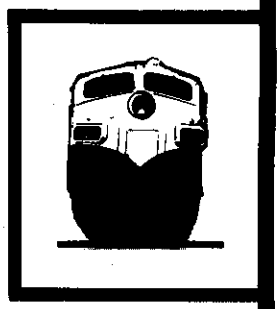
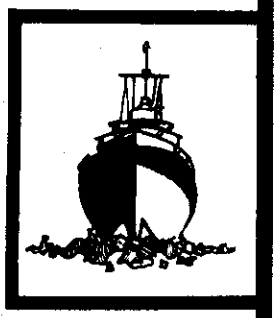
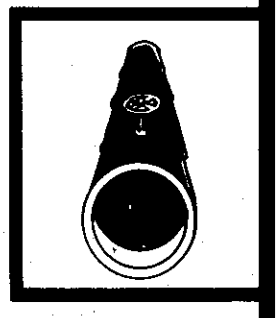
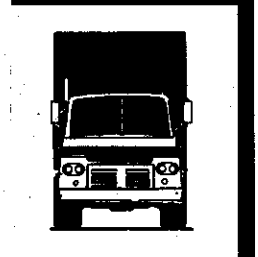
PB89-151021









NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

ANNUAL REVIEW OF AIRCRAFT ACCIDENT DATA

U.S. AIR CARRIER OPERATIONS CALENDAR YEAR 1986

NTSB/ARC-89/01

UNITED STATES GOVERNMENT

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NTSB/ARC-89/01	2. Government Accession No. PB89-151021	3. Recipient's Catalog No.
4. Title and Subtitle Annual Review of Aircraft Accident Data U.S. Air Carrier Operations Calendar Year 1986		5. Report Date February 3, 1989
		6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
9. Performing Organization Name and Address Bureau of Safety Programs National Transportation Safety Board Washington, D.C. 20594		10. Work Unit No. 5025
		11. Contract or Grant No.
12. Sponsoring Agency Name and Address NATIONAL TRANSPORTATION SAFETY BOARD Washington, D. C. 20594		13. Type of Report and Period Covered
		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This publication presents the record of aviation accidents involving revenue operations of U.S. Air Carriers including Commuter Air Carriers and On Demand Air Taxis for calendar year 1986.

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 1986 accidents to enable comparison with prior years.

17. Key Words	18. Distribution Statement		
Aviation, Air Carrier, Commuter, On Demand Air Taxi, Accident Rates, 14 CFR 121, 14 CFR 135			
19. Security Classification (of this report) UNCLASSIFIED	20. Security Classification (of this page) UNCLASSIFIED	21. No. of Pages 102	22. Price

NTSB Form 1765.2 (Rev. 9/74)

CONTENTS

LIST OF TABLES WITH TABLE NUMBERS

INTRODUCTION

This report presents a statistical compilation and review of air carrier accidents which occurred in 1986. The accidents reported are all those involving U.S. registered aircraft conducting operations under 14 CFR 121, 14 CFR 125, 14 CFR 127, or 14 CFR 135.

Briefly stated, 14 CFR 121 applies to large commercial air carriers such as major airlines and cargo haulers. 14 CFR 125 covers the operation of large privately owned aircraft not held out for hire. 14 CFR 127 regulates the operation of helicopters used as scheduled air carriers. 14 CFR 135 applies to commercial air carriers commonly refered to as commuter airlines and air taxis. For a complete definition of each of these Parts consult the applicable sections of the Code of Federal Regulations.

Exposure data (flight hours, miles, and departures) used to compute accident rates for Parts 121, 125, and 127 operations and for scheduled Part 135 operations were obtained from the Research & Special Programs Administration (RSPA). Flight hours for nonscheduled Part 135 operations were estimated from data obtained by the Federal Aviation Administration (FAA) in its general aviation activity surveys.

This 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 of these sections begins with an overview of accidents and their consequences for 1986 and for the four preceding years. Several tables then present accident parameters for 1986 only. Concluding each section are tabulations which present comparative statistics for 1986 and for the five-year period 1981-1985.

Beginning in 1982, the Safety Board changed its method of classifying accidents. Although the collection of data remained essentially the same, the method of analysis of these data was revised to allow a more in-depth description of the circumstances of an accident. For instance, the Board no longer uses accident types (first type and second type). Instead, the accident sequence of events is described in terms of occurrences. Although similar in appearance to the accident types formerly used by the Board, the application of the occurrences differs significantly from that of accident types, by providing a better description of the accident scenario and by facilitating citation of underlying causes. Tables in this report that list occurrences are based only on the first occurrence in the accident sequence. To facilitate comparison of 1986 occurrences to accident types under the pre-1982 system, similar types of occurrences have been combined into categories resembling accident types. (A table comparing occurrence types with the accident types previously used is presented in Appendix B.)

Table 17 and other tables entitled "Most Prevalent First Occurrences ..." employ the categories defined in Appendix B to enable comparisons between 1986 and the preceding five-year period.

It should be noted that in many of the tables presented in this report (such as in Table 4), the number of accidents in a given category is small, and even a small change in the number of accidents would result in a significant change in the accident rate. Therefore, caution should be exercised in the use of these rates. Similarly, care should be taken 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 upon a change which may be due primarily to chance.

14 CFR 121, 125, 127 OPERATIONS

There were 23 accidents in Part 121, 125, and 127 operations in 1986. The overall accident rate for 1986 was 0.232 accidents per 100,000 hours flown, an 8.3 percent decrease from the 1985 rate of 0.253. The 1986 rate was 26.8 percent lower than the overall rate of 0.317 for the period from 1976 through 1985.

There were two fatal accidents in this category during 1986. During the period 1977 through 1985 there were an average of four fatal accidents per year in this category. The two fatal accidents were responsible for a total of four fatalities.

Three of the four fatalities which occurred in this category were aboard a nonscheduled cargo flight operated by Southern Air Transport which crashed on takeoff from Kelly Air Force Base, Texas. The other fatality was the pilot of a general aviation aircraft which landed on a taxiway at Tampa International and collided with a taxiing 14 CFR 121 aircraft. There were no fatalities in 1986 among fare-paying passengers on 14 CFR 121, 125 or 127 operations.

Table 1 - SUMMARY OF LOSSES
14 CFR 121, 125, 127 OPERATIONS
1982 - 1986

	1982	1983	1984	1985	1986
Accidents					
Fatal	4	4	1	7	2
Involved Serious Injury	7	11	10	8	15
Involved Minor or No Injury	8	9	6	7	6
Total	19	24	17	22	23
Fatalities					
Passenger	209	8	1	486	0
Crew	13	6	3	39	3
Other Persons	12	1	0	1	1
Total	234	15	4	526	4
Aircraft Damaged (14 CFR 121, 125, 127)					
Destroyed	3	2	2	9	2
Substantial	9	13	8	8	7
Minor	2	3	2	0	4
None	4	6	4	5	10
Unknown / Not Reported	1	0	0	0	0
Total	19	24	16	22	23

Table 3 - LIST OF ACCIDENTS

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

	1982	1983	1984	1985	1986
Aircraft Miles Flown (Thousands)	2,938,513	3,069,318	3,428,063	3,631,017	4,055,547
Aircraft Hours Flown	7,040,325	7,298,799	8,165,124	8,709,894	9,924,292
Departures Flown	5,351,133	5,444,374	5,898,852	6,306,759	7,242,826
Accident Rates					
Per Million Miles Flown	0.0065	0.0078	0.0050	0.0061	0.0057
Per Hundred Thousand Hours Flown	0.270	0.329	0.196	0.253	0.232
Per Hundred Thousand Departures Flown	0.355	0.441	0.288	0.349	0.318
Fatal Accident Rates					
Per Million Miles Flown	0.0014	0.0013	0.0003	0.0019	0.0005
Per Hundred Thousand Hours Flown	0.057	0.055	0.012	0.080	0.020
Per Hundred Thousand Departures Flown	0.075	0.073	0.017	0.111	0.028

