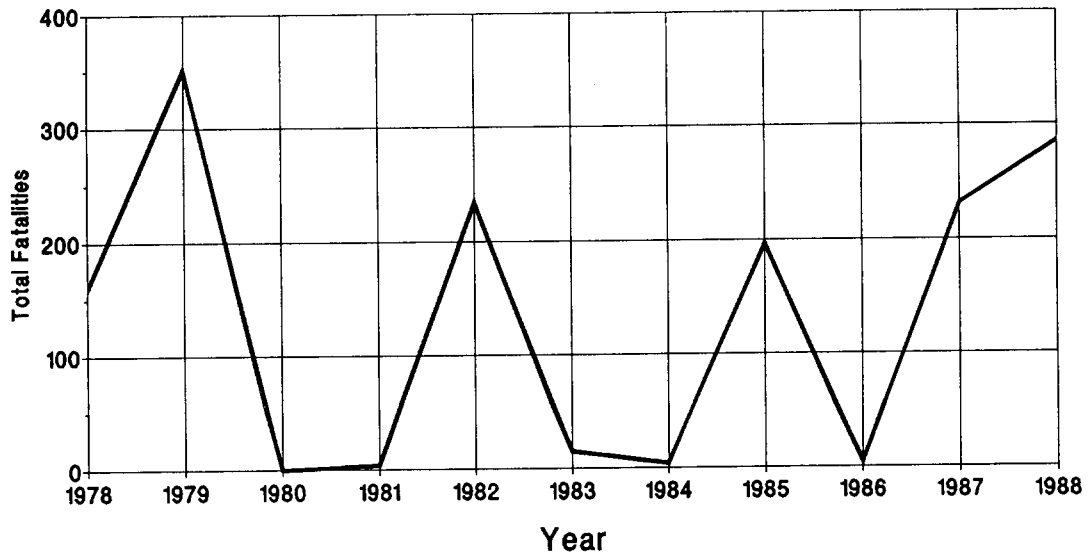
Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000*	
			Total	Aboard Aircraft In This Category		Total	Fatal
1978	20	5	160	150	6,031,743	0.332	0.083
1979	23	4	351	348	6,713,094	0.343	0.060
1980	15	0	0	0	7,069,481	0.212	0.000
1981	25	4	4	2	6,834,140	0.366	0.059
1982	16	4	234	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	9,498,519	0.211	0.011
1987	32	4	231	229	10,064,852	0.308	0.030
1988	28	3	285	274	10,520,090	0.257	0.019

* 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**

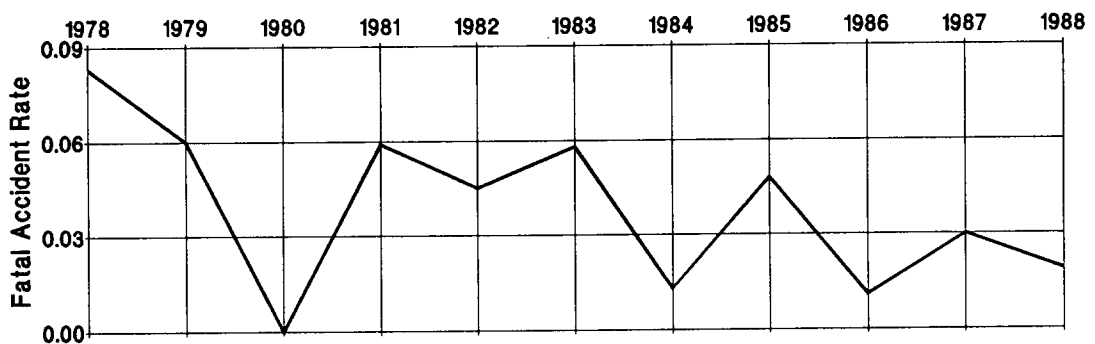
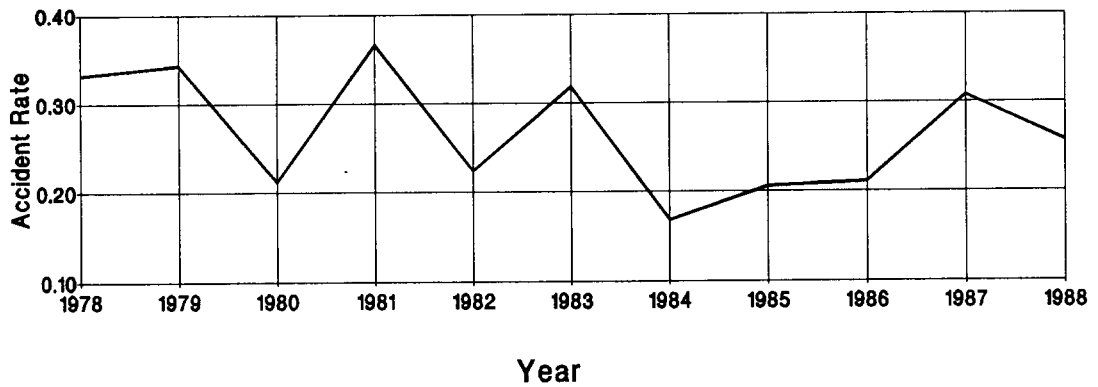
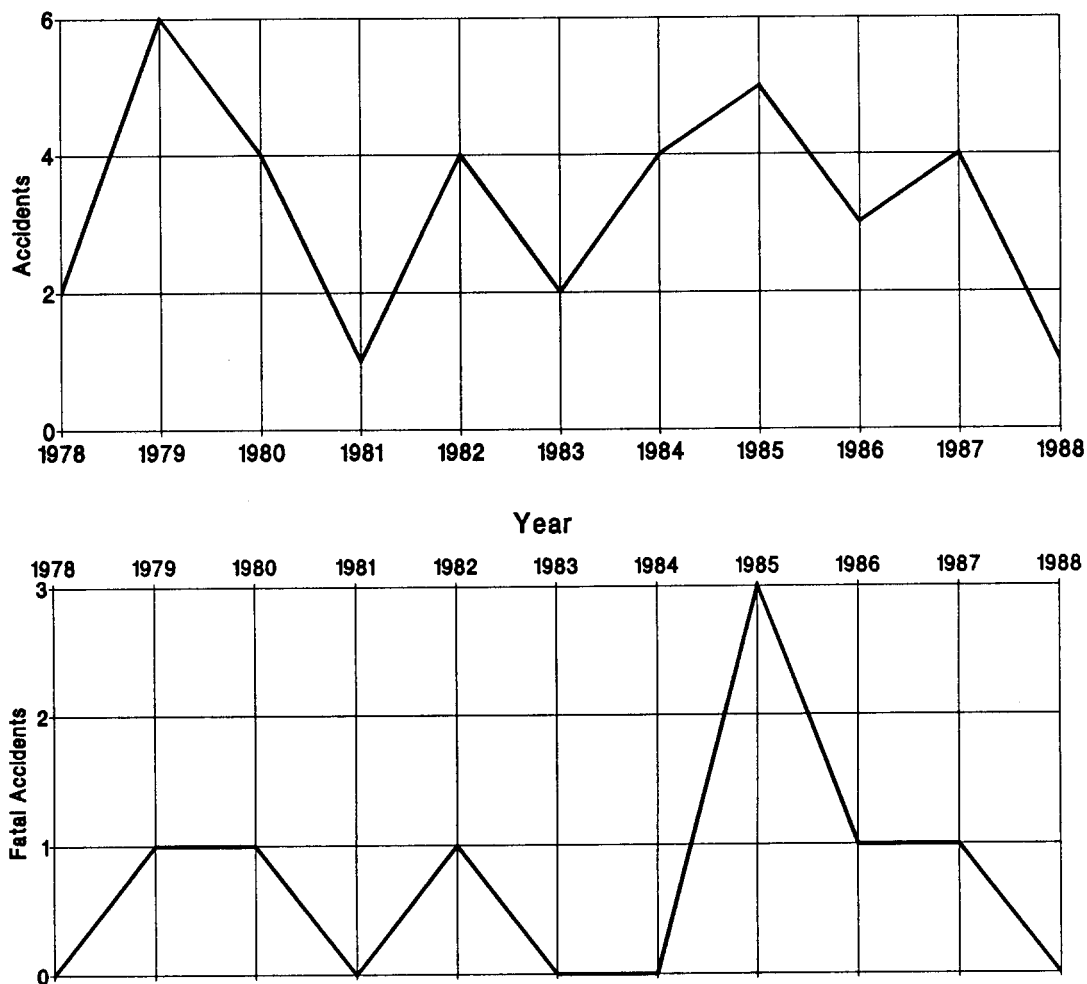


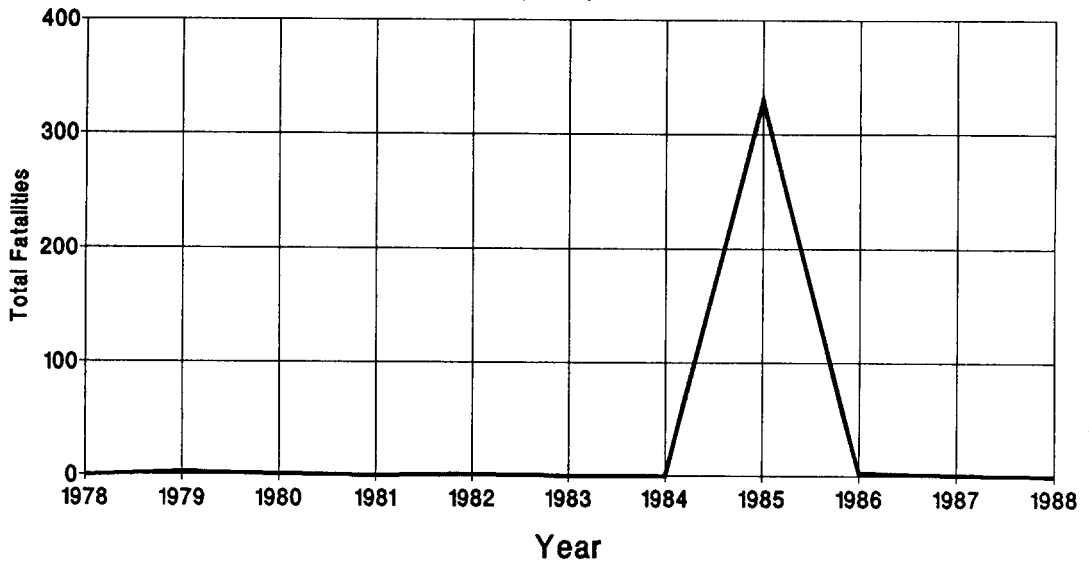
Table 16 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
 NONSCHEDULED 14 CFR 121 125 127 OPERATIONS
 1978 - 1988

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1978	2	0	0	0	202,883	0.986	0.000
1979	6	1	3	3	165,817	3.618	0.603
1980	4	1	1	0	310,100	1.290	0.322
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	475,353	0.631	0.210
1987	4	1	1	1	523,844	0.764	0.191
1988	1	0	0	0	621,441	0.161	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**

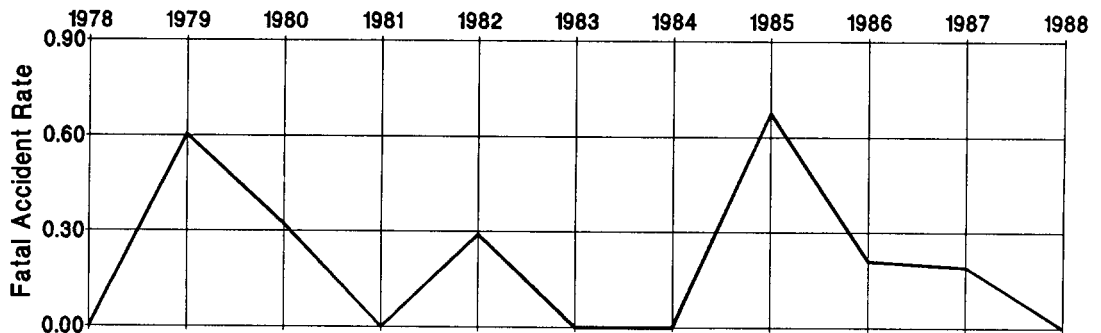
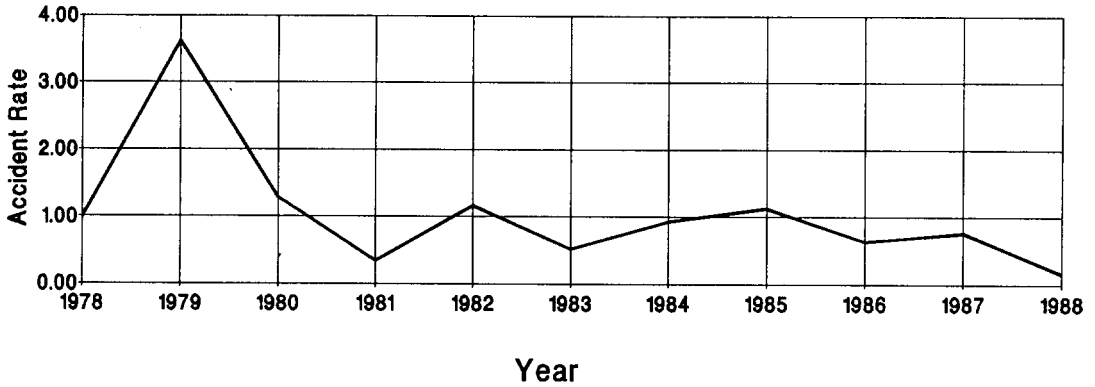


Table 17 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1988 AND 1983 - 1987

Type of Occurrence	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
In flight encounter with weather	5	17.2	6.4	25.8	0	.0	.2	5.3
Airframe/component/system fail/mal	4	13.8	4.0	16.1	1	33.3	.2	5.3
On ground collision with object	5	17.2	2.0	8.1	0	.0	.4	10.5
Loss of control - in flight	1	3.4	1.4	5.6	1	33.3	1.2	31.6
Miscellaneous/other	4	13.8	1.4	5.6	0	.0	.2	5.3
Not reported	4	13.8	1.2	4.8	0	.0	.4	10.5
In flight collision with object	0	.0	1.2	4.8	0	.0	.2	5.3
In flight collision w/ terrain	0	.0	1.0	4.0	0	.0	.4	10.5
Loss of engine power(total) - non-mechanical	0	.0	.8	3.2	0	.0	.2	5.3
Main gear collapsed	0	.0	.6	2.4	0	.0	.0	.0
Loss of engine power(total) - mech failure/malfunction	2	6.9	.6	2.4	0	.0	.0	.0
Abrupt maneuver	0	.0	.4	1.6	0	.0	.0	.0
Nose gear collapsed	0	.0	.4	1.6	0	.0	.0	.0
Hard landing	0	.0	.4	1.6	0	.0	.0	.0
Loss of control - on ground	0	.0	.4	1.6	0	.0	.0	.0
On ground collision w/ terrain	0	.0	.4	1.6	0	.0	.2	5.3
Overrun	0	.0	.4	1.6	0	.0	.0	.0
Loss of engine power	0	.0	.4	1.6	0	.0	.0	.0
Loss of engine power(partial) - mech failure/malfunction	1	3.4	.4	1.6	0	.0	.2	5.3
Near collision between aircraft	0	.0	.2	.8	0	.0	.0	.0
On ground encounter with weather	0	.0	.2	.8	0	.0	.0	.0
Propeller blast or jet exhaust/suction	0	.0	.2	.8	0	.0	.0	.0
Propeller/rotor contact to person	0	.0	.2	.8	0	.0	.0	.0
Undershoot	0	.0	.2	.8	0	.0	.0	.0
Altitude deviation,uncontrolled	1	3.4	.0	.0	0	.0	.0	.0
Fire/explosion	1	3.4	.0	.0	0	.0	.0	.0
Explosion	1	3.4	.0	.0	1	33.3	.0	.0
Total Aircraft	29	100.0	24.8	100.0	3	100.0	3.8	100.0

Table 18 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1988 AND 1983 - 1987

Phase of Operation	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Takeoff	3	10.3	4.8	19.4	1	33.3	1.4	36.8
Cruise	9	31.0	4.8	19.4	2	66.7	.4	10.5
Landing	2	6.9	3.6	14.5	0	.0	.4	10.5
Approach	1	3.4	2.4	9.7	0	.0	.6	15.8
Climb	1	3.4	2.2	8.9	0	.0	.2	5.3
Descent	3	10.3	2.2	8.9	0	.0	.2	5.3
Taxi	4	13.8	1.8	7.3	0	.0	.2	5.3
Standing	2	6.9	1.6	6.5	0	.0	.0	.0
Not reported	4	13.8	1.2	4.8	0	.0	.4	10.5
Other	0	.0	.2	.8	0	.0	.0	.0
Total Aircraft	29	100.0	24.8	100.0	3	100.0	3.8	100.0

Table 19 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1988 AND 1983 - 1987

Broad Cause/Factor	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	8	27.6	11.6	46.8	1	33.3	2.6	68.4
Weather	6	20.7	9.6	38.7	0	.0	1.0	26.3
Other Person (Not Aboard)	10	34.5	8.4	33.9	2	66.7	1.8	47.4
Other Person (Aboard)	9	31.0	4.6	18.5	0	.0	.4	10.5
Systems/Equipment/ Instruments	4	13.8	4.4	17.7	1	33.3	1.0	26.3
Light Conditions	1	3.4	3.8	15.3	0	.0	1.0	26.3
Landing Gear	1	3.4	2.8	11.3	0	.0	.0	.0
Object (tree,wires,etc)	2	6.9	2.8	11.3	0	.0	.6	15.8
Propulsion System and Controls	5	17.2	2.6	10.5	0	.0	.4	10.5
Terrain/Runway Condition	1	3.4	2.0	8.1	0	.0	.2	5.3
Airframe	3	10.3	1.8	7.3	1	33.3	.2	5.3
Flight Control System	2	6.9	.6	2.4	0	.0	.2	5.3
Airport/Airways Facilities, Aids	1	3.4	.8	3.2	0	.0	.0	.0
Total Aircraft	29		24.8		3		3.8	
NTSB Determined Probable Cause	23		23.2		2		3.2	

Scheduled 14 CFR 135 Operations

There were 19 accidents involving scheduled 14 CFR 135 operations in 1988. The average number of accidents per year in this category for the years 1978 through 1987 is 31.5. The accident rate per 100,000 hours flown for 1988 is 0.911, compared with an overall rate of 2.124 for the period 1978 through 1987.

Of the 19 accidents in this category, two accidents were fatal, involving a total of 21 fatalities. During the period 1978 through 1987, there were an average of 7.9 fatal accidents and 35.8 fatalities per year in Scheduled 14 CFR 135 operations, with a fatal accident rate of 0.096 accidents per 100,000 hours flown.

Table 20 - SUMMARY OF LOSSES
SCHEDULED 14 CFR 135 OPERATIONS
1984 - 1988

	1984	1985	1986	1987	1988
-----	-----	-----	-----	-----	-----
Accidents					

Fatal	7	7	2	10	2
Involved Serious Injury	4	4	2	5	2
Involved Minor or No Injury	11	10	11	17	15
-----	-----	-----	-----	-----	-----
Total	22	21	15	32	19
Fatalities					

Passenger	38	28	3	42	17
Crew	8	8	1	15	4
Other Persons	2	1	0	2	0
-----	-----	-----	-----	-----	-----
Total	48	37	4	59	21
Aircraft Damaged (Scheduled 14 CFR 135)					

Destroyed	7	9	1	11	3
Substantial	15	12	13	18	15
Minor	0	0	1	2	1
None	0	0	1	1	0
-----	-----	-----	-----	-----	-----
Total	22	21	16	32	19

Table 21 - ACCIDENT RATES
SCHEDULED 14 CFR 135 OPERATIONS

	1984	1985	1986	1987	1988
-----	-----	-----	-----	-----	-----
Aircraft Miles Flown (Thousands)	291,460	300,817	308,147	347,349	378,802
Aircraft Hours Flown	1,745,762	1,737,106	1,723,034	1,927,580	2,085,285
Departures Flown	2,676,590	2,561,463	2,727,777	2,781,068	2,899,439
Accident Rates					

Per Million Miles Flown	0.0755	0.0698	0.0487	0.0921	0.0502
Per Hundred Thousand Hours Flown	1.260	1.209	0.871	1.660	0.911
Per Hundred Thousand Departures Flown	0.822	0.820	0.550	1.151	0.655
Fatal Accident Rates					

Per Million Miles Flown	0.0240	0.0232	0.0062	0.0288	0.0053
Per Hundred Thousand Hours Flown	0.401	0.403	0.116	0.519	0.096
Per Hundred Thousand Departures Flown	0.262	0.273	0.073	0.360	0.069

Table 22 - LIST OF ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1988

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/18	Prescott, AZ	Passenger	Golden Pacific	Cessna 402C	Substantial	None	Hard landing
1/19	Bayfield, CO	Passenger	Trans Colorado	Fairchild Swearingen SA-227AC	Destroyed	Fatal (9)	In flight collision with terrain
2/19	Cary, NC	Passenger	Avair, Inc.	Fairchild Swearingen SA-227AC	Destroyed	Fatal (12)	Loss of control - in flight
2/26	Albany, NY	Pax and Cargo	Brockway Air Inc.	Beech 1900	Substantial	None	On ground collision with object
5/16	Atlanta, GA	Passenger	Atlantis Airlines	Fairchild Swearingen SA-226TC	Substantial	None	Gear not extended
5/24	Lawton, OK	Passenger	Atlantic Southeast	Embraer EMB-110P	Destroyed	Serious	Loss of power(total) mech fail./ma lf.
6/05	Chicago, IL	Passenger	Manufacturer's Hanover	Dornier 228-201	Substantial	None	Loss of control - on ground
7/08	Seattle, WA	Passenger	Kenmore Air Harbor	DeHavilland DHC-2	Substantial	None	Dragged wing, rotor, pod, or float
7/27	Anchorage, AK	Pax and Cargo	Peninsula Airways	Fairchild Swearingen SA-227AT	Substantial	None	Airframe/component/syst. failure/ma lf.
8/16	Cleveland, OH	Passenger	Britt Airways	Fairchild Swearingen SA-226TC	Substantial	Minor	Airframe/component/syst. failure/ma lf.
8/25	Prescott, AZ	Passenger	Golden Pacific	Cessna 402C	Substantial	None	Complete gear collapsed
8/26	Sacramento, CA	Passenger	Wings West	Fairchild Swearingen SA-226AC	Substantial	Minor	Airframe/component/syst. failure/ma lf.
9/01	Emporia, KS	Pax and Cargo	Air Midwest	Fairchild Swearingen SA-226	Minor	Serious	Airframe/component/syst. failure/ma lf.
10/04	East Sound, WA	Passenger	Beechcraft Acceptance	Beech B-99A	Substantial	None	In flight collision with object
10/10	Perde Bay, AK	Pax and Cargo	Cape Smyth Air	Cessna 207	Substantial	None	Loss of power(total) mech fail./ma lf..
10/29	San Juan, PR	Passenger	Virgin Air Inc.	Piper PA-23-250	Substantial	None	Explosion
12/04	Homer, AK	Passenger	ERA Aviation	DeHavilland DHC-6	Substantial	None	On ground collision with object
12/21	Kotzebue, AK	Pax and Cargo	Baker Aviation Inc.	Cessna 207	Substantial	None	Hard landing
12/28	Kivalina, AK	Cargo	Baker Aviation	Cessna 207	Substantial	Minor	Loss of power(partial) - non-mech.

Table 23 - ACCIDENTS AND RATES BY TYPE OF OPERATION
SCHEDULED 14 CFR 135 OPERATIONS
1988

	Type of Operation		
	Passenger/ Cargo	All Cargo	All*
Accidents	18	1	19
Fatal Accidents	2	0	2
Aircraft Miles Flown (Thousands)	360,379	18,423	378,802
Aircraft Hours Flown	1,969,482	115,803	2,085,285
Departures Flown	2,764,585	134,854	2,899,439
Accident Rates			
Per Million Miles Flown	0.0499	0.0543	0.0502
Per Hundred Thousand Hours Flown	0.914	0.864	0.911
Per Hundred Thousand Departures Flown	0.651	0.742	0.655
Fatal Accident Rates			
Per Million Miles Flown	0.0055	0.0	0.0053
Per Hundred Thousand Hours Flown	0.102	0.0	0.096
Per Hundred Thousand Departures Flown	0.072	0.0	0.069

* Since 1982, all commuter airline cargo and mail carrying operations were classified the same as on-demand operations, for which there is no requirement to report activity. Therefore, there are no exposure data and rates cannot be calculated for all cargo operations. Exposure data for "All Operations" are estimated by NTSB from RSPA-reported (passenger/cargo) exposure data using the proportion of the totals which had historically been reported for such operations:

$$\text{All Operations Miles} = \frac{\text{Passenger-Cargo Miles}}{0.915}$$

$$\text{All Operations Hours} = \frac{\text{Passenger-Cargo Hours}}{0.914}$$

$$\text{All Operations Departures} = \frac{\text{Passenger-Cargo Departures}}{0.943}$$

Table 24 - PERSONS BY ROLE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1988

Role of Person	Degree of Injury				Total
	Fatal	Serious	Minor	None	
Pilot	2	1	1	15	19
Copilot	2	1	1	8	12
Passenger	17	2	15	76	110
Total aboard	21	4	17	99	141
Grand total	21	4	17	99	141
Percent	14.9	2.8	12.1	70.2	

Table 25 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1988

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
Minor	0	0	1	0	1	5.3
Substantial	12	3	0	0	15	78.9
Destroyed	0	0	1	2	3	15.8
Aircraft Number -	12	3	2	2	19	
Percent -	63.2	15.8	10.5	10.5		

Table 26 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1988

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	1	2	1	0	0	1	3	0	4	21.1
Dragged wing, rotor, pod, or float	1	0	0	0	0	0	1	0	1	5.3
Explosion	1	0	0	0	0	0	1	0	1	5.3
Complete gear collapsed	1	0	0	0	0	0	1	0	1	5.3
Gear not extended	1	0	0	0	0	0	1	0	1	5.3
Hard landing	2	0	0	0	0	0	2	0	2	10.5
In flight collision w/obj.	1	0	0	0	0	0	1	0	1	5.3
In flight collision w/ter.	0	0	0	1	0	0	0	1	1	5.3
Loss of control - in flight	0	0	0	1	0	0	0	1	1	5.3
Loss of control - on ground	1	0	0	0	0	0	1	0	1	5.3
On ground collision w/obj.	2	0	0	0	0	0	2	0	2	10.5
Loss of power(total) - mech failure/malfunction	1	0	1	0	0	0	1	1	2	10.5
Loss of power(partial) - non-mechanical	0	1	0	0	0	0	1	0	1	5.3
Aircraft Number -	12	3	2	2	0	1	15	3	19	
Percent -	63.2	15.8	10.5	10.5	.0	5.3	78.9	15.8		

Table 27 - AIRCRAFT BY FIRST OF OCCURRENCE AND BROAD PHASE OF OPERATION
SCHEDULED 14 CFR 135 OPERATIONS
1988

Type of first occurrence	Phase of operation								Aircraft	
	Stdng	Taxi	Tkoff	Cruis	Dscnt	Aprch	Landg	Manvr	No.	Percent
Airframe/component/system failure/malfunction	0	1	1	2	0	0	0	0	4	21.1
Dragged wing, rotor, pod, or float	0	0	0	0	0	0	1	0	1	5.3
Explosion	1	0	0	0	0	0	0	0	1	5.3
Complete gear collapsed	0	1	0	0	0	0	0	0	1	5.3
Gear not extended	0	0	0	0	0	0	1	0	1	5.3
Hard landing	0	0	0	0	0	0	2	0	2	10.5
In flight collision with object	0	0	0	0	0	0	0	1	1	5.3
In flight collision with terrain	0	0	0	0	0	1	0	0	1	5.3
Loss of control - in flight	0	0	1	0	0	0	0	0	1	5.3
Loss of control - on ground	0	1	0	0	0	0	0	0	1	5.3
On ground collision with object	0	2	0	0	0	0	0	0	2	10.5
Loss of power(total) - mech failure/malfunction	0	0	1	1	0	0	0	0	2	10.5
Loss of power(partial) - non-mechanical	0	0	0	0	1	0	0	0	1	5.3
Aircraft										
Number -	1	5	3	3	1	1	4	1	19	
Percent -	5.3	26.3	15.8	15.8	5.3	5.3	21.1	5.3		

Table 28 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1988

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing - starting engine(s)	1	0	0	0	0	0	1	0	1	5.3
Taxi	1	0	0	0	0	0	1	0	1	5.3
Taxi - to takeoff	3	0	0	0	0	0	3	0	3	15.8
Taxi - from landing	1	0	0	0	0	0	1	0	1	5.3
Takeoff - ground run	0	1	0	0	0	0	1	0	1	5.3
Takeoff - initial climb	0	0	1	1	0	0	0	2	2	10.5
Cruise	1	0	0	0	0	0	1	0	1	5.3
Cruise - normal	0	1	1	0	0	1	1	0	2	10.5
Descent - emergency	0	1	0	0	0	0	1	0	1	5.3
Approach - IAF to FAF/outer marker (IFR)	0	0	0	1	0	0	0	1	1	5.3
Landing	1	0	0	0	0	0	1	0	1	5.3
Landing - flare/touchdown	2	0	0	0	0	0	2	0	2	10.5
Landing - roll	1	0	0	0	0	0	1	0	1	5.3
Maneuvering - turn to reverse direction	1	0	0	0	0	0	1	0	1	5.3
Aircraft										
Number -	12	3	2	2	0	1	15	3	19	
Percent -	63.2	15.8	10.5	10.5	.0	5.3	78.9	15.8		