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
1/17	Loudon County, VA	Sch Passenger	Eastern	Boeing 727-225	Substantial	None	Airframe/component/system failure/malfunction
1/19	Las Vegas, NV	Nonsch. Pax	Skybus	Boeing 727-214	None	Serious	Airframe/component/system failure/malfunction
2/15	Jamaica, NY	Sch Passenger	Eastern	Lock. L-1011-3-85-1	None	Serious	Unauthorized evacuation of passengers
2/20	Denver, CO	Sch Passenger	Continental	Boeing 737-300	Substantial	None	On ground collision with terrain
2/21	Erie, PA	Sch Passenger	US Air	McD-Doug. DC-9-31	Substantial	Minor	Overrun
3/03	Honolulu, HI	Sch Pax + Cargo	United	Boeing 747-122	None	Serious	In flight encounter with weather
3/12	Memphis, TN	Sch Passenger	American	Boeing 727-223	None	Serious	Emergency evacuation of passengers
4/08	Chicago, IL	Sch Pax + Cargo	United	Boeing 737-222	Substantial	Minor	Main gear collapsed
4/25	Denver, CO	Sch Passenger	Aspen Airway	Convair 580	None	Serious	In flight encounter with weather
5/04	Almosa, CO	Sch Pax + Cargo	Southwest	Boeing 737-200	None	Serious	In flight encounter with weather
5/23	Sydney, Australia	Sch Passenger	United	Boeing 747SP-21	Substantial	None	Airframe/component/system failure/malfunction
7/13	West Palm Bch, FL	Sch Passenger	Eastern	Airbus A300-B4-2C	None	Serious	In flight encounter with weather
7/21	Montgomery, AL	Sch Passenger	Republic	McD-Doug. DC-9-31	Minor	Serious	In flight encounter with weather
8/05	Gulf Of Mexico	Sch Passenger	Continental	Boeing 727	None	Serious	In flight encounter with weather
10/04	Kelly AFB, TX	Nonsch Cargo	Southern Air	Lockheed 383-G	Destroyed	Fatal (3)	Loss of control - in flight
10/09	Boston, MA	Nonsch Cargo	Zantop Int'l	Lockheed 188-A	None	Serious	Propeller/rotor contact
10/25	Charlotte, NC	Sch Passenger	Piedmont	Boeing 737-222	Destroyed	Serious	Overrun
11/06	Tampa, FL	Sch Passenger	Pan American	Boeing 727-235	Substantial	Fatal (1)	On ground collision with aircraft
11/07	Los Angeles, CA	Sch Passenger	Continental	McD-Doug. DC-10-10	None	Serious	Airframe/component/system failure/malfunction

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
11/13	Newark, NJ	Sch Passenger	Delta	Lockheed L-1011	Substantial	None	Airframe/component/system failure/malfunction
12/15	Anchorage, AK	Sch Passenger	United	Boeing 727-222	Minor	Serious	In flight encounter with weather
12/22	Dublin, VA	Sch Passenger	US Air	Boeing 737-300	Minor	Serious	In flight encounter with weather
12/30	West Palm Bch, FL	Sch Passenger	Piedmont	Fokker F28-MK-4000	Minor	Serious	Airframe/component/system failure/malfunction

Table 4 - ACCIDENTS AND RATES BY TYPE OF OPERATION
14 CFR 121, 125, 127 OPERATIONS
1986

	Type of Operation				
	Scheduled				
	Passenger/ Cargo	All Cargo	All	All Non-Scheduled	All
Accidents	20	0	20	3	23
Fatal Accidents	1	0	1	1	2
Aircraft Miles Flown (Thousands)	3,761,722	107,374	3,868,852	186,695	4,055,546
Aircraft Hours Flown	n/a	n/a	9,451,541	472,751	9,924,292
Departures Flown	n/a	n/a	6,973,927	268,899	7,242,826
Accident Rates					
Per Million Miles Flown	0.0053	0.0	0.0052	0.0161	0.0057
Per Hundred Thousand Hours Flown	n/a	n/a	0.212	0.635	0.232
Per Hundred Thousand Departures Flown	n/a	n/a	0.287	1.116	0.318
Fatal Accident Rates					
Per Million Miles Flown	0.0003	0.0	0.0003	0.0054	0.0005
Per Hundred Thousand Hours Flown	n/a	n/a	0.011	0.212	0.020
Per Hundred Thousand Departures Flown	n/a	n/a	0.014	0.372	0.028

Table 5 - PERSONS BY ROLE AND DEGREE OF INJURY
14 CFR 121 125 127 OPERATIONS
1986

	Degree of Injury				
Role of Person	Fatal	Serious	Minor	None	Total
Pilot	1	0	1	21	23
Copilot	1	0	1	21	23
Check pilot	0	0	0	1	1
Flight engineer	1	0	0	13	14
Cabin attendants	0	7	22	70	99
Other crew	0	0	0	14	14
Passenger	0	14	83	2207	2304
Total aboard	3	21	107	2347	2478
Other aircraft*	1	1	0	0	2
Grand total	4	22	107	2347	2480
Percent	.2	.9	4.3	94.6	

* 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
1986

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
None	0	0	10	0	10	43.5
Minor	0	0	4	0	4	17.4
Substantial	4	2	0	1	7	30.4
Destroyed	0	0	1	1	2	8.7
Aircraft						
Number -	4	2	15	2	23	
Percent -	17.4	8.7	65.2	8.7		

Table 7 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1986

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	3	0	3	0	2	1	3	0	6	26.1
Main gear collapsed	0	1	0	0	0	0	1	0	1	4.3
In flight encounter with weather	0	0	8	0	5	3	0	0	8	34.8
Loss of control - in flight	0	0	0	1	0	0	0	1	1	4.3
On ground collision with object	0	0	0	1	0	0	1	0	1	4.3
On ground collision with terrain	1	0	0	0	0	0	1	0	1	4.3
Overrun	0	1	1	0	0	0	1	1	2	8.7
Propeller/rotor contact	0	0	1	0	1	0	0	0	1	4.3
Miscellaneous/other	0	0	2	0	2	0	0	0	2	8.7
Aircraft										
Number -	4	2	15	2	10	4	7	2	23	
Percent -	17.4	8.7	65.2	8.7	43.5	17.4	30.4	8.7		

Table 8 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
14 CFR 121 125 127 OPERATIONS
1986

Type of first occurrence	Phase of operation								Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	No.	Percent
Airframe/component/system failure/malfunction	1	0	0	1	1	0	1	2	6	26.1
Main gear collapsed	0	0	0	0	0	0	0	1	1	4.3
In flight encounter with weather	0	0	0	1	3	4	0	0	8	34.8
Loss of control - in flight	0	0	1	0	0	0	0	0	1	4.3
On ground collision with object	0	1	0	0	0	0	0	0	1	4.3
On ground collision with terrain	0	0	1	0	0	0	0	0	1	4.3
Overrun	0	0	0	0	0	0	0	2	2	8.7
Propeller/rotor contact	1	0	0	0	0	0	0	0	1	4.3
Miscellaneous/other	0	1	0	1	0	0	0	0	2	8.7
Aircraft										
Number -	2	2	2	3	4	4	1	5	23	
Percent -	8.7	8.7	8.7	13.0	17.4	17.4	4.3	21.7		

Table 9 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121 125 127 OPERATIONS
1986