Table 29 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
SCHEDULED 14 CFR 135 OPERATIONS
1988

Condition of light	Type of weather		Aircraft	
	VMC	IMC	No.	Percent
Daylight	11	3	14	73.7
Night (dark)	1	3	4	21.1
Night (bright)	1	0	1	5.3
Aircraft				
Number -	13	6	19	
Percent -	68.4	31.6		

Table 30 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1988

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	8	2	1	2	13	68.4
Scheduled Domestic Cargo	0	1	0	0	1	5.3
Scheduled Domestic Pass/Cargo	4	1	0	0	5	26.3
Aircraft						
Number -	12	4	1	2	19	
Percent -	63.2	21.1	5.3	10.5		

Table 31 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
SCHEDULED 14 CFR 135 OPERATIONS
1988

Accident location	Flight plan			Aircraft	
	None	IFR	Cmpny VFR	No.	Percent
Off airport/airstrip	2	4	2	8	42.1
On Airport	1	8	2	11	57.9
Aircraft					
Number -	3	12	4	19	
Percent -	15.8	63.2	21.1		

Table 32 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1988

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	10	3	1	1	0	1	13	1	15	78.9
In-flight	1	0	0	0	0	0	1	0	1	5.3
On ground	1	0	1	1	0	0	1	2	3	15.8
Aircraft										
Number -	12	3	2	2	0	1	15	3	19	
Percent -	63.2	15.8	10.5	10.5	.0	5.3	78.9	15.8		

Table 33 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1988

Type of aircraft	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Fixed Wing Single Recip. Engine	3	1	0	0	0	0	4	0	4	21.1
Fixed Wing Multiple Recip. Engine	3	0	0	0	0	0	3	0	3	15.8
Fixed Wing Turboprop	6	2	2	2	0	1	8	3	12	63.2
Aircraft										
Number -	12	3	2	2	0	1	15	3	19	
Percent -	63.2	15.8	10.5	10.5	.0	5.3	78.9	15.8		

Table 34 - BROAD CAUSE/FACTOR ASSIGNMENTS*
SCHEDULED 14 CFR 135 OPERATIONS
1988

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	8	0	3	0	10
Propulsion System and Controls	0	4	0	1	0	5
Airframe	0	1	0	1	0	2
Landing Gear	0	1	0	0	0	1
Systems/Equipment/Instruments	0	3	0	1	0	3
Environment #	0	0	0	8	0	8
Weather	0	0	0	4	0	4
Light Conditions	0	0	0	2	0	2
Object(trees,wires,etc.)	0	0	0	3	0	3
Airport/Airways Facilities,Aids	0	0	0	1	0	1
Terrain/Runway Condition	0	0	0	2	0	2
Personnel #	2	15	1	8	2	15
Pilot	2	13	1	8	2	15
Others (Not Aboard)	0	4	0	2	0	6
Number of Aircraft					2	19
NTSB Determined Probable Cause					2	19

* 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 35 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 135 OPERATIONS
1978 - 1988

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1978	61	14	48	48	1,302,136	4.685	1.075
1979	52	15	66	66	1,169,921	4.445	1.282
1980	38	8	37	37	1,175,588	3.232	0.681
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	1,723,034	0.871	0.116
1987	32	10	59	57	1,927,580	1.660	0.519
1988	19	2	21	21	2,085,285	0.911	0.096

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

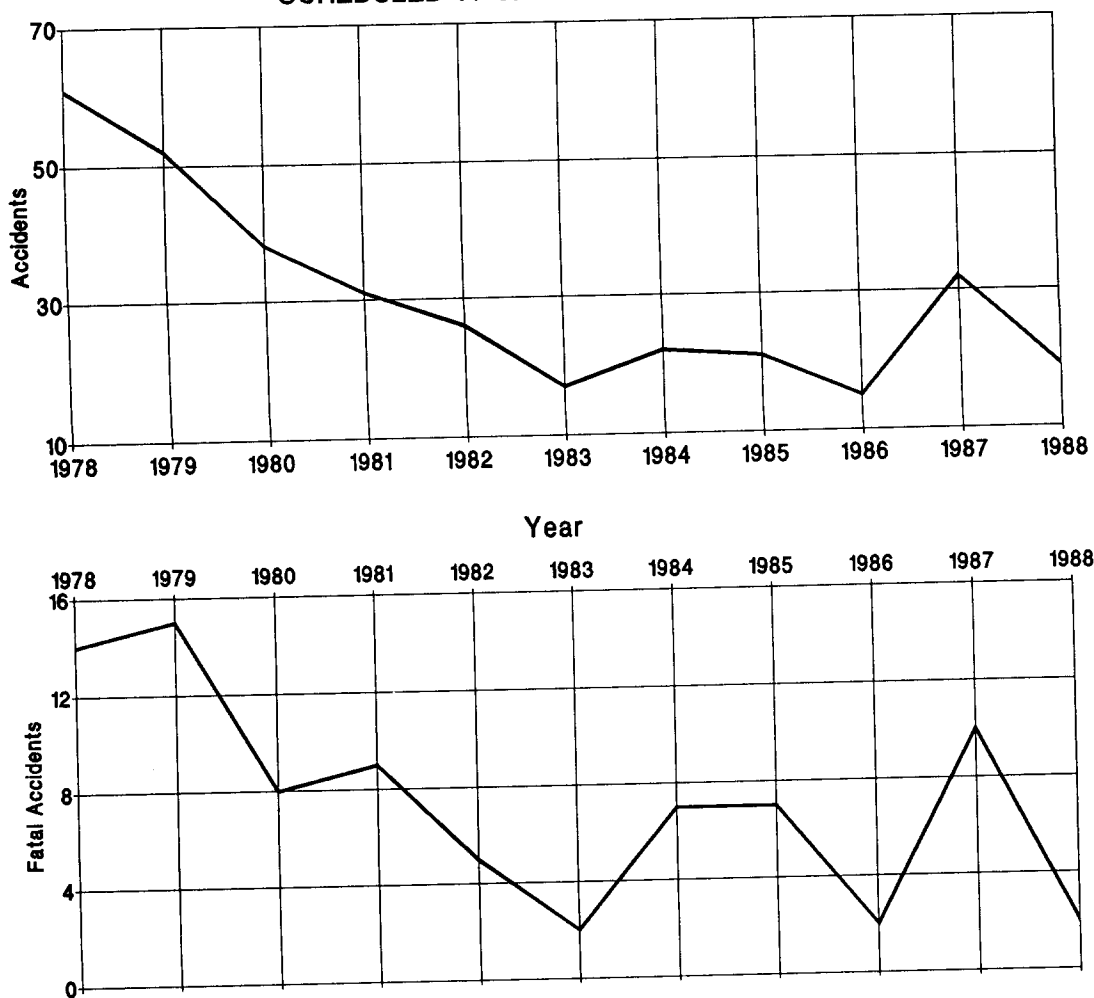


Figure 11 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 135 OPERATIONS

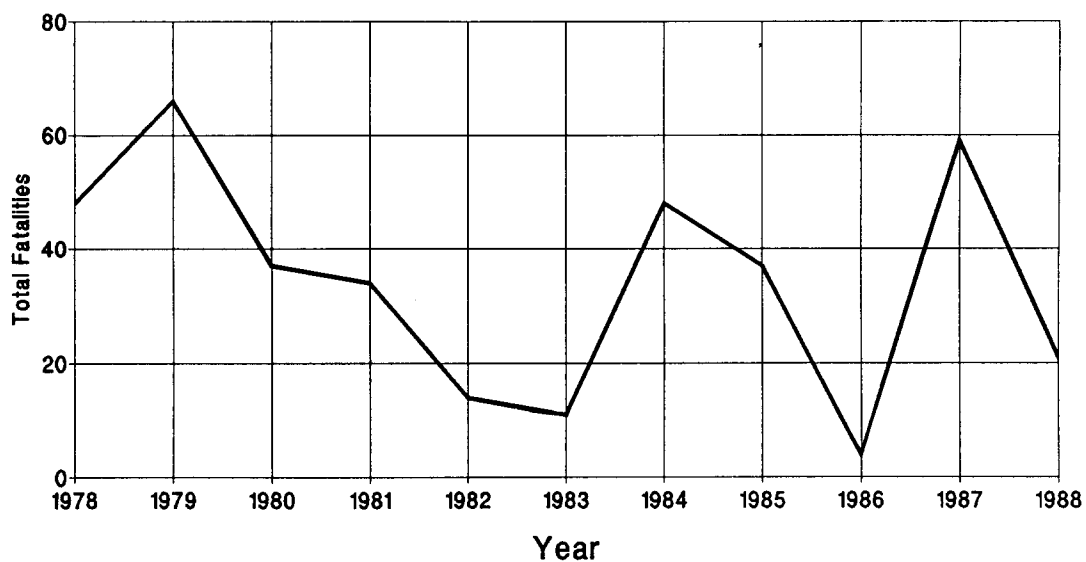


Figure 12 - ACCIDENT RATE PER 100,000 HOURS FLOWN
SCHEDULED 14 CFR 135 OPERATIONS

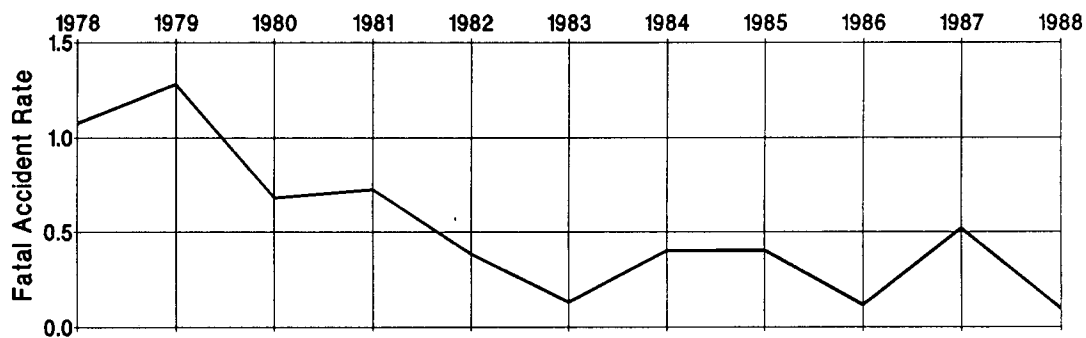
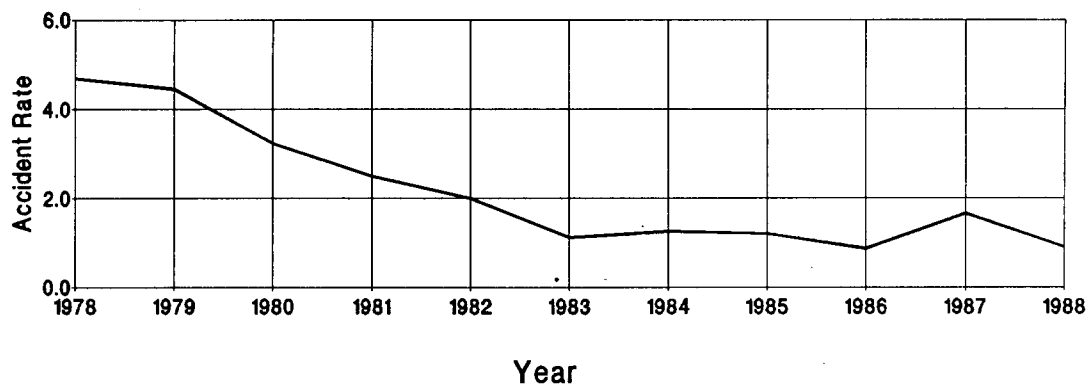


Table 36 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Type of Occurrence	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Airframe/component/system fail/malf	4	21.1	3.0	13.9	0	.0	.8	14.3
Loss of engine power(total) - non-mechanical	0	.0	2.6	12.0	0	.0	.6	10.7
In flight encounter with weather	0	.0	1.8	8.3	0	.0	.8	14.3
Loss of control - in flight	1	5.3	1.8	8.3	1	50.0	.8	14.3
On ground collision with object	2	10.5	1.4	6.5	0	.0	.2	3.6
In flight collision w/terrain	1	5.3	1.2	5.6	1	50.0	.4	7.1
Loss of control - on ground	1	5.3	1.2	5.6	0	.0	.0	.0
In flight collision with object	1	5.3	.8	3.7	0	.0	.4	7.1
Midair collision	0	.0	.8	3.7	0	.0	.4	7.1
Loss of engine power	0	.0	.8	3.7	0	.0	.4	7.1
Loss of engine power(partial) - non-mechanical	1	5.3	.8	3.7	0	.0	.2	3.6
Propeller/rotor contact to person	0	.0	.6	2.8	0	.0	.2	3.6
Fire	0	.0	.4	1.9	0	.0	.0	.0
Gear collapsed	0	.0	.4	1.9	0	.0	.0	.0
Main gear collapsed	0	.0	.4	1.9	0	.0	.0	.0
Nose gear collapsed	0	.0	.4	1.9	0	.0	.0	.0
Complete gear collapsed	1	5.3	.4	1.9	0	.0	.0	.0
Hard landing	2	10.5	.4	1.9	0	.0	.0	.0
Loss of engine power(partial) - mech failure/malfunction	0	.0	.4	1.9	0	.0	.2	3.6
Undershoot	0	.0	.4	1.9	0	.0	.0	.0
Vortex turbulence encountered	0	.0	.4	1.9	0	.0	.0	.0
Miscellaneous/other	0	.0	.4	1.9	0	.0	.0	.0
Not reported	0	.0	.2	.9	0	.0	.2	3.6
Overrun	0	.0	.2	.9	0	.0	.0	.0
Loss of engine power(total) - mech failure/malfunction	2	10.5	.2	.9	0	.0	.0	.0
Undetermined	0	.0	.2	.9	0	.0	.0	.0
Dragged wing, rotor, pod, or float	1	5.3	.0	.0	0	.0	.0	.0
Explosion	1	5.3	.0	.0	0	.0	.0	.0
Gear not extended	1	5.3	.0	.0	0	.0	.0	.0
Total Aircraft	19	100.0	21.6	100.0	2	100.0	5.6	100.0