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing	0	0	1	0	0	1	0	0	1	4.3
Standing - starting engine(s)	0	0	1	0	1	0	0	0	1	4.3
Taxi	0	0	1	0	1	0	0	0	1	4.3
Taxi - to takeoff	0	0	0	1	0	0	1	0	1	4.3
Takeoff - ground run	1	0	0	0	0	0	1	0	1	4.3
Takeoff - initial climb	0	0	0	1	0	0	0	1	1	4.3
Climb	0	0	1	0	1	0	0	0	1	4.3
Climb - to cruise	0	0	2	0	2	0	0	0	2	8.7
Cruise	0	0	1	0	1	0	0	0	1	4.3
Cruise - normal	0	0	3	0	2	1	0	0	3	13.0
Descent	0	0	2	0	1	1	0	0	2	8.7
Descent - normal	0	0	2	0	1	1	0	0	2	8.7
Approach - FAF/outer marker to threshold (IFR)	1	0	0	0	0	0	1	0	1	4.3
Landing - flare/touchdown	1	0	0	0	0	0	1	0	1	4.3
Landing - roll	1	2	1	0	0	0	3	1	4	17.4
Aircraft										
Number -	4	2	15	2	10	4	7	2	23	
Percent -	17.4	8.7	65.2	8.7	43.5	17.4	30.4	8.7		

Table 10 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
14 CFR 121 125 127 OPERATIONS
1986

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Daylight	8	4	0	12	52.2
Night (dark)	3	1	0	4	17.4
Night (bright)	4	0	0	4	17.4
Dusk	1	0	0	1	4.3
Not reported	1	0	1	2	8.7
Aircraft					
Number -	17	5	1	23	
Percent -	73.9	21.7	4.3		

Table 11 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
14 CFR 121, 125, 127 OPERATIONS
1986

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	3	0	10	1	14	60.9
Scheduled Domestic Pass/Cargo	0	1	2	0	3	13.0
Scheduled International Pass.	1	1	1	0	3	13.0
Nonscheduled Domestic Pass.	0	0	1	0	1	4.3
Nonscheduled Domestic Cargo	0	0	1	1	2	8.7
Aircraft						
Number -	4	2	15	2	23	
Percent -	17.4	8.7	65.2	8.7		

Table 12 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
14 CFR 121, 125, 127 OPERATIONS
1986

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	3	1	14	0	9	4	4	1	18	78.3
On ground	0	1	1	2	1	0	2	1	4	17.4
Not reported	1	0	0	0	0	0	1	0	1	4.3
Aircraft										
Number -	4	2	15	2	10	4	7	2	23	
Percent -	17.4	8.7	65.2	8.7	43.5	17.4	30.4	8.7		

Table 13 - BROAD CAUSE/FACTOR ASSIGNMENTS*
14 CFR 121 125 127 OPERATIONS
1986

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
Personnel	2	11	1	7	2	15
Weather	0	7	1	3	1	10
Pilot	1	7	0	3	1	7
Airframe	1	3	0	0	1	3
Systems	0	2	0	1	0	3
Landing Gear	0	2	0	0	0	2
Instruments/Equipment/Accessories	0	0	1	2	1	2
Airport/Airways/Facilities	0	0	0	2	0	2
Miscellaneous	0	0	1	2	1	2
Terrain	0	0	0	1	0	1
Number of Aircraft					2	23

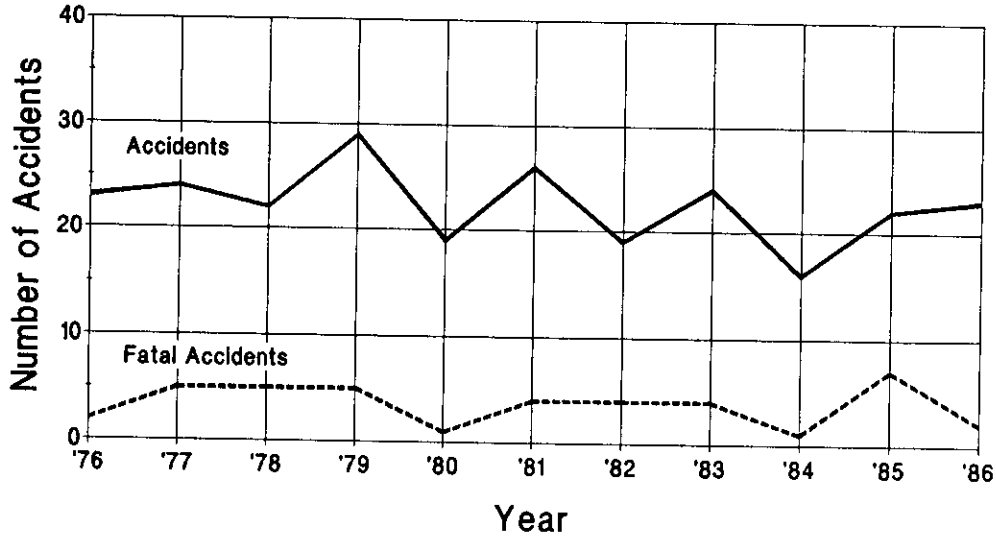
---

* Multiple causes and factors may be assigned in an accident

Table 14 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
ALL 14 CFR 121 125 127 OPERATIONS
1977 - 1986

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1976	23	2	38	38	5,806,729	0.40	0.03
1977	24	5	655	398	6,039,707	0.40	0.08
1978	22	5	160	150	6,234,628	0.35	0.08
1979	29	5	354	351	6,878,911	0.42	0.07
1980	19	1	1	0	7,379,581	0.26	0.01
1981	26	4	4	2	7,125,698	0.36	0.06
1982	19	4	234	222	7,040,325	0.27	0.06
1983	24	4	15	14	7,298,799	0.33	0.05
1984	16	1	4	4	8,165,124	0.20	0.01
1985	22	7	526	525	8,709,894	0.25	0.08
1986	23	2	4	3	9,924,292	0.23	0.02

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



er 100,000*
rs Flown

Fatal
0.03
0.08
0.08
0.07
0.01
0.06
0.06
0.05
0.01
0.08
0.02

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

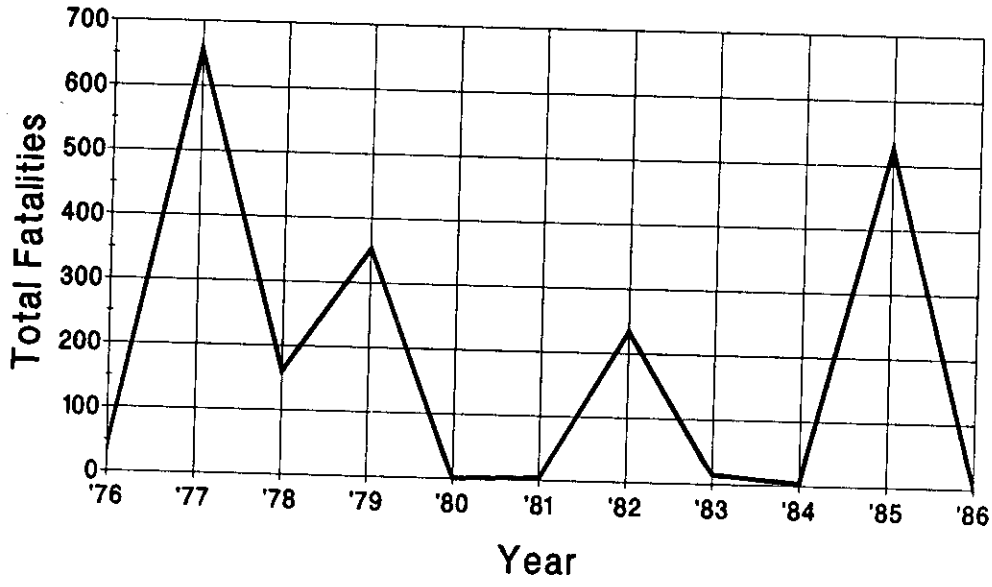


Figure 3 - ACCIDENT RATES
ALL 14 CFR 121, 125, 127 OPERATIONS

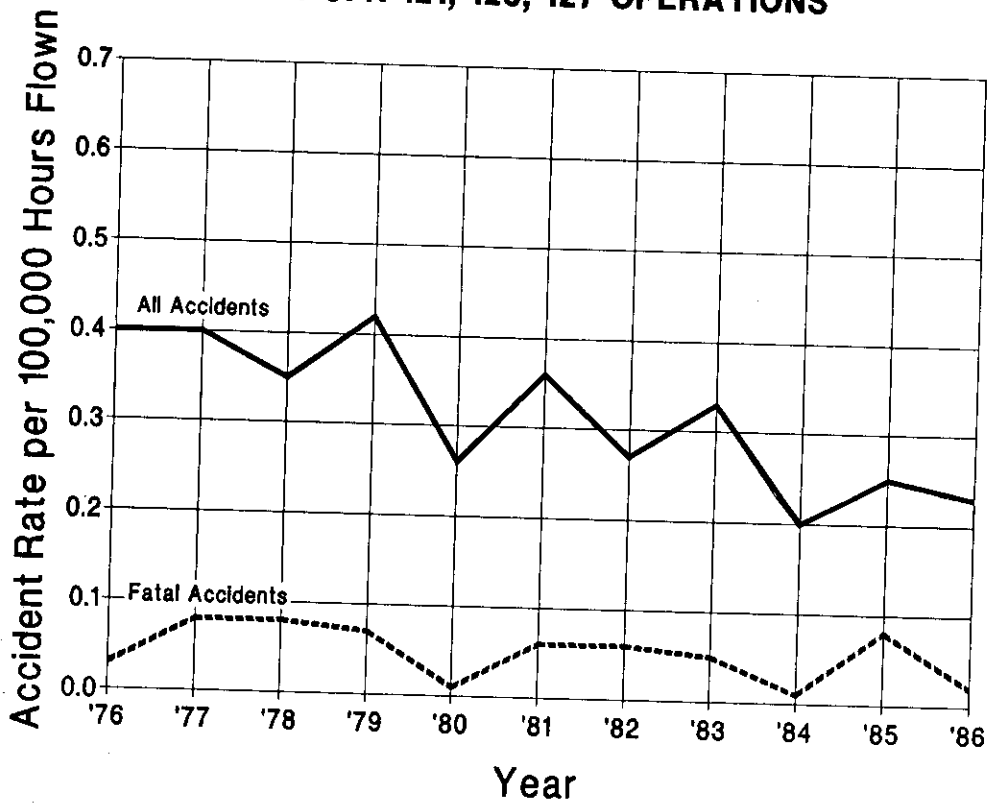


Table 15 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 121 125 127 OPERATIONS
1977 - 1986

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1976	21	2	38	38	5,587,776	0.38	0.04
1977	19	3	78	69	5,798,873	0.33	0.05
1978	20	5	160	150	6,031,743	0.33	0.08
1979	23	4	351	348	6,713,094	0.34	0.06
1980	15	0	0	0	7,069,481	0.21	0.00
1981	25	4	4	2	6,834,140	0.37	0.06
1982	15	3	233	221	6,697,770	0.22	0.04
1983	22	4	15	14	6,914,969	0.32	0.06
1984	13	1	4	4	7,736,037	0.17	0.01
1985	17	4	197	196	8,265,332	0.21	0.05
1986	20	1	1	0	9,450,537	0.21	0.01

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

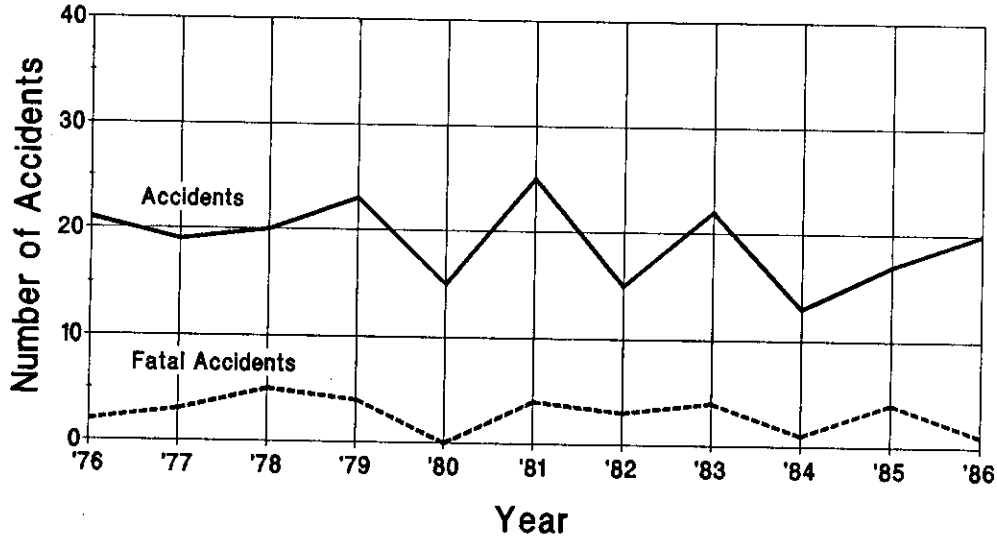


Figure 5 - NUMBER OF FATALITIES
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