Table 37 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Phase of Operation	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Approach	1	5.3	6.2	28.7	1	50.0	2.4	42.9
Landing	4	21.1	3.8	17.6	0	.0	.0	.0
Takeoff	3	15.8	3.0	13.9	1	50.0	1.0	17.9
Taxi	5	26.3	2.2	10.2	0	.0	.2	3.6
Cruise	3	15.8	1.6	7.4	0	.0	.4	7.1
Climb	0	.0	1.4	6.5	0	.0	.6	10.7
Descent	1	5.3	1.2	5.6	0	.0	.0	.0
Standing	1	5.3	1.0	4.6	0	.0	.2	3.6
Other	0	.0	.6	2.8	0	.0	.2	3.6
Maneuvering	1	5.3	.4	1.9	0	.0	.4	7.1
Not Reported	0	.0	.2	.9	0	.0	.2	3.6
Total Aircraft	19	100.0	21.6	100.0	2	100.0	5.6	100.0

Table 38 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Broad Cause/Factor	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	15	78.9	15.6	72.2	2	100.0	4.2	75.0
Other Person (Not Aboard)	6	31.6	7.8	36.1	0	.0	3.0	53.6
Weather	4	21.1	5.4	25.0	0	.0	2.0	35.7
Propulsion System and Controls	5	26.3	4.8	22.2	0	.0	1.4	25.0
Terrain/Runway Condition	2	10.5	5.0	23.1	0	.0	1.4	25.0
Systems/Equipment/ Instruments	3	15.8	4.0	18.5	0	.0	1.4	25.0
Object (tree,wires,etc)	3	15.8	3.0	13.9	0	.0	.6	10.7
Landing Gear	1	5.3	2.8	13.0	0	.0	.0	.0
Light Conditions	2	10.5	2.6	12.0	0	.0	1.0	17.9
Flight Control System	0	.0	1.2	5.6	0	.0	.6	10.7
Airframe	2	10.5	1.2	5.6	0	.0	.4	7.1
Other Person (Aboard)	0	.0	.2	.9	0	.0	.2	3.6
Airport/Airways Facilities, Aids	1	5.3	1.0	4.6	0	.0	.4	7.1
Total Aircraft	19		21.6		2		5.6	
NTSB Determined Probable Cause	19		21.6		2		5.6	

Nonscheduled 14 CFR 135 Operations

There were 96 accidents involving nonscheduled 14 CFR 135 aircraft in 1988. Twenty-seven of them were fatal, involving a total of 58 fatalities. The number of accidents and fatal accidents, during 1988, was almost identical to the 1987 totals, with a 10.8 percent decrease in the number of fatalities.

The average accident rate for the ten year period 1978 - 1987 was 4.71 accidents per 100,000 hours flown. The 1988 rate of 3.38 is 28.2 percent below this average. The 1988 fatal accident rate of 0.95, the lowest since 1984, is 14.4 percent below the ten year average of 1.11.

Table 39 - SUMMARY OF LOSSES
NONSCHEDULED 14 CFR 135 OPERATIONS
1984 - 1988

	1984	1985	1986	1987	1988
-----	-----	-----	-----	-----	-----
Accidents					

Fatal	23	35	31	30	27
Involved Serious Injury	19	12	13	9	12
Involved Minor or No Injury	104	105	72	58	57
-----	-----	-----	-----	-----	-----
Total	146	152	116	97	96
Fatalities					

Passenger	22	39	26	31	21
Crew	30	36	35	32	33
Other Persons	0	1	4	2	4
-----	-----	-----	-----	-----	-----
Total	52	76	65	65	58
Aircraft Damaged (Nonscheduled 14 CFR 135)					

Destroyed	40	50	38	34	34
Substantial	104	102	76	62	60
Minor	1	2	1	4	1
None	2	1	2	0	1
-----	-----	-----	-----	-----	-----
Total	147	155	117	100	96

Table 40 - ACCIDENT RATES
NONSCHEDULED 14 CFR 135 OPERATIONS

	1984	1985	1986	1987	1988
-----	-----	-----	-----	-----	-----
Aircraft Hours Flown	3,079,007	2,782,696	2,913,358	2,877,002	2,841,717
Accident Rates *					

All Accidents	4.74	5.46	3.98	3.37	3.38
Fatal Accidents	0.75	1.26	1.06	1.04	0.95

*Per Hundred Thousand Hours Flown

Table 41 - LIST OF ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/04	Akiachak, AK	Passenger	Cessna 207	Substantial	None	Loss of control - on ground
1/04	Bedford Park, IL	Cargo	Cessna T210N	Destroyed	Fatal (1)	Loss of power
1/08	Dewitt, AR	Passenger	Beech 58	Substantial	None	In flight collision with terrain
1/08	Monroe, LA	Cargo	Gates Learjet 36A	Destroyed	Fatal (2)	In flight collision with terrain
1/08	Atlantic City, NJ	Passenger	Piper PA-23-250	Substantial	Minor	Gear not extended
1/18	Augusta, GA	Passenger	Piper PA-23	Destroyed	Serious	In flight collision with object
1/18	Albuquerque, NM	Cargo	Cessna 402	Substantial	Minor	Loss of control - on ground
1/26	Urbana, IL	Passenger	Cessna T310R	Substantial	None	Airframe/component/system failure/malfunction
1/30	Cold Bay, AK	Cargo	Piper PA-32-300	Substantial	Serious	In flight collision with terrain
2/01	Bangor, ME	Pax and Cargo	Cessna 402B	Substantial	None	Loss of power(partial) - mech failure/malfunction
2/02	Hyannis, MA	Passenger	Cessna 303	Substantial	None	Overrun
2/03	Helena, MT	Cargo	Cessna 421A	Destroyed	Fatal (3)	In flight collision with terrain
2/10	Burlington, IA	Passenger	Piper PA-34-200T	Substantial	None	On ground collision with terrain
2/12	Brevig Mission, AK	Cargo	Cessna 207	Substantial	None	Loss of control - on ground
2/19	Stratford, CT	Cargo	Piper PA-34-200T	Destroyed	Fatal (2)	In flight collision with terrain
2/19	Hamilton Twp., NJ	Passenger	Piper PA-31-325	Destroyed	Fatal (3)	Loss of control - in flight
2/23	Kipnuk, AK	Passenger	Piper PA-32-300	Substantial	None	In flight encounter with weather
2/24	Morganton, NC	Cargo	Beech 18S	Substantial	None	Loss of control - on ground
3/03	Vienna, MO	Cargo	Beech E18S	Destroyed	Fatal (2)	Airframe/component/system failure/malfunction
3/10	Dixon, IL	Passenger	Piper PA-31-350	Substantial	None	Airframe/component/system failure/malfunction
3/10	Warren, MI	Cargo	Beech E18S	Destroyed	Fatal (3)	Loss of control - in flight

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
3/11	Ruby, AK	Cargo	Cessna 207	Substantial	None	Loss of power(partial) - mech failure/malfunction
3/17	Taylorville, IL	Passenger	Bell 206L-1	Destroyed	Serious	Loss of control - in flight
3/22	Excelsior Spgs, MO	Cargo	Piper PA-23-250	Destroyed	None	Loss of power(total) - non-mechanical
3/24	Offshore Oil, GM	Pax and Cargo	Sikorsky S-76A	None	Serious	Propeller/rotor contact
4/01	Kansas City, MO	Cargo	Beech H18	Destroyed	Fatal (1)	Abrupt maneuver
4/01	Springfield, MO	Passenger	Bell 206L-1	Substantial	Serious	In flight encounter with weather
4/02	Silver Plume, CO	Passenger	Aerospatiale SA316B	Substantial	None	Airframe/component/system failure/malfunction
4/04	Hardwick, MN	Cargo	Cessna 207	Destroyed	Fatal (1)	In flight collision with terrain
4/05	St. Paul, MN	Passenger	Beech 890	Substantial	None	Altitude deviation,uncontrolled
4/08	Soda Springs, ID	Cargo	Aero Commander 680FL	Destroyed	Fatal (2)	Airframe/component/system failure/malfunction
4/17	Cajon, CA	Passenger	Aerospatiale AS355F	Destroyed	Fatal (2)	In flight encounter with weather
4/18	Cantwell, AK	Pax and Cargo	Cessna 206	Substantial	None	Loss of control - on ground
4/27	Hayward, CA	Cargo	Piper PA-31-350	Destroyed	Serious	Loss of power(partial) - mech failure/malfunction
5/02	Atlanta, GA	Passenger	Beech 55	Substantial	None	Loss of control - on ground
5/06	Hunter Creek, AK	Passenger	Cessna 185F	Substantial	Minor	Main gear collapsed
5/14	Mathew, VA	Passenger	Cessna 172RG	Substantial	None	Loss of control - in flight
5/17	Little Rock, AR	Cargo	Aero Commander 690A	Destroyed	Fatal (1)	Loss of control - in flight
5/18	Skwentna, AK	Pax and Cargo	Piper PA-32-260	Destroyed	Fatal (3)	In flight collision with terrain
5/18	Port Heiden, AK	Pax and Cargo	Piper PA-32-301	Substantial	None	On ground collision with terrain
5/24	Dillingham, AK	Cargo	Aerospatiale AS350D	Destroyed	Fatal (4)	Midair collision
5/25	West Columbia, SC	Cargo	Cessna 402B	Destroyed	Fatal (1)	Airframe/component/system failure/malfunction

Table 41 - LIST OF ACCIDENTS (Continued)
 NONSCHEDULED 14 CFR 135 OPERATIONS
 1988

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
5/29	Honolulu, HI	Passenger	Bell 206B	Destroyed	Minor	Loss of control - in flight
6/01	Eagle, AK	Cargo	DeHavilland DHC-3	Substantial	None	Loss of control - on ground
6/01	Utica, NY	Cargo	Beech H18	Substantial	None	Loss of power(partial) - mech failure/malfunction
6/18	St. Louis, MO	Cargo	Volpar D18S	Substantial	None	Main gear collapsed
6/19	Warroad, MN	Passenger	DeHavilland DHC-2	Substantial	Minor	On ground collision with terrain
6/24	Cleveland, OH	Cargo	Short Brothers SC.7	Substantial	None	Nose gear collapsed
6/27	Barter Island, AK	Pax and Cargo	Cessna 185F	Substantial	None	Overrun
7/01	Akron, NY	Passenger	Piper PA-32-300	Substantial	None	Overrun
7/08	Kitoi Bay, AK	Pax and Cargo	Hughes 369D	Substantial	None	Roll over
7/22	Dillingham, AK	Passenger	Piper PA-32-300	Substantial	Minor	Loss of control - in flight
7/22	Oklahoma City, OK	Cargo	Piper PA-28R	Substantial	Serious	On ground collision with terrain
7/23	Kongiganak, AK	Passenger	Cessna 207A	Substantial	Serious	Loss of control - on ground
7/30	Liscome Bay, AK	Pax and Cargo	Cessna 185	Destroyed	Fatal (3)	Loss of control - in flight
8/08	Cooper Landing, AK	Passenger	Cessna 207A	Substantial	None	Loss of power(total) - mech failure/malfunction
8/14	Kwethluk, AK	Passenger	Piper PA-32	Substantial	None	Loss of control - on ground
8/15	Tok, AK	Passenger	Piper PA-18-150	Substantial	None	Loss of control - on ground
8/17	Mt. Torbet, AK	Cargo	Cessna 402B	Substantial	Fatal (2)	In flight collision with terrain
8/18	Sitka, AK	Cargo	DeHavilland DHC-2	Destroyed	Fatal (1)	Loss of control - in flight
8/27	Joseph Village, AK	Pax and Cargo	Cessna 185F	Substantial	None	Main gear collapsed
8/31	Barrett Junct., CA	Passenger	Bell 206L-1	Substantial	Serious	In flight collision with object
9/01	Antelope Wells, NM	Passenger	Cessna 182RG	Substantial	None	On ground collision with object

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
9/05	Sitka, AK	Passenger	Britten Norman BN-2A	Destroyed	Fatal (1)	In flight collision with terrain
9/11	Ruth Lake, AK	Passenger	DeHavilland DHC-2	Substantial	None	Overrun
9/16	Lihue, HI	Passenger	Bell 206L	Substantial	None	Loss of power(partial) - non-mechanical
9/16	Hays, KS	Cargo	Aero Commander 500B	Substantial	Minor	Loss of control - on ground
9/21	Chip River, AK	Pax and Cargo	Cessna 185F	Substantial	None	Loss of control - on ground
9/22	New Koliganek, AK	Pax and Cargo	Cessna 207A	Substantial	None	Overrun
9/23	Zacher Bay, AK	Passenger	DeHavilland DHC-2	Substantial	None	Loss of control - on ground
9/29	Santa Barbara, CA	Pax and Cargo	Bell 206L-1	Substantial	None	Loss of power(total) - mech failure/malfunction
9/30	Homer, AK	Passenger	Cessna 206	Substantial	Serious	Loss of power(total) - non-mechanical
10/02	Tell City, IN	Passenger	Cessna 310Q	Destroyed	Serious	In flight encounter with weather
10/03	Kodiak, AK	Passenger	Cessna 206	Substantial	Minor	Loss of control - in flight
10/05	Eagle, AK	Pax and Cargo	Cessna 206	Substantial	None	In flight collision with object
10/10	Akiachak, AK	Passenger	Cessna 182C	Substantial	None	Loss of control - on ground
10/15	Cedar Rapids, IA	Cargo	Piper PA-28-151	Substantial	None	Loss of power(total) - non-mechanical
10/16	Sedona, AZ	Passenger	Piper PA-32-300	Destroyed	Fatal (5)	Loss of power(total) - mech failure/malfunction
10/16	Wallingford, CT	Passenger	Bell 206L-1	Destroyed	Serious	Loss of power(total) - non-mechanical
10/16	Edinburg, TX	Pax and Cargo	Piper PA-31-350	Destroyed	None	Loss of power(total) - non-mechanical
10/23	Ivanof Bay, AK	Cargo	Piper PA-32-301	Substantial	None	Hard landing
10/29	Aspen, CO	Passenger	Canadair CL-600-1A11	Substantial	Minor	Loss of control - on ground
11/02	Houston, TX	Cargo	Piper 601B	Destroyed	Fatal (1)	In flight collision with object
11/04	W. Cameron 617, GM	Pax and Cargo	Aerospatiale	Destroyed	Fatal (4)	Airframe/component/system failure/malfunction

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
11/05	Monaghan, PA	Cargo	Cessna 207	Destroyed	Fatal (1)	In flight collision with terrain
11/06	Anacortes, WA	Pax and Cargo	Cessna 210K	Substantial	None	Gear collapsed
11/12	Topping, VA	Passenger	Cessna 207	Minor	None	Midair collision
11/13	Jacksonville, FL	Passenger	Piper PA-28-181	Destroyed	Fatal (4)	In flight collision with object
11/14	Kasitsna Bay, AK	Mail Only	Cessna A185F	Substantial	None	Nose over
11/16	Chicago, IL	Cargo	Mitsubishi MU-2B-60	Destroyed	Fatal (1)	Loss of control - in flight
11/17	Bend, OR	Passenger	Gates Learjet 25B	Substantial	None	Overrun
12/05	South Marsh 113, GM	Pax and Cargo	MBB BO-105	Substantial	Minor	Airframe/component/system failure/malfunction
12/14	Kasaan, AK	Passenger	DeHavilland DHC-2	Destroyed	Fatal (1)	Loss of control - in flight
12/21	Porcupine Lodge, AK	Passenger	Cessna 185	Substantial	None	On ground collision with terrain
12/22	Cape Girardeau, MO	Passenger	Bell 206L-1	Destroyed	Fatal (3)	In flight encounter with weather
12/24	Spokane, WA	Mail Only	Beech 99A	Substantial	None	Airframe/component/system failure/malfunction

Table 42 - PERSONS BY ROLE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Role of Person	Degree of Injury				Total
	Fatal	Serious	Minor	None	
Pilot	25	9	9	53	96
Copilot	3	0	1	5	9
Cabin attendants	0	0	0	1	1
Other crew	5	2	0	6	13
Passenger	21	19	22	108	170
Total aboard	54	30	32	173	289
Other aircraft*	2	1	1	2	6
Other ground	2	0	0	0	2
Grand total	58	31	33	175	297
Percent	19.5	10.4	11.1	58.9	

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

Table 43 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
None	0	0	1	0	1	1.0
Minor	1	0	0	0	1	1.0
Substantial	44	9	6	1	60	62.5
Destroyed	2	1	5	26	34	35.4
Aircraft						
Number -	47	10	12	27	96	
Percent -	49.0	10.4	12.5	28.1		

Table 44 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Abrupt maneuver	0	0	0	1	0	0	0	1	1	1.0
Altitude deviation, uncontrolled	1	0	0	0	0	0	1	0	1	1.0
Airframe/component/system failure/malfunction	4	1	0	4	0	0	5	4	9	9.4
Gear collapsed	1	0	0	0	0	0	1	0	1	1.0
Main gear collapsed	2	1	0	0	0	0	3	0	3	3.1
Nose gear collapsed	1	0	0	0	0	0	1	0	1	1.0
Gear not extended	0	1	0	0	0	0	1	0	1	1.0
Hard landing	1	0	0	0	0	0	1	0	1	1.0
In flight collision with object	1	0	2	2	0	0	2	3	5	5.2
In flight collision with terrain	1	0	1	8	0	0	3	7	10	10.4
In flight encounter with weather	1	0	2	2	0	0	2	3	5	5.2
Loss of control - in flight	1	3	1	7	0	0	3	9	12	12.5
Loss of control - on ground	11	3	1	0	0	0	15	0	15	15.6
Midair collision	1	0	0	1	0	1	0	1	2	2.1
Nose over	1	0	0	0	0	0	1	0	1	1.0
On ground collision with object	1	0	0	0	0	0	1	0	1	1.0
On ground collision with terrain	3	1	1	0	0	0	5	0	5	5.2
Overrun	6	0	0	0	0	0	6	0	6	6.3
Loss of power	0	0	0	1	0	0	0	1	1	1.0
Loss of power(total) - mech failure/malfunction	2	0	0	1	0	0	2	1	3	3.1
Loss of power(partial) - mech failure/malfunction	3	0	1	0	0	0	3	1	4	4.2
Loss of power(total) - non-mechanical	3	0	2	0	0	0	2	3	5	5.2
Loss of power(partial) - non-mechanical	1	0	0	0	0	0	1	0	1	1.0
Propeller/rotor contact	0	0	1	0	1	0	0	0	1	1.0
Roll over	1	0	0	0	0	0	1	0	1	1.0
Aircraft Number -	47	10	12	27	1	1	60	34	96	
Percent -	49.0	10.4	12.5	28.1	1.0	1.0	62.5	35.4		

Table 45 - AIRCRAFT BY FIRST OCCURRENCE BROAD PHASE OF OPERATION
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Type of first occurrence	Phase of operation										Aircraft	
	Stdng	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Manvr	Other	No.	Percent
Abrupt maneuver	0	0	0	0	0	0	1	0	0	0	1	1.0
Altitude deviation, uncontrolled	0	0	0	0	1	0	0	0	0	0	1	1.0
Airframe/component/system failure/malfunction	0	0	2	1	3	1	1	1	0	0	9	9.4
Gear collapsed	0	0	0	0	0	0	0	1	0	0	1	1.0
Main gear collapsed	0	0	0	0	0	0	0	3	0	0	3	3.1
Nose gear collapsed	0	0	0	0	0	0	0	1	0	0	1	1.0
Gear not extended	0	0	0	0	0	0	0	1	0	0	1	1.0
Hard landing	0	0	0	0	0	0	0	1	0	0	1	1.0
In flight collision w/object	0	0	0	0	0	1	3	0	1	0	5	5.2
In flight collision w/terrain	0	0	0	0	3	1	3	1	2	0	10	10.4
In flight encounter w/weather	0	0	1	0	1	0	2	0	1	0	5	5.2
Loss of control - in flight	0	0	5	0	0	0	3	0	3	1	12	12.5
Loss of control - on ground	0	1	8	0	0	0	0	6	0	0	15	15.6
Midair collision	0	0	1	0	1	0	0	0	0	0	2	2.1
Nose over	0	0	0	0	0	0	0	1	0	0	1	1.0
On ground collision w/object	0	0	1	0	0	0	0	0	0	0	1	1.0
On ground collision w/terrain	0	3	1	0	0	0	0	0	0	1	5	5.2
Overrun	0	0	0	0	0	0	0	4	0	2	6	6.3
Loss of power	0	0	0	0	0	0	1	0	0	0	1	1.0
Loss of power(total) - mech failure/malfunction	0	0	0	1	1	0	1	0	0	0	3	3.1
Loss of power(partial) - mech failure/malfunction	0	0	1	1	0	0	1	0	1	0	4	4.2
Loss of power(total) - non-mechanical	0	0	1	1	1	1	1	0	0	0	5	5.2
Loss of power(partial) - non-mechanical	0	0	0	0	0	0	1	0	0	0	1	1.0
Propeller/rotor contact	1	0	0	0	0	0	0	0	0	0	1	1.0
Roll over	0	0	1	0	0	0	0	0	0	0	1	1.0
Aircraft Number -	1	4	22	4	11	4	18	20	8	4	96	
Percent -	1.0	4.2	22.9	4.2	11.5	4.2	18.8	20.8	8.3	4.2		

Table 46 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing - idling rotors	0	0	1	0	1	0	0	0	1	1.0
Taxi - to takeoff	2	0	0	0	0	0	2	0	2	2.1
Taxi - from landing	1	1	0	0	0	0	2	0	2	2.1
Takeoff	2	0	0	1	0	0	2	1	3	3.1
Takeoff - ground run	5	3	1	0	0	0	9	0	9	9.4
Takeoff - initial climb	4	2	1	3	0	1	5	4	10	10.4
Climb - to cruise	3	1	0	0	0	0	3	1	4	4.2
Cruise	1	0	1	3	0	0	2	3	5	5.2
Cruise - normal	2	0	2	2	0	0	3	3	6	6.3
Descent	0	0	0	2	0	0	1	1	2	2.1
Descent - normal	1	0	1	0	0	0	2	0	2	2.1
Approach	2	0	1	4	0	0	1	6	7	7.3
Approach - VFR pattern - base turn	0	0	1	0	0	0	0	1	1	1.0
Approach - VFR pattern - base to final	0	0	1	0	0	0	0	1	1	1.0
Approach - VFR pattern - final approach	2	0	0	0	0	0	2	0	2	2.1
Approach - IAF to FAF/outer marker (IFR)	0	0	0	2	0	0	0	2	2	2.1
Approach - FAF/outer marker to threshold (IFR)	0	0	0	3	0	0	0	3	3	3.1
Approach - circling(IFR)	0	0	0	1	0	0	0	1	1	1.0
Approach - missed approach (IFR)	0	0	1	0	0	0	0	1	1	1.0
Landing	1	0	0	0	0	0	1	0	1	1.0
Landing - flare/touchdown	3	1	1	0	0	0	5	0	5	5.2
Landing - roll	13	1	0	0	0	0	14	0	14	14.6
Maneuvering	2	1	0	3	0	0	3	3	6	6.3
Maneuvering - turn to reverse direction	0	0	0	2	0	0	0	2	2	2.1
Other	3	0	0	1	0	0	3	1	4	4.2
Aircraft										
Number -	47	10	12	27	1	1	60	34	96	
Percent -	49.0	10.4	12.5	28.1	1.0	1.0	62.5	35.4		

Table 47 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Dawn	3	0	0	3	3.1
Daylight	58	6	1	65	67.7
Night (dark)	12	12	1	25	26.0
Night (bright)	1	0	0	1	1.0
Dusk	2	0	0	2	2.1
Aircraft					
Number -	76	18	2	96	
Percent -	79.2	18.8	2.1		

Table 48 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Domestic Passenger	23	7	8	7	45	46.9
Domestic Cargo	10	2	3	17	32	33.3
Domestic Pass/Cargo	12	1	0	3	16	16.7
Domestic Mail	2	0	0	0	2	2.1
International Pass/Cargo	0	0	1	0	1	1.0
Aircraft						
Number -	47	10	12	27	96	
Percent -	49.0	10.4	12.5	28.1		

Table 49 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Accident location	Flight plan						Aircraft	
	None	VFR	IFR	VFR/ IFR	Cmpny VFR	Other	No.	Percent
Off airport/airstrip	9	15	16	1	17	1	59	61.5
On airport	3	2	16	1	9	0	31	32.3
On airstrip	2	1	0	0	3	0	6	6.3
Aircraft								
Number -	14	18	32	2	29	1	96	
Percent -	14.6	18.8	33.3	2.1	30.2	1.0		

Table 50 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	45	10	10	14	1	1	59	18	79	82.3
On ground	1	0	2	13	0	0	0	16	16	16.7
In-flight and on ground	1	0	0	0	0	0	1	0	1	1.0
Aircraft Number -	47	10	12	27	1	1	60	34	96	
Percent -	49.0	10.4	12.5	28.1	1.0	1.0	62.5	35.4		

Table 51 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

Type of aircraft	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
All fixed wing *	43	8	7	23	0	1	53	27	81	84.4
Fixed Wing Single Recip. Eng.	27	4	4	9	0	1	34	9	44	45.8
Fixed Wing Multiple Recip. Eng.	11	3	3	11	0	0	13	15	28	29.2
Fixed Wing Turboprop	4	0	0	2	0	0	4	2	6	6.3
Fixed Wing Turbojet	1	1	0	1	0	0	2	1	3	3.1
All Rotorcraft *	4	2	5	4	1	0	7	7	15	15.6
Rotorcraft, Turbine Engine	4	2	5	4	1	0	7	7	15	15.6
Aircraft Number -	47	10	12	27	1	1	60	34	96	
Percent -	49.0	10.4	12.5	28.1	1.0	1.0	62.5	35.4		

* Not included in column totals

Table 52 - BROAD CAUSE/FACTOR ASSIGNMENTS*
 NONSCHEDULED 14 CFR 135 OPERATIONS
 1988

Cause/Factor	Cited as a Cause		Cited as a Factor		Cited as Either a Cause or a Factor (or Both)	
	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents	Fatal Accidents	All Accidents
Aircraft #	6	26	2	13	7	33
Propulsion System and Controls	3	15	0	3	3	17
Flight Control System	1	3	0	1	1	3
Airframe	1	1	0	1	1	2
Landing Gear	0	5	0	4	0	9
Systems/Equipment/Instruments	1	3	2	6	2	7
Environment #	0	3	20	67	20	68
Weather	0	1	16	34	16	35
Light Conditions	0	0	10	18	10	18
Object(trees,wires,etc.)	0	0	5	14	5	14
Airport/Airways Facilities,Aids	0	1	0	1	0	2
Terrain/Runway Condition	0	1	8	35	8	35
Personnel #	25	82	15	38	27	88
Pilot	23	78	14	34	25	83
Others (Aboard)	0	1	0	0	0	1
Others (Not Aboard)	3	6	4	8	7	14
Number of Aircraft					27	96
NTSB Determined Probable Cause					27	96

* 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 53 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
 NONSCHEDULED 14 CFR 135 OPERATIONS
 1978 - 1988

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1978	198	54	155	152	3,545,753	5.58	1.52
1979	160	30	77	73	3,684,321	4.34	0.81
1980	171	46	105	101	3,617,724	4.73	1.27
1981	157	40	94	92	2,895,827	5.42	1.38
1982	132	31	72	72	3,256,763	4.05	0.95
1983	141	27	62	57	2,574,883	5.48	1.05
1984	146	23	52	52	3,079,007	4.74	0.75
1985	152	35	76	75	2,782,696	5.46	1.26
1986	116	31	65	61	2,913,358	3.98	1.06
1987	97	30	65	63	2,877,002	3.37	1.04
1988	96	27	58	54	2,841,717	3.38	0.95