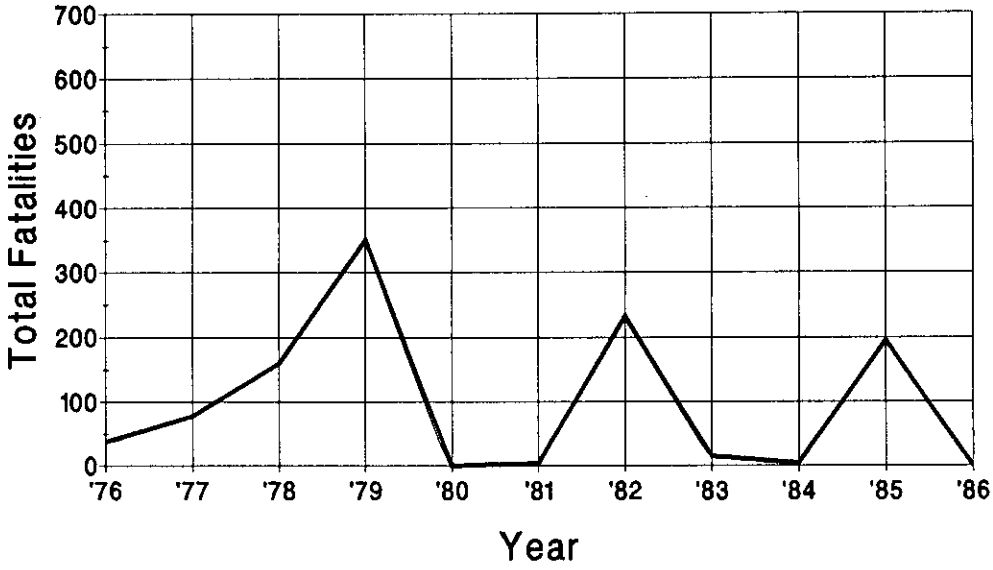


Figure 6 - ACCIDENT RATES
SCHEDULED 14 CFR 121, 125, 127 OPERATIONS

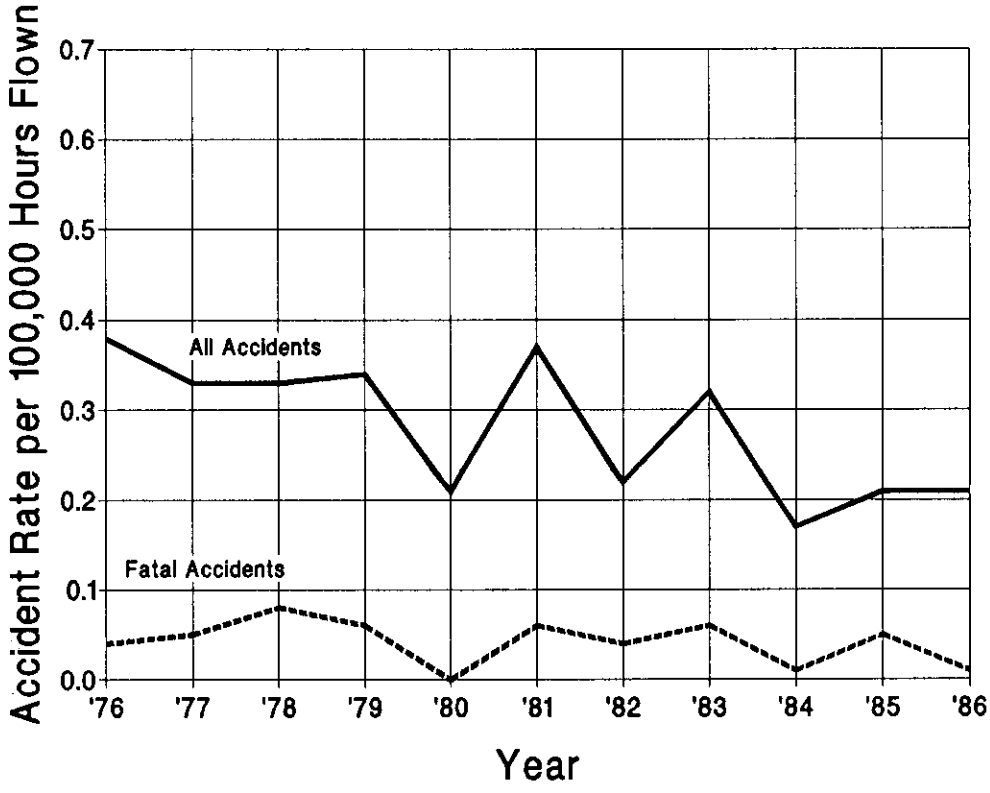


Table 16 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCHEDULED 14 CFR 121 125 127 OPERATIONS
1977 - 1986

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1976	2	0	0	0	218,953	0.91	0.00
1977	5	2	577	329	240,834	2.08	0.83
1978	2	0	0	0	202,883	0.99	0.00
1979	6	1	3	3	165,817	3.62	0.60
1980	4	1	1	0	310,100	1.29	0.32
1981	1	0	0	0	291,558	0.34	0.00
1982	4	1	1	1	342,555	1.17	0.29
1983	2	0	0	0	383,830	0.52	0.00
1984	4	0	0	0	429,087	0.93	0.00
1985	5	3	329	329	444,562	1.12	0.67
1986	3	1	3	3	472,751	0.63	0.21

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

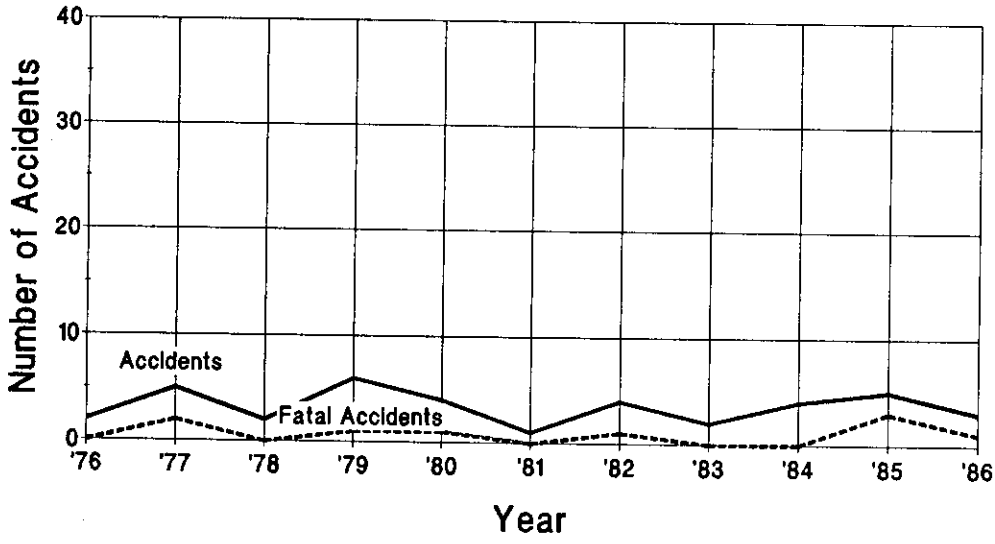


Figure 8 - NUMBER OF FATALITIES NONSCHEDULED 14 CFR 121, 125, 127 OPERATIONS

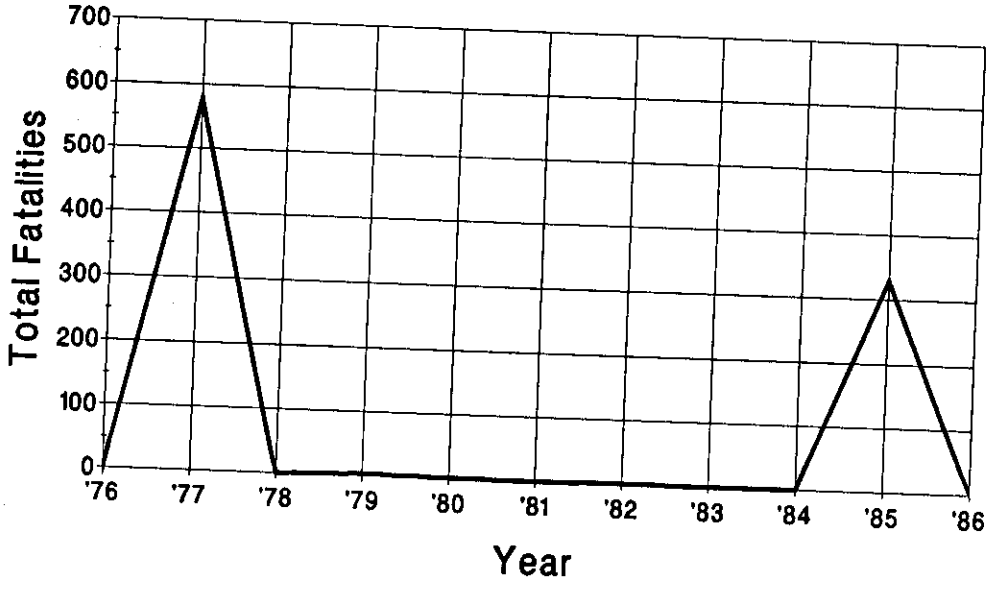


Figure 9 - ACCIDENT RATES NONSCHEDULED 14 CFR 121, 125, 127 OPERATIONS

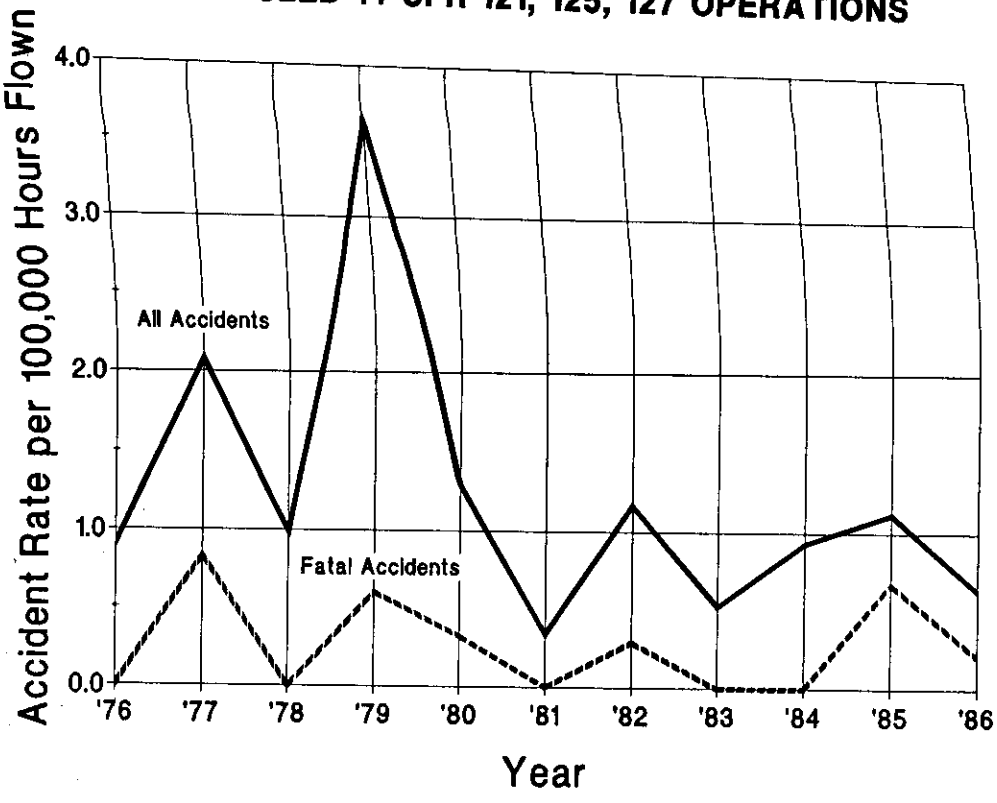


Table 17 - MOST PREVALENT FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1986 AND 1981 - 1985

Type of Occurrence	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Encounter with weather/turbulence	8	34.8	5.2	24.1	0	.0	.2	5.0
Collision with object/terrain	2	8.7	3.4	15.7	1	50.0	1.0	25.0
Miscellaneous	4	17.4	3.0	13.9	0	.0	1.2	30.0
Loss of power	0	.0	2.8	13.0	0	.0	.6	15.0
Airframe/component/system fail/malf	6	26.1	2.0	9.3	0	.0	.2	5.0
Gear collapsed/retracted	1	4.3	1.4	6.5	0	.0	.0	.0
Loss of control - in flight	1	4.3	1.0	4.6	1	50.0	.8	20.0
Loss of control - on ground	0	.0	.6	2.8	0	.0	.0	.0
Undershoot	0	.0	.6	2.8	0	.0	.0	.0
Not reported	0	.0	.6	2.8	0	.0	.0	.0
Abrupt maneuver	0	.0	.4	1.9	0	.0	.0	.0
Fire/explosion	0	.0	.4	1.9	0	.0	.0	.0
(All other types)	1	4.3	.2	.9	0	.0	.0	.0
Total	23	100.0	21.6	100.0	2	100.0	4.0	100.0

Table 18 - MOST PREVALENT FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1986 AND 1981 - 1985

Phase of Operation	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Standing	2	8.7	2.0	9.3	0	.0	.4	10.0
Taxi	2	8.7	2.2	10.2	1	50.0	.2	5.0
Takeoff	2	8.7	4.2	19.4	1	50.0	1.6	40.0
Climb	3	13.0	1.8	8.3	0	.0	.4	10.0
Cruise	4	17.4	3.8	17.6	0	.0	.4	10.0
Descent	4	17.4	1.8	8.3	0	.0	.2	5.0
Approach	1	4.3	3.2	14.8	0	.0	.4	10.0
Landing	5	21.7	1.8	8.3	0	.0	.4	10.0
Not reported	0	.0	.6	2.8	0	.0	.0	.0
Other	0	.0	.2	.9	0	.0	.0	.0
Total	23	100.0	21.6	100.0	2	100.0	4.0	100.0

Table 19 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
14 CFR 121 125 127 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	7	30.4	10.6	49.1	1	50.0	2.2	55.0
Personnel	15	65.2	10.4	48.1	2	100.0	2.4	60.0
Weather	10	43.5	8.8	40.7	1	50.0	1.4	35.0
Miscellaneous	2	8.7	5.6	25.9	1	50.0	1.8	45.0
Powerplant	0	.0	3.6	16.7	0	.0	.0	.0
Airport/Airways/ Facilities	2	8.7	3.0	13.9	0	.0	.8	20.0
Landing Gear	2	8.7	2.4	11.1	0	.0	.0	.0
Terrain	1	4.3	2.0	9.3	0	.0	.4	10.0
Airframe	3	13.0	1.8	8.3	1	50.0	.4	10.0
Systems	3	13.0	1.6	7.4	0	.0	.6	15.0
Instruments/Equipment/ Accessories	2	8.7	1.0	4.6	1	50.0	.4	10.0
Undetermined	0	.0	1.0	4.6	0	.0	.0	.0
Total	23		21.6		2		4.0	

Scheduled 14 CFR 135 Operations

There were 15 accidents involving scheduled 14 CFR 135 operations in 1986, the lowest number of any year presented in this review. The average number of accidents per year in this category for the years 1976 through 1985 is 34.8. The accident rate per 100,000 hours flown for 1986 is 0.863, compared with an overall rate of 2.617 for the period 1976 through 1985.

Of the 15 accidents in this category, two accidents were fatal, involving a total of four fatalities. During the period 1976 through 1985, there were an average of 8.5 fatal accidents and 35.4 fatalities per year in Scheduled 14 CFR 135 operations. The fatal accident rate of 0.115 accidents per 100,000 hours flown is the lowest of any year in this review.

One of the accidents reported in this section involved two scheduled 14 CFR 135 aircraft colliding on the ground. Therefore, the tables in this section list 15 accidents, involving 16 aircraft.

Table 20 - SUMMARY OF LOSSES
SCHEDULED 14 CFR 135 OPERATIONS
1982 - 1986

	1982	1983	1984	1985	1986
Accidents					
Fatal	5	2	7	7	2
Involved Serious Injury	6	7	4	4	2
Involved Minor or No Injury	15	9	11	10	11
Total	26	18	22	21	15
Fatalities					
Passenger	8	9	38	28	3
Crew	6	1	8	8	1
Other Persons	0	1	2	1	0
Total	14	11	48	37	4
Aircraft Damaged (Scheduled 14 CFR 135)					
Destroyed	8	6	7	9	1
Substantial	16	10	15	12	13
Minor	1	2	0	0	1
None	0	0	0	0	1
Unknown / Not Reported	1	0	0	0	0
Total	26	18	22	21	16

Table 21 - ACCIDENT RATES
SCHEDULED 14 CFR 135 OPERATIONS

	1982	1983	1984	1985	1986
Aircraft Miles Flown (Thousands)	222,355	253,572	291,460	300,817	321,629
Aircraft Hours Flown	1,299,748	1,510,908	1,745,762	1,737,106	1,738,239
Departures Flown	2,026,691	2,328,430	2,676,590	2,561,463	2,663,327
Accident Rates					
Per Million Miles Flown	0.1169	0.0710	0.0755	0.0698	0.0466
Per Hundred Thousand Hours Flown	2.000	1.191	1.260	1.209	0.863
Per Hundred Thousand Departures Flown	1.283	0.773	0.822	0.820	0.563
Fatal Accident Rates					
Per Million Miles Flown	0.0225	0.0079	0.0240	0.0232	0.0062
Per Hundred Thousand Hours Flown	0.385	0.132	0.401	0.403	0.115
Per Hundred Thousand Departures Flown	0.247	0.086	0.262	0.273	0.075