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

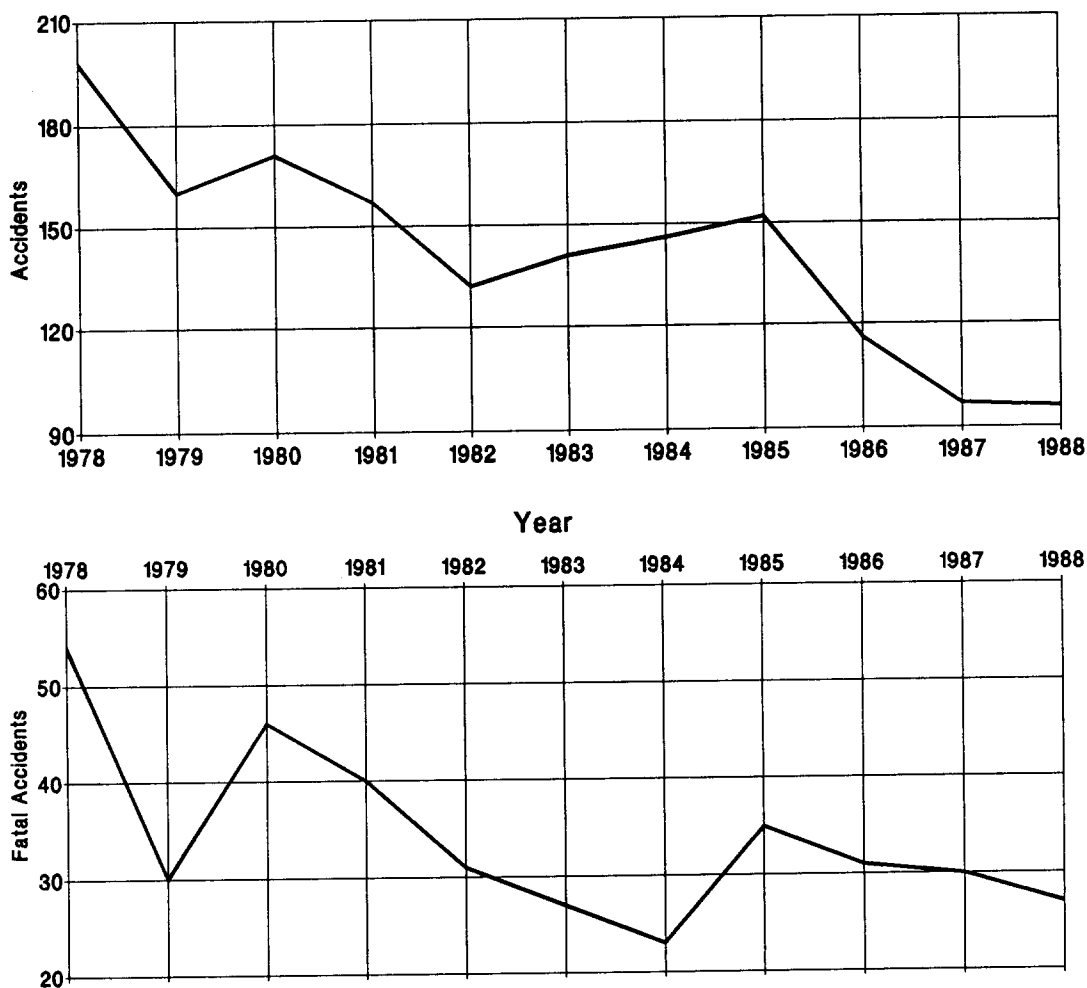


Figure 14 - NUMBER OF FATALITIES
NONSCHEDULED 14 CFR 135 OPERATIONS

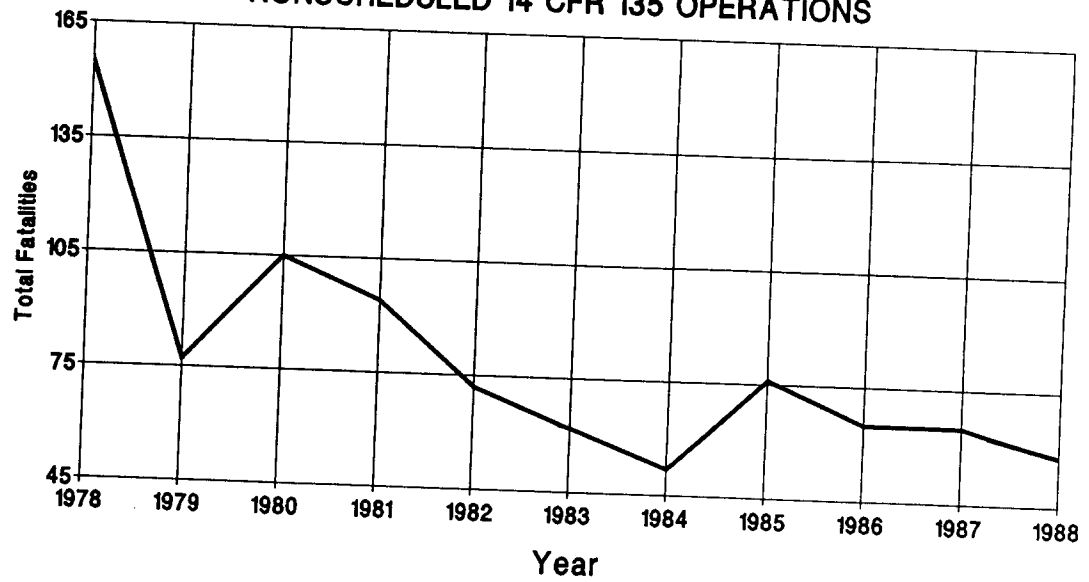


Figure 15 - ACCIDENT RATE PER 100,000 HOURS FLOWN
NONSCHEDULED 14 CFR 135 OPERATIONS

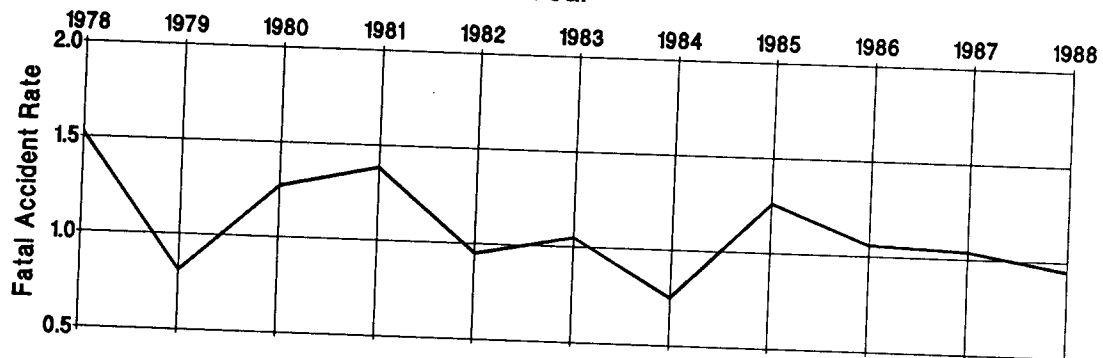
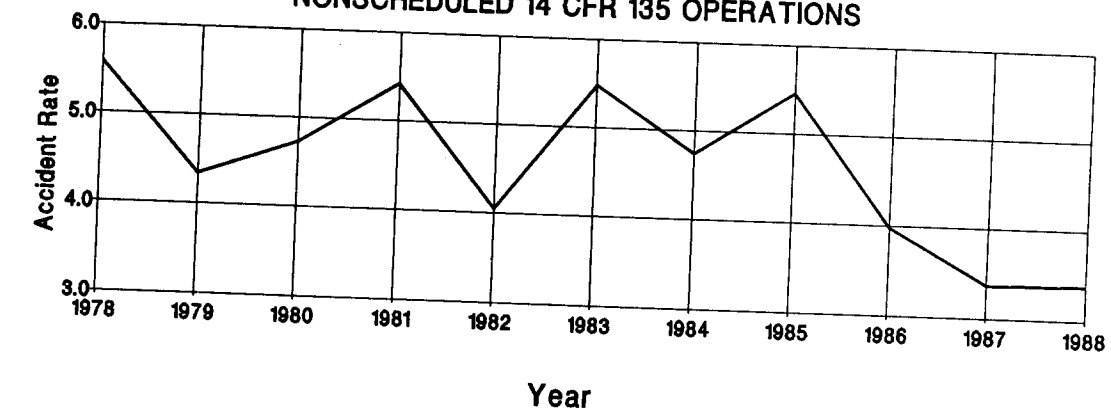


Table 54 - FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Type of Occurrence	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Loss of control - in flight	12	12.5	14.8	11.2	7	25.9	6.0	20.4
In flight encounter with weather	5	5.2	12.4	9.4	2	7.4	6.2	21.1
Airframe/component/system fail/malf	9	9.4	10.6	8.0	4	14.8	1.8	6.1
Loss of control - on ground	15	15.6	10.2	7.7	0	.0	.4	1.4
Loss of engine power(total) - non-mechanical	5	5.2	10.2	7.7	0	.0	.8	2.7
In flight collision with object	5	5.2	10.0	7.6	2	7.4	2.4	8.2
In flight collision w/terrain	10	10.4	9.6	7.3	8	29.6	4.2	14.3
On ground collision with object	1	1.0	8.4	6.3	0	.0	.6	2.0
Loss of engine power(total) - mech failure/malfunction	3	3.1	8.4	6.3	1	3.7	1.0	3.4
Loss of engine power	1	1.0	4.4	3.3	1	3.7	1.0	3.4
Loss of engine power(partial) - mech failure/malfunction	4	4.2	4.0	3.0	0	.0	1.0	3.4
Main gear collapsed	3	3.1	3.4	2.6	0	.0	.0	.0
Overrun	6	6.3	3.2	2.4	0	.0	.0	.0
Fire	0	.0	2.6	2.0	0	.0	.4	1.4
Undershoot	0	.0	2.6	2.0	0	.0	.2	.7
On ground collision w/terrain	5	5.2	2.4	1.8	0	.0	.0	.0
Loss of engine power(partial) - non-mechanical	1	1.0	1.8	1.4	0	.0	.0	.0
Hard landing	1	1.0	1.4	1.1	0	.0	.0	.0
Midair collision	2	2.1	1.4	1.1	1	3.7	.8	2.7
Miscellaneous/other	0	.0	1.4	1.1	0	.0	.2	.7
Propeller/rotor contact to person	1	1.0	1.2	.9	0	.0	.2	.7
Abrupt maneuver	1	1.0	.8	.6	1	3.7	.6	2.0
Explosion	0	.0	.8	.6	0	.0	.2	.7
Nose gear collapsed	1	1.0	.8	.6	0	.0	.0	.0
Nose over	1	1.0	.8	.6	0	.0	.0	.0
Altitude deviation,uncontrolled	1	1.0	.6	.5	0	.0	.4	1.4
Gear collapsed	1	1.0	.6	.5	0	.0	.0	.0
On ground encounter with weather	0	.0	.6	.5	0	.0	.0	.0
Roll over	1	1.0	.6	.5	0	.0	.2	.7
Fire/explosion	0	.0	.4	.3	0	.0	.0	.0
Gear not extended	1	1.0	.4	.3	0	.0	.0	.0
Undetermined	0	.0	.4	.3	0	.0	.4	1.4
Missing aircraft	0	.0	.4	.3	0	.0	.4	1.4
Dragged wing, rotor, pod, or float	0	.0	.2	.2	0	.0	.0	.0
Forced landing	0	.0	.2	.2	0	.0	.0	.0
Tail gear collapsed	0	.0	.2	.2	0	.0	.0	.0
Other gear collapsed	0	.0	.2	.2	0	.0	.0	.0
Total Aircraft	96	100.0	132.4	100.0	27	100.0	29.4	100.0

Table 55 - FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Phase of Operation	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Takeoff	25	26.0	27.8	21.0	4	14.8	4.4	15.0
Cruise	11	11.5	27.4	20.7	5	18.5	7.2	24.5
Landing	21	21.9	27.0	20.4	1	3.7	1.2	4.1
Approach	18	18.8	15.6	11.8	10	37.0	6.0	20.4
Maneuvering	8	8.3	9.4	7.1	5	18.5	3.6	12.2
Taxi	4	4.2	6.6	5.0	0	.0	.0	.0
Climb	4	4.2	6.0	4.5	0	.0	2.2	7.5
Descent	4	4.2	5.0	3.8	2	7.4	2.2	7.5
Standing	1	1.0	4.6	3.5	0	.0	.8	2.7
Other	0	.0	3.0	2.3	0	.0	1.8	6.1
Total Aircraft	96	100.0	132.4	100.0	27	100.0	29.4	100.0

Table 56 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1988 AND 1983 - 1987

Broad Cause/Factor	All Accidents				Fatal Accidents			
	1988		1983 - 1987		1988		1983 - 1987	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	83	86.5	100.0	75.5	25	92.6	24.4	83.0
Weather	35	36.5	40.2	30.4	16	59.3	12.6	42.9
Terrain/Runway Condition	35	36.5	41.8	31.6	8	29.6	9.4	32.0
Propulsion System and Controls	17	17.7	29.8	22.5	3	11.1	4.4	15.0
Light Conditions	18	18.8	25.0	18.9	10	37.0	8.0	27.2
Object (tree,wires,etc)	14	14.6	24.0	18.1	5	18.5	5.2	17.7
Other Person (Not Aboard)	14	14.6	23.2	17.5	7	25.9	6.4	21.8
Landing Gear	9	9.4	15.4	11.6	0	.0	.4	1.4
Systems/Equipment/Instruments	7	7.3	11.8	8.9	2	7.4	3.4	11.6
Airframe	2	2.1	6.8	5.1	1	3.7	1.8	6.1
Flight Control System	3	3.1	2.0	1.5	1	3.7	1.0	3.4
Other Person (Aboard)	1	1.0	.8	.6	0	.0	.4	1.4
Airport/Airways Facilities, Aids	2	2.1	2.8	2.1	0	.0	.4	1.4
Total Aircraft	96		132.4		27		29.4	
NTSB Determined Probable Cause	96		132.4		27		29.4	

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES L. KOLSTAD
Chairman

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Member

APPENDIX A
MIDAIR COLLISION ACCIDENTS
U.S. AIR CARRIER OPERATIONS
1978 - 1988

Year	Accidents		Total Fatalities	Number of Accidents by Segments of Aviation Involved				
	Total	Fatal		121 and GA	S135 and S135	S135 and GA	N135 and N135	N135 and GA
1978	1	1	144	1	0	0	0	0
1979	4	2	8	0	1	0	0	3
1980	3	3	3	0	0	0	1	2
1981	4	3	20	0	0	1	1	2
1982	3	1	3	0	0	1	1	1
1983	1	1	4	0	0	0	0	1
1984	1	1	17	0	0	1	0	0
1985	2	1	1	0	0	0	2	0
1986	0	0	0	0	0	0	0	0
1987	5	2	12	0	0	3	0	2
1988	2	1	4	0	0	0	0	2
	26	16	216	1	1	6	5	13

NOTE: 121 = 14 CFR 121, 125 or 127 Operation
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 cowlings, 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
1988

	Cause or Factor -----	Cause -----
AIRCRAFT		
Door, inspection	1	0
Fire extinguisher, powerplant	1	0
Flight control, slat	1	0
Flt control syst, wing slat system	1	0
Fluid, oil	1	1
Fuel system, filter	1	1
Fuselage, attachment	1	1
Fuselage, cabin	1	0
Landing gear, normal brake system	1	1
Lubricating system, oil magnetic plug	1	0
Misc eqpt/furnishings, galley/personnel lift	1	1
Safety system(other)	1	1
Thrust reverser	1	0
Thrust reverser, cockpit control	1	0
Turbine assembly	1	0
Turbine assembly, seal	1	1
Turbine assembly, turbine blade	2	2
Turbine assembly, turbine wheel	1	0
Warning system(other)	1	1
FACILITY		
Airport facilities, centerline lights	1	0
Airport facilities, runway edge lights	1	0
Airport facilities, runway marking	1	0
Airport facilities, runway/landing area condition	1	0
ENVIRONMENT		
Aircraft parked	1	0
Dark night	1	0
Thunderstorm	1	0
Turbulence	2	0
Turbulence in clouds	1	0
Turbulence(thunderstorms)	1	1
Turbulence, clear air	2	1
Vehicle	1	0
FLIGHT CREW		
Clearance	1	1
Crew/group coordination	2	1
Directional control	1	1
Distance	1	1
Flight into known adverse weather	1	1
Hydraulic system	1	0
In-flight planning/decision	1	1
Monitoring	1	0
Over confidence in personal ability	1	1
Preflight planning/preparation	1	1
Procedures/directives	2	2
Proper alignment	1	1
Reversers	1	0
Seat belt sign	1	1
Supervision	1	1
OTHER PERSON		
Acft/equip, inadequate aircraft component	1	1
Acft/equip, inadequate airframe	1	0
Airport snow removal	1	1
Anxiety/apprehension	1	0
Checklist	1	0
Communications	1	1
Company-induced pressure	1	0