Table 22 - LIST OF ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Air Carrier	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/30	Metlakatla, AK	Passenger	Temsco Airlines	DeHavilland DHC-2	Substantial	None	Loss of control - on ground
1/30	Metlakatla, AK	Passenger	West Flight Aviation	DeHavilland DHC-2	Minor	None	Loss of control - on ground
2/07	Mekoryuk, AK	Pax and Cargo	Era Helicopters, Inc.	DeHavilland DHC-6	Substantial	None	Loss of control - in flight
2/14	Kansas City, MO	Passenger	Air Midwest	Fairchild Swearingen SA226TC	Substantial	None	Airframe/component/syst. failure/malf.
3/13	Alpena, MI	Passenger	Simmons Airlines	Embraer EMB-110P1	Destroyed	Fatal (3)	In flight encounter with weather
4/05	El Paso, TX	Cargo	Atorie Air	Douglas DC-3C	Substantial	None	Airframe/component/syst. failure/malf.
4/25	Opa Locka, FL	Passenger	Caribbeam Express	Cessna 402B	Substantial	None	In flight collision with terrain
5/16	Laramie, WY	Pax and Cargo	Centennial Airlines	Beech BE-99C	Substantial	None	In flight encounter with weather
5/20	Hutchinson, KS	Passenger	Air Midwest	Swearingen SA226	Substantial	None	Undershoot
5/21	Hopewell, VA	Passenger	New York Air	Short Brothers SD3-30	None	Serious	In flight encounter with weather
9/24	Galesburg, IL	Passenger	Britt Airways	Fairchild Swearingen SA226TC	Substantial	None	Complete gear collapsed
10/28	St. Croix, VI	Passenger	Virgin Island Seaplane	Grumman G-73	Substantial	Fatal (1)	Airframe/component/syst. failure/malf.
10/30	Santa Barbara, CA	Passenger	American Eagle	Fairchild Swearingen SA226TC	Substantial	Serious	In flight collision with terrain
11/29	San Juan, PR	Passenger	Eastern Metro Express	DeHavilland DHC-6	Substantial	None	Loss of control - on ground
12/15	Salt Lake City, UT	Passenger	Skywest Airlines	Fairchild SA227AC	Substantial	None	In flight encounter with weather
12/26	St. Barthelemy Isl	Passenger	Virgin Air	Beech C-45H	Substantial	Minor	Abrupt maneuver at landing

Table 23 - ACCIDENTS AND RATES BY TYPE OF OPERATION
SCHEDULED 14 CFR 135 OPERATIONS
1986

	Type of Operation		
	Passenger/ Cargo	All Cargo	All*
Accidents	14	1	15
Fatal Accidents	2	0	2
Aircraft Miles Flown (Thousands)	294,291	27,660	321,629
Aircraft Hours Flown	1,588,750	149,489	1,738,239
Departures Flown	2,511,517	151,810	2,663,327
Accident Rates			
Per Million Miles Flown	0.0476	0.0362	0.0466
Per Hundred Thousand Hours Flown	0.881	0.669	0.863
Per Hundred Thousand Departures Flown	0.557	0.659	0.563
Fatal Accident Rates			
Per Million Miles Flown	0.6796	0.0	0.0062
Per Hundred Thousand Hours Flown	0.126	0.0	0.115
Per Hundred Thousand Departures Flown	0.080	0.0	0.075

* 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:

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

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

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

Type of

Airframe
failu
Complete
In fligh
In fligh
Loss of
Loss of
Undersho
Miscella

Aircraft
Numbe
Perce

Table 24 - PERSONS BY ROLE AND DEGREE OF INJURY
SCHEDULED 14 CFR PART 135 OPERATIONS
1986

Role of Person	Degree of Injury				
	Fatal	Serious	Minor	None	Total
Pilot	0	1	2	13	16
Copilot	1	0	1	10	12
Cabin attendants	0	1	0	1	2
Other crew	0	0	0	1	1
Passenger	3	10	10	74	97
Total aboard	4	12	13	99	128
Grand total	4	12	13	99	128
Percent	3.1	9.4	10.2	77.3	

Table 25 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1986

Aircraft damage	Degree of injury				Aircraft	
	None	Minor	Ser	Fatal	No.	Percent
None	0	0	1	0	1	6.3
Minor	1	0	0	0	1	6.3
Substantial	10	1	1	1	13	81.3
Destroyed	0	0	0	1	1	6.3
Aircraft						
Number -	11	1	2	2	16	
Percent -	68.8	6.3	12.5	12.5		

Table 26 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1986

Type of first occurrence	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Airframe/component/system failure/malfunction	2	0	0	1	0	0	3	0	3	18.8
Complete gear collapse	1	0	0	0	0	0	1	0	1	6.3
In flight collision with terrain	1	0	1	0	0	0	2	0	2	12.5
In flight encounter with weather	2	0	1	1	1	0	2	1	4	25.0
Loss of control - in flight	1	0	0	0	0	0	1	0	1	6.3
Loss of control - on ground	3	0	0	0	0	1	2	0	3	18.8
Undershoot	1	0	0	0	0	0	1	0	1	6.3
Miscellaneous/other	0	1	0	0	0	0	1	0	1	6.3
Aircraft										
Number -	11	1	2	2	1	1	13	1	16	
Percent -	68.8	6.3	12.5	12.5	6.3	6.3	81.3	6.3		

Table 27 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
SCHEDULED 14 CFR 135 OPERATIONS
1986

Type of first occurrence	Phase of operation							Aircraft	
	Taxi	Tkoff	Climb	Cruis	Aprch	Landg	Other	No.	Percent
Airframe/component/system failure/malfunction	0	0	2	1	0	0	0	3	18.8
Complete gear collapse	0	1	0	0	0	0	0	1	6.3
In flight collision with terrain	0	0	0	0	0	2	0	2	12.5
In flight encounter with weather	0	0	1	1	2	0	0	4	25.0
Loss of control - in flight	0	0	0	0	0	1	0	1	6.3
Loss of control - on ground	2	1	0	0	0	0	0	3	18.8
Undershoot	0	0	0	0	1	0	0	1	6.3
Miscellaneous/other	0	0	0	0	0	0	1	1	6.3
Aircraft									
Number -	2	2	3	2	3	3	1	16	
Percent -	12.5	12.5	18.8	12.5	18.8	18.8	6.3		

Table 28 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1986

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Taxi	2	0	0	0	0	1	1	0	2	12.5
Takeoff - ground run	2	0	0	0	0	0	2	0	2	12.5
Climb	0	0	0	1	0	0	1	0	1	6.3
Climb - to cruise	2	0	0	0	0	0	2	0	2	12.5
Cruise - normal	1	0	1	0	1	0	1	0	2	12.5
Approach - VFR pattern - final approach	1	0	0	0	0	0	1	0	1	6.3
Approach - FAF/outer marker to threshold (IFR)	1	0	0	1	0	0	1	1	2	12.5
Landing - flare/touchdown	2	0	1	0	0	0	3	0	3	18.8
Other	0	1	0	0	0	0	1	0	1	6.3
Aircraft										
Number -	11	1	2	2	1	1	13	1	16	
Percent -	68.8	6.3	12.5	12.5	6.3	6.3	81.3	6.3		