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1988

	Cause or Factor -----	Cause -----
OTHER PERSON (continued)		
Complacency	1	0
Condition(s)/step(s) not listed	1	1
Control tower service	1	0
Crew/group briefing	1	1
Crew/group coordination	1	0
Emergency equipment	1	1
Inadequate certification/approval - Aircraft	1	1
Inadequate substantiation process	1	1
Inadequate surveillance of operation	1	0
Inattentive	1	0
Instructions, written/verbal	2	2
Insufficient stds/rqmts - Operation/operator	1	0
Maintenance, inspection of aircraft	2	1
Maintenance, installation	2	2
Meteorological service	1	0
NOTAMs	1	0
Procedure inadequate	1	0
Procedures/directives	5	4
Seat belt	4	4
Substantiation - Inadequate compliance rcrdkpng	1	0
Supervision	1	0
Visual lookout	1	1

APPENDIX D
DETAILED CAUSE/FACTOR ASSIGNMENTS
SCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
SCHEDULED 14 CFR 135 OPERATIONS
1988

	Cause or Factor -----	Cause -----
AIRCRAFT		
Compressor assembly, blade	1	0
Cooling system, cowling	1	1
Electrical system, generator	1	0
Engine assembly, piston	1	1
Fluid, oil	1	1
Fuel system, tank	1	1
Hydraulic system	1	1
Hydraulic system, fitting	1	1
Landing gear, normal brake system	1	1
Powerplant	1	1
Propeller governor control, linkage	1	1
Window, flight compartment window/windshield	1	1
Wing	1	0
FACILITY		
Aircraft manuals, system information	1	0
Airport facilities, taxiway condition	1	0
ENVIRONMENT		
Aircraft parked	2	0
Dark night	2	0
Fence	1	0
Fog	1	0
Icing conditions	1	0
Low ceiling	2	0
Snow	1	0
Terrain condition	2	0
Unfavorable wind	1	0
Whiteout	1	0
FLIGHT CREW		
Aborted takeoff	1	1
Aircraft control	1	1
Aircraft preflight	1	0
Brakes(emergency)	1	1
Checklist	1	1
Clearance	2	2
Crew/group coordination	1	0
Directional control	1	1
Emergency procedure	2	1
Flare	1	1
Flight into known adverse weather	1	1
Gear extension	1	1
IFR procedure	1	1
In-flight planning/decision	1	1
Lack of familiarity with geographic area	1	0
Lack of total experience in type of aircraft	1	0
Monitoring	1	1
Physical impairment(drugs)	1	0
Procedures/directives	1	0
Proper assistance	2	2
Proper descent rate	1	1
Stall	1	1
Supervision	2	1
Visual lookout	1	1
Visual/aural detection	1	1
Visual/aural perception	1	0
Wheels up landing	1	1

CAUSE/FACTOR TABLE
SCHEDULED 14 CFR 135 OPERATIONS
1988

	Cause or Factor -----	Cause -----
OTHER PERSON		
Acft/equip, inadequate aircraft component	1	1
Clearance	1	1
Improper training	1	0
Inadequate surveillance of operation	1	0
Insufficient stds/rqmts - Operation/operator	1	0
Maintenance, service of aircraft	1	1
Operation with known deficiencies in equipment	1	1
Procedure inadequate	1	0
Procedures/directives	1	1
Visual/aural perception	1	1

APPENDIX E

DETAILED CAUSE/FACTOR ASSIGNMENTS
NONSCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

	Cause or Factor	Cause
AIRCRAFT		
1 engine	1	0
Air cond/heating/pressurization,cabin temp control	1	0
Aircraft performance,climb capability	1	1
Anti-ice/de-ice system,wing	1	1
Door	1	0
Electrical system,battery	1	0
Electrical system,electric switch	1	1
Engine assembly,connecting rod	1	1
Engine assembly,piston	1	1
Flight control,elevator tab surface	1	1
Flight/nav instruments,turn and bank indicator	1	0
Flt control syst,elevator control	1	1
Flt control syst,elevator tab control(trim)	1	1
Fluid,fuel	5	4
Fuel system	2	1
Fuel system,line	1	1
Fuel system,pump	1	0
Fuel system,tank	1	1
Ignition system,magneto	2	1
Ignition system,spark plug	1	0
Landing gear,axle	1	1
Landing gear,main gear	1	0
Landing gear,main gear attachment	1	1
Landing gear,normal brake system	2	1
Landing gear,normal retraction/extension assembly	1	1
Landing gear,nose gear assembly	2	1
Landing gear,skid assembly	1	0
Lubricating system	1	1
Misc eqpt/furnishings,parachute/drag chute	1	0
Powerplant	1	1
Propeller system/accessories,feathering system	1	1
Rotor drive system,tail rotor drive shaft	1	1
Rotor system,tail rotor blade	1	1
Rotorcraft flight control,collective control	1	0
Rotorcraft flight control,mixing unit	1	1
Throttle/power lever,cable	1	1
Throttle/power lever,linkage	1	1
Turbine assembly,seal	1	1
Turboshaft engine,free (power) turbine	1	1
Wing	1	1
FACILITY		
Airport facilities,ramp facilities	1	0
Airport facilities,runway/landing area condition	1	1
Airport facilities,taxiway condition	1	1
Airport facilities,taxiway marking	1	1
ENVIRONMENT		
Aircraft parked	1	0
Bright night	1	0
Building(nonresidential)	1	0
Clouds	1	0
Crosswind	5	0
Dark night	13	0
Dawn	1	0
Fence	3	0
Fog	11	0
Gusts	6	1
High wind	5	1
Icing conditions	2	0
Low ceiling	7	0
Night	2	0

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

	Cause or Factor -----	Cause -----
ENVIRONMENT (continued)		
Obscuration	2	0
Other	1	0
Rain	3	0
Snow	4	0
Sunglare	1	0
Tailwind	2	0
Temperature extremes	2	0
Terrain condition	35	0
Thunderstorm	1	0
Tree(s)	4	0
Turbulence	3	0
Unfavorable wind	1	0
Vehicle	1	0
Whiteout	3	0
Windshear	1	0
Wire,static	1	0
Wire,transmission	3	0
FLIGHT CREW		
ATC clearance	1	0
Abort	2	2
Aborted landing	2	1
Aborted takeoff	5	4
Air/ground communications	1	1
Aircraft control	3	3
Aircraft preflight	5	5
Aircraft weight and balance	5	2
Airplane handling	1	1
Airspeed	5	4
Airspeed(Vmc)	1	1
All available runway	2	0
Altitude	5	4
Autorotation	1	0
Brakes(normal)	1	1
Checklist	1	1
Clearance	2	2
Company-induced pressure	1	0
Compensation for wind conditions	6	5
Cyclic	1	1
Decision height	3	3
Descent	1	1
Design stress limits of aircraft	1	1
Directional control	11	10
Distance	2	2
Diverted attention	2	2
Emergency lights	1	1
Emergency procedure	4	3
Excessive workload (task overload)	1	0
Fatigue	1	0
Fatigue(lack of sleep)	1	1
Flare	1	0
Flight into known adverse weather	4	3
Fuel consumption calculations	1	1
Fuel supply	1	1
Gear down and locked	1	1
Gear extension	1	1
Gear retraction	2	2
Go-around	4	4
Ground loop/swerve	1	1
IFR procedure	7	6
Ice/frost removal from aircraft	1	1
In flight weather advisories	1	1

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1988

	Cause or Factor -----	Cause -----
FLIGHT CREW(continued)		
In-flight planning/decision	17	15
Inadequate transition/upgrade training	1	0
Inattentive	1	0
Judgement	2	2
Lack of familiarity with geographic area	1	0
Lack of total experience in type of aircraft	1	0
Lack of total instrument time	2	1
Level off	2	2
Lowering of flaps	1	1
Maneuver	2	2
Minimum descent altitude	1	0
Missed approach	3	1
Monitoring	1	1
Navigation receiver	1	1
Operation with known deficiencies in equipment	3	2
Over confidence in personal ability	1	0
Performance data	1	0
Physical impairment	1	0
Planned approach	3	3
Planning-decision	3	3
Preflight briefing service	1	1
Preflight planning/preparation	6	3
Procedures/directives	5	3
Proper alignment	2	0
Proper altitude	2	2
Proper glidepath	2	2
Proper touchdown point	3	3
Recovery from bounced landing	1	1
Refueling	1	0
Rotor rpm	1	0
Rotorcraft flight controls	1	1
Self-induced pressure	3	1
Spatial disorientation	3	2
Stall	3	3
Stall/spin	1	1
Starting procedure	1	0
Supervision	3	2
Unsuitable terrain	6	6
VFR flight into IMC	4	3
Visual lookout	4	4
Visual/aural perception	1	0
Weather evaluation	5	3
Wind information	1	1
OTHER PERSON		
Aircraft/equipment, inadequate design	1	1
Airport snow removal	2	0
Company-induced pressure	2	0
Condition(s)/step(s) insufficiently defined	1	0
Dispatch procedures	1	0
Inadequate surveillance of operation	1	0
Inadequate training	1	0
Insufficient stds/rqmts - Airman	1	0
Maintenance	2	0
Maintenance,100 hour inspection	1	1
Maintenance,compliance with AD	1	1
Maintenance,inspection of aircraft	1	0
Maintenance,installation	1	1
Maintenance,service of aircraft	1	1
Pressure induced by others	1	0
Procedures/directives	1	1
Supervision	1	0
Visual lookout	3	3

APPENDIX F

N.T.S.B. FORM 6120.4

National Transportation Safety Board FACTUAL REPORT AVIATION				1 NTSB Accident/Incident Number <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>					
				2 1 <input type="checkbox"/> Accident 2 <input type="checkbox"/> Incident		3 Investigation 1 <input type="checkbox"/> NTSB 2 <input type="checkbox"/> FAA Delegated			
4 Aircraft Registration Number <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		5 Flight Number <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> A Other		<i>For collision between aircraft, enter reg. no. and flt. no. for other aircraft</i>		6 Aircraft Registration Number <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		7 Flight Number <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> A Other	
8 Nearest City/Place <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>			9 State <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>	10 Zip Code (First 5 numbers only) <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		11 Accident Site Elevation <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> Feet MSL			
12 Date of Accident (Nos. for M, D, Y) <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		13 Day of Week (First 2 letters) <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		14 Local Time (24 hour clock) <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		15 Time Zone <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>			
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)									
17 Date (Nos. for M, D, Y) <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>		18 Agency <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>			19 Name/Signature <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>				

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 <div style="border-bottom: 1px solid black; height: 20px; width: 100%;"></div>		
24 <input type="checkbox"/> Not applicable (Go to block 39)				
25 Airport Name <div style="border-bottom: 1px solid black; height: 20px; width: 90%;"></div> A Other _____	26 Airport Identifier <div style="border-bottom: 1px solid black; height: 20px; width: 90%;"></div>	27 Accident Location 1 <input type="checkbox"/> Off airport/airstrip 2 <input type="checkbox"/> On airport 3 <input type="checkbox"/> 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 <input type="checkbox"/> None 2 <input type="checkbox"/> Traffic pattern 3 <input type="checkbox"/> Straight-in 4 <input type="checkbox"/> Valley/terrain following 5 <input type="checkbox"/> Go around 6 <input type="checkbox"/> Touch and go 7 <input type="checkbox"/> Full stop 8 <input type="checkbox"/> Stop and go 9 <input type="checkbox"/> Simulated forced landing 10 <input type="checkbox"/> Forced landing 11 <input type="checkbox"/> Precautionary landing A Other _____		31 Type Instrument Approach Flown (Multiple entry) <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 1 <input type="checkbox"/> None 2 <input type="checkbox"/> ADF/NDB 3 <input type="checkbox"/> SDF 4 <input type="checkbox"/> VOR/TVOR 5 <input type="checkbox"/> VOR/DME 6 <input type="checkbox"/> TACAN 7 <input type="checkbox"/> ILS-complete 8 <input type="checkbox"/> ILS-localizer 9 <input type="checkbox"/> ILS-backcourse 10 <input type="checkbox"/> RNAV 11 <input type="checkbox"/> MLS </div> <div style="width: 48%;"> 12 <input type="checkbox"/> LDA 13 <input type="checkbox"/> ASR 14 <input type="checkbox"/> PAR 15 <input type="checkbox"/> Sidestep 16 <input type="checkbox"/> Visual 17 <input type="checkbox"/> Contact 18 <input type="checkbox"/> Circling 19 <input type="checkbox"/> Practice A Other _____ </div> </div>		32 Runway Used Identifier _____ A Other _____
36 Runway/Landing Surface 1 <input type="checkbox"/> Macadam 2 <input type="checkbox"/> Asphalt 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Gravel 5 <input type="checkbox"/> Dirt 6 <input type="checkbox"/> Grass/turf 7 <input type="checkbox"/> Snow 8 <input type="checkbox"/> Ice 9 <input type="checkbox"/> Water 10 <input type="checkbox"/> Metal/wood A Other _____		37 Runway/Landing Surface Condition <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> 1 <input type="checkbox"/> Dry 2 <input type="checkbox"/> Wet 3 <input type="checkbox"/> Ice covered 4 <input type="checkbox"/> Snow—dry 5 <input type="checkbox"/> Snow—wet 6 <input type="checkbox"/> Snow—crusted 7 <input type="checkbox"/> Snow—compacted 8 <input type="checkbox"/> Vegetation 9 <input type="checkbox"/> Water—calm 10 <input type="checkbox"/> Water—choppy </div> <div style="width: 35%;"> 11 <input type="checkbox"/> Water—glassy 12 <input type="checkbox"/> Rubber deposits 13 <input type="checkbox"/> Soft 14 <input type="checkbox"/> Rough 15 <input type="checkbox"/> Slush covered 16 <input type="checkbox"/> Holes A Other _____ </div> </div>		
If accident occurred during approach, departure or on airport, see instructions for completing Supplement Q.				
Aircraft Information				
39 Aircraft Manufacturer <div style="border-bottom: 1px solid black; height: 20px; width: 95%;"></div>	40 Aircraft Model/Series <div style="border-bottom: 1px solid black; height: 20px; width: 95%;"></div>	41 Serial No. <div style="border-bottom: 1px solid black; height: 20px; width: 95%;"></div> A Other _____	42 Certificated Maximum Gross Weight <div style="border-bottom: 1px solid black; height: 20px; width: 95%;"></div> A Other _____	
43 Type of Aircraft <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 1 <input type="checkbox"/> Airplane 2 <input type="checkbox"/> Helicopter 3 <input type="checkbox"/> Glider 4 <input type="checkbox"/> Balloon </div> <div style="width: 48%;"> 5 <input type="checkbox"/> Blimp/dirigible 6 <input type="checkbox"/> Ultralight 7 <input type="checkbox"/> Gyroplane A Specify _____ </div> </div>		44 Type Airworthiness Certificate (Multiple entry) <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> Standard 1 <input type="checkbox"/> Normal 2 <input type="checkbox"/> Utility 3 <input type="checkbox"/> Acrobatic 4 <input type="checkbox"/> Transport </div> <div style="width: 48%;"> Special 5 <input type="checkbox"/> Restricted 6 <input type="checkbox"/> Limited 7 <input type="checkbox"/> Provisional 8 <input type="checkbox"/> Special flight 9 <input type="checkbox"/> Experimental A Other _____ </div> </div>		
45 Home Built 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other _____				

National Transportation Safety Board
FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

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

**Emergency Locator
Transmitter (ELT)**

1 Yes 2 No A Other

67 Installed

68 Required

69 Operated

**70 Aided in location
of accident site**

66 Hazardous Material Spill/Factor

- 1 ☐ Yes
2 ☐ No
A Other

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 <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	
77 Operator Status of This Aircraft 1 <input type="checkbox"/> Owner 2 <input type="checkbox"/> Lessee 3 <input type="checkbox"/> Renter 4 <input type="checkbox"/> Borrower 5 <input type="checkbox"/> Unauthorized A Other		78 Pilot Status of This Aircraft 1 <input type="checkbox"/> Owner 2 <input type="checkbox"/> Lessee 3 <input type="checkbox"/> Renter 4 <input type="checkbox"/> Borrower 5 <input type="checkbox"/> Unauthorized 6 <input type="checkbox"/> Employee A Other	
Type of Certificate(s) Held		79 None <input type="checkbox"/> (Go to block 83)	
80 Air Carrier Operating Certificate (Check all applicable) 1 <input type="checkbox"/> Flag carrier/domestic (121) 2 <input type="checkbox"/> Supplemental 3 <input type="checkbox"/> All cargo (418) 4 <input type="checkbox"/> Large helicopter (127) 5 <input type="checkbox"/> Commuter air carrier 6 <input type="checkbox"/> On-demand air taxi		81 Operating Certificate <input type="checkbox"/> Other operator of large aircraft	
82 Operator Certificate 1 <input type="checkbox"/> Rotorcraft—external load operator (133) 2 <input type="checkbox"/> Agricultural aircraft (137)			
Regulation Flight Conducted Under			
83 Regulation Flight Conducted Under 1 <input type="checkbox"/> 14 CFR 91 (only) 2 <input type="checkbox"/> 14 CFR 91D 3 <input type="checkbox"/> 14 CFR 103 4 <input type="checkbox"/> 14 CFR 105 5 <input type="checkbox"/> 14 CFR 121 6 <input type="checkbox"/> 14 CFR 125 7 <input type="checkbox"/> 14 CFR 127 8 <input type="checkbox"/> 14 CFR 133 9 <input type="checkbox"/> 14 CFR 135 10 <input type="checkbox"/> 14 CFR 137 11 <input type="checkbox"/> 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 <input type="checkbox"/> Scheduled 2 <input type="checkbox"/> Non-scheduled		84b 1 <input type="checkbox"/> Domestic 2 <input type="checkbox"/> International	
84c 1 <input type="checkbox"/> Passenger 2 <input type="checkbox"/> Cargo		3 <input type="checkbox"/> Passenger/cargo 4 <input type="checkbox"/> Mail contract ONLY	
(Complete 86 ONLY if 84a, b, c is not applicable)			
86 1 <input type="checkbox"/> Personal 2 <input type="checkbox"/> Business 3 <input type="checkbox"/> Instructional (Including air carrier training) 4 <input type="checkbox"/> Executive/corporate 5 <input type="checkbox"/> Aerial application 6 <input type="checkbox"/> Aerial observation 7 <input type="checkbox"/> Other work use 8 <input type="checkbox"/> Public use 9 <input type="checkbox"/> Ferry 10 <input type="checkbox"/> Positioning A Specify _____			
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 <input type="checkbox"/> Male 2 <input type="checkbox"/> Female			
95 Seat Occupied 1 <input type="checkbox"/> Left 2 <input type="checkbox"/> Right 3 <input type="checkbox"/> Center 4 <input type="checkbox"/> Front 5 <input type="checkbox"/> Rear A Other _____		96 Principal Profession 1 <input type="checkbox"/> Pilot—civilian 2 <input type="checkbox"/> Pilot—military 3 <input type="checkbox"/> Other—military 4 <input type="checkbox"/> Aircraft mechanic 5 <input type="checkbox"/> Business 6 <input type="checkbox"/> Lawyer 7 <input type="checkbox"/> Doctor/dentist 8 <input type="checkbox"/> Police 9 <input type="checkbox"/> Student 10 <input type="checkbox"/> Clergy 11 <input type="checkbox"/> Teacher 12 <input type="checkbox"/> Engineer 13 <input type="checkbox"/> Farmer/rancher 14 <input type="checkbox"/> Retired A Other _____	
97 Certificate(s) (Multiple entry) 1 <input type="checkbox"/> Student 2 <input type="checkbox"/> Private 3 <input type="checkbox"/> Commercial 4 <input type="checkbox"/> Airline Transport 5 <input type="checkbox"/> Flight Instructor		6 <input type="checkbox"/> Flight Engineer 7 <input type="checkbox"/> Military 8 <input type="checkbox"/> None 9 <input type="checkbox"/> Foreign A Other _____	

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NTSB Accident/Incident Number

Information (continued) (Page 6 of 6)

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 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											
137 Seatbelt Used 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											
138 Shoulder Harness Available 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											
139 Shoulder Harness Used 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											
140 Autopsy Performed (This pilot) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											
141 Toxicology Performed (This pilot) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other											

Page 6

National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB Accident/Incident Number <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
Personnel Information (continued)		
142 Person at Controls 1 <input type="checkbox"/> Pilot in command 4 <input type="checkbox"/> Non-pilot 2 <input type="checkbox"/> Second pilot 5 <input type="checkbox"/> No one 3 <input type="checkbox"/> Both pilots A Other	143 Simulated Instrument Flight 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other	144 Vision Restricting Device Used 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No A Other
145 Second Pilot 1 <input type="checkbox"/> Yes (Complete second pilot supplement) 2 <input type="checkbox"/> No		
Flight Information		
155 Last Departure Point (Multiple entry) 1 <input type="checkbox"/> Same as accident/incident location or A Airport identifier _____ B City/Place _____ C State _____ D Other	157 Destination (Multiple entry) 1 <input type="checkbox"/> Same as accident/incident location or 2 <input type="checkbox"/> Local flight A Airport identifier _____ B City/Place _____ C State _____ D Other	158 Flight Plan Filed (Multiple entry) 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Visual Flight Rules (VFR) 3 <input type="checkbox"/> Instrument Flight Rules (IFR) 4 <input type="checkbox"/> VFR/IFR 5 <input type="checkbox"/> Company (VFR) 6 <input type="checkbox"/> Military (VFR) A Other
156 Time of Departure A Time _____ C Other B Time Zone _____		
159 Type of Clearance 1 <input type="checkbox"/> None 6 <input type="checkbox"/> VFR on top 2 <input type="checkbox"/> VFR 7 <input type="checkbox"/> Cruise 3 <input type="checkbox"/> Special VFR 8 <input type="checkbox"/> Traffic Advisory 4 <input type="checkbox"/> IFR 9 <input type="checkbox"/> VFR Flight Following 5 <input type="checkbox"/> Special IFR A Other	160 Airspace <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> 1 <input type="checkbox"/> Uncontrolled 2 <input type="checkbox"/> Controlled 3 <input type="checkbox"/> Airport traffic area 4 <input type="checkbox"/> Control zone 5 <input type="checkbox"/> Airport advisory area 6 <input type="checkbox"/> Positive control area 7 <input type="checkbox"/> Terminal control area </div> <div style="width: 30%;"> 8 <input type="checkbox"/> Stage II TRSA 9 <input type="checkbox"/> Stage III TRSA 10 <input type="checkbox"/> Prohibited area 11 <input type="checkbox"/> Restricted area 12 <input type="checkbox"/> Military Operating Area (MOA) 13 <input type="checkbox"/> Student Jet Training Area 14 <input type="checkbox"/> Demo Area </div> <div style="width: 30%;"> 15 <input type="checkbox"/> Warning area 16 <input type="checkbox"/> FAR 93 (Special air traffic areas) A Other </div> </div>	
161 Control Area 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Victor airway 3 <input type="checkbox"/> Jet airway 4 <input type="checkbox"/> Control airway 5 <input type="checkbox"/> Colored airway A Other	162 Route 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Standard instrument departure 3 <input type="checkbox"/> Standard terminal arrival 4 <input type="checkbox"/> RNAV/OMEGA/LCRAN/INS 5 <input type="checkbox"/> Direct 6 <input type="checkbox"/> Profile Descent 7 <input type="checkbox"/> VR route (military) 8 <input type="checkbox"/> IR route (military) 9 <input type="checkbox"/> SR route (military) 10 <input type="checkbox"/> Refueling route (military) A Other	163 Last Two Way Communications Established 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Yes A Facility Identifier _____ B Other
Aircraft Loading Information		
164 Fuel on Board at Takeoff (Multiple entry) 1 <input type="checkbox"/> Estimated 2 <input type="checkbox"/> Verified A _____ Gallons or B _____ Pounds C Other	165 Fuel Types (Multiple entry) <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> 1 <input type="checkbox"/> 80/87 2 <input type="checkbox"/> 100 low lead 3 <input type="checkbox"/> 100/130 4 <input type="checkbox"/> 115/145 </div> <div style="width: 30%;"> 5 <input type="checkbox"/> Kerosene 6 <input type="checkbox"/> JP 3, 4, 5, 6 7 <input type="checkbox"/> Jet A 8 <input type="checkbox"/> Jet B </div> <div style="width: 30%;"> 9 <input type="checkbox"/> Mixture 10 <input type="checkbox"/> Automotive 11 <input type="checkbox"/> Anti-ice additive added (If known) A Other </div> </div>	
166 Aircraft Weight at Takeoff (Multiple entry) 1 <input type="checkbox"/> At or below max cert. gross takeoff weight 2 <input type="checkbox"/> Above max certified gross takeoff weight 3 <input type="checkbox"/> Estimated 4 <input type="checkbox"/> Verified A Other	167 Aircraft CG at Takeoff (Multiple entry) <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> 1 <input type="checkbox"/> Within limits 2 <input type="checkbox"/> Exceeded fwd limit 3 <input type="checkbox"/> Exceeded aft limit 4 <input type="checkbox"/> Exceeded lateral limit </div> <div style="width: 40%;"> 5 <input type="checkbox"/> Estimated 6 <input type="checkbox"/> Verified A Other </div> </div>	
168 Aircraft Weight at Accident (Multiple entry) 1 <input type="checkbox"/> Same as takeoff 2 <input type="checkbox"/> At or below max cert. gross takeoff weight 3 <input type="checkbox"/> Above max certified gross takeoff weight 4 <input type="checkbox"/> Estimated 5 <input type="checkbox"/> Verified A Other	169 Aircraft CG at Accident (Multiple entry) <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> 1 <input type="checkbox"/> Same as takeoff 2 <input type="checkbox"/> Within limits 3 <input type="checkbox"/> Exceeded fwd limit 4 <input type="checkbox"/> Exceeded aft limit 5 <input type="checkbox"/> Exceeded lateral limit </div> <div style="width: 40%;"> 6 <input type="checkbox"/> Estimated 7 <input type="checkbox"/> Verified A Other </div> </div>	

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170 Load Description (Multiple entry)

- 1 ☐ None 3 ☐ Cargo 5 ☐ Towing banner 7 ☐ Parachutists 9 ☐ Chemical 11 ☐ Illegal cargo
2 ☐ Passengers 4 ☐ Towing glider 6 ☐ Other external 8 ☐ Water 10 ☐ Livestock A Other

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 <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>					
---	--	--	--	--	--	--	--	--	--	--	--

200 Aircraft Damage 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Minor 3 <input type="checkbox"/> Substantial 4 <input type="checkbox"/> Destroyed	201 Aircraft Fire 1 <input type="checkbox"/> None 2 <input type="checkbox"/> In-flight 3 <input type="checkbox"/> On ground A <input type="checkbox"/> Other	202 Explosion 1 <input type="checkbox"/> None 2 <input type="checkbox"/> In-flight 3 <input type="checkbox"/> On ground A <input type="checkbox"/> Other	203 Damage to Property 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Residence 3 <input type="checkbox"/> Residential area 4 <input type="checkbox"/> Commercial bldg. 5 <input type="checkbox"/> Vehicle(s)	6 <input type="checkbox"/> Airport facility 7 <input type="checkbox"/> Trees 8 <input type="checkbox"/> Crops 9 <input type="checkbox"/> Fence 10 <input type="checkbox"/> Wires/poles 11 <input type="checkbox"/> Other property
---	---	---	---	--

204 Injury Index (Most critical injury) 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Minor 3 <input type="checkbox"/> Serious 4 <input type="checkbox"/> Fatal

Injury Summary <small>(Enter only one digit per block)</small>	A Fatal	B Serious	C Minor	D None	E Total	
205 First Pilot						217 Classification 1 <input type="checkbox"/> U.S. Registered Aircraft on U.S. Soil, Territories and Possessions, or International Waters 2 <input type="checkbox"/> U.S. Registered Aircraft on Foreign Soil 3 <input type="checkbox"/> U.S. Registered Aircraft operated by a Foreign Operator 4 <input type="checkbox"/> Foreign Registered Aircraft on U.S. Soil, Territories or Possessions 5 <input type="checkbox"/> Military Aircraft 6 <input type="checkbox"/> Aircraft not Registered
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						

220 Part Failure/Malfunction (Multiple entry) 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Part/component #1 3 <input type="checkbox"/> Part/component #2 4 <input type="checkbox"/> Part/component #3 A <input type="checkbox"/> Other _____	221 Incorrect Part (Multiple entry) 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Part/component #1 3 <input type="checkbox"/> Part/component #2 4 <input type="checkbox"/> Part/component #3 A <input type="checkbox"/> 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 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
236 Bogus Part	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No