Table 29 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
SCHEDULED 14 CFR 135 OPERATIONS
1986

Condition of light	Type of weather		Aircraft	
	VMC	IMC	No.	Percent
Daylight	8	2	10	62.5
Night (dark)	2	3	5	31.3
Not reported	1	0	1	6.3
Aircraft				
Number -	11	5	16	
Percent -	68.8	31.3		

Table 30 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
SCHEDULED 14 CFR 135 OPERATIONS
1986

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Scheduled Domestic Passenger	6	0	2	2	10	62.5
Scheduled Domestic Cargo	1	0	0	0	1	6.3
Scheduled Domestic Pass/Cargo	2	0	0	0	2	12.5
Scheduled International Pass.	2	1	0	0	3	18.8
Aircraft						
Number -	11	1	2	2	16	
Percent -	68.8	6.3	12.5	12.5		

Table 31 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
SCHEDULED 14 CFR 135 OPERATIONS
1986

Accident location	Flight plan			Aircraft	
	VFR	IFR	Cmpny VFR	No.	Percent
Off airport/airstrip	1	3	1	5	31.3
On Airport	1	4	3	8	50.0
On Airstrip	1	0	0	1	6.3
Not reported	1	1	0	2	12.5
Aircraft					
Number -	4	8	4	16	
Percent -	25.0	50.0	25.0		

Table 32 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1986

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	11	0	2	0	1	1	11	0	13	81.3
On ground	0	0	0	1	0	0	0	1	1	6.3
Not reported	0	1	0	1	0	0	2	0	2	12.5
Aircraft										
Number -	11	1	2	2	1	1	13	1	16	
Percent -	68.8	6.3	12.5	12.5	6.3	6.3	81.3	6.3		

Year	Acc
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	
1986	

Table 33 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
SCHEDULED 14 CFR 135 OPERATIONS
1986

Type of aircraft	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Fixed Wing Single Recip. Engine	2	0	0	0	0	1	1	0	2	12.5
Fixed Wing Multiple Recip. Engine	2	1	0	1	0	0	4	0	4	25.0
Fixed Wing Turboprop	7	0	2	1	1	0	8	1	10	62.5
Aircraft										
Number -	11	1	2	2	1	1	13	1	16	
Percent -	68.8	6.3	12.5	12.5	6.3	6.3	81.3	6.3		

Table 34 - BROAD CAUSE/FACTOR ASSIGNMENTS*
SCHEDULED 14 CFR 135 OPERATIONS
1986

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
Pilot	2	11	0	4	2	12
Personnel	1	6	0	1	1	7
Weather	0	2	1	6	1	7
Miscellaneous	0	0	1	4	1	4
Airport/Airways/Facilities	0	0	1	4	1	4
Powerplant	0	2	0	0	0	2
Systems	1	2	0	0	1	2
Instruments/Equipment/Accessories	0	1	0	1	0	2
Landing Gear	0	2	0	0	0	2
Airframe	1	1	0	0	1	1
Terrain	0	0	0	1	0	1
Number of Aircraft					2	16

* Multiple causes and factors may be assigned in an accident

Table 35 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
SCHEDULED 14 CFR 135 OPERATIONS
1977 - 1986

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1976	35	9	27	23	965,296	3.63	0.93
1977	44	9	32	32	1,150,250	3.83	0.78
1978	61	14	48	48	1,302,136	4.68	1.08
1979	52	15	66	66	1,169,921	4.44	1.28
1980	38	8	37	37	1,175,588	3.23	0.68
1981	31	9	34	32	1,240,764	2.50	0.73
1982	26	5	14	14	1,299,748	2.00	0.38
1983	18	2	11	10	1,510,908	1.19	0.13
1984	22	7	48	46	1,745,762	1.26	0.40
1985	21	7	37	36	1,737,106	1.21	0.40
1986	15	2	4	4	1,738,239	0.86	0.12

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

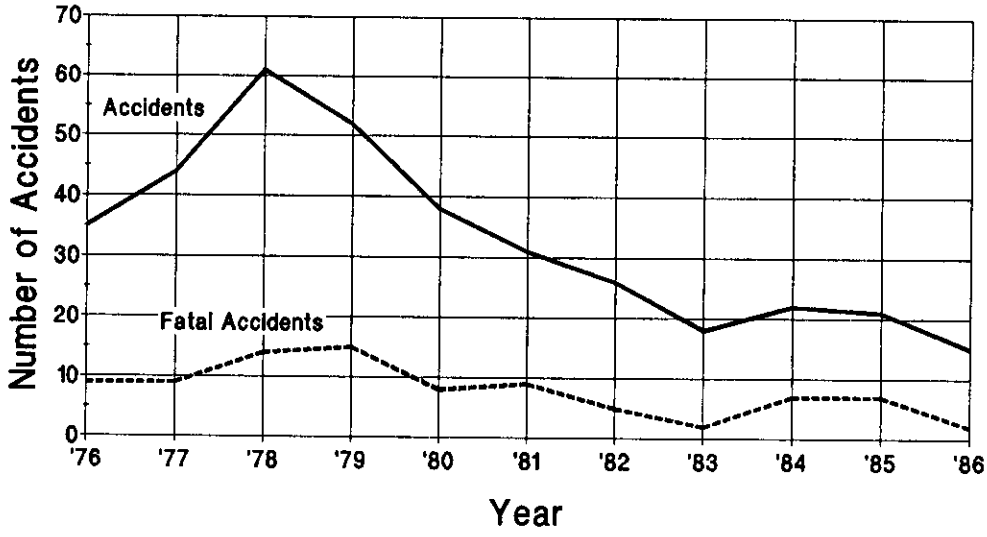


Figure 11 - NUMBER OF FATALITIES SCHEDULED 14 CFR 135 OPERATIONS

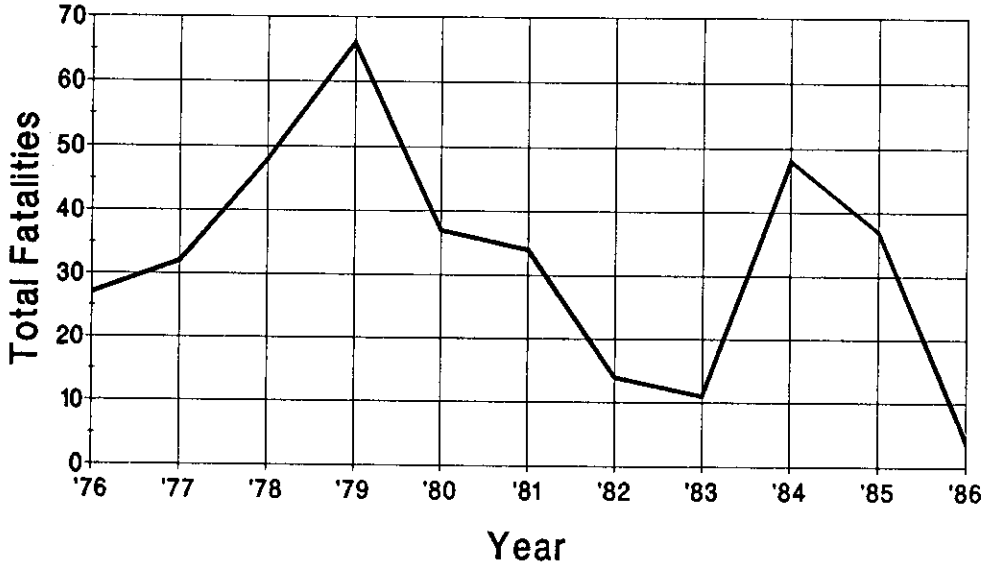


Figure 12 - ACCIDENT RATES SCHEDULED 14 CFR 135 OPERATIONS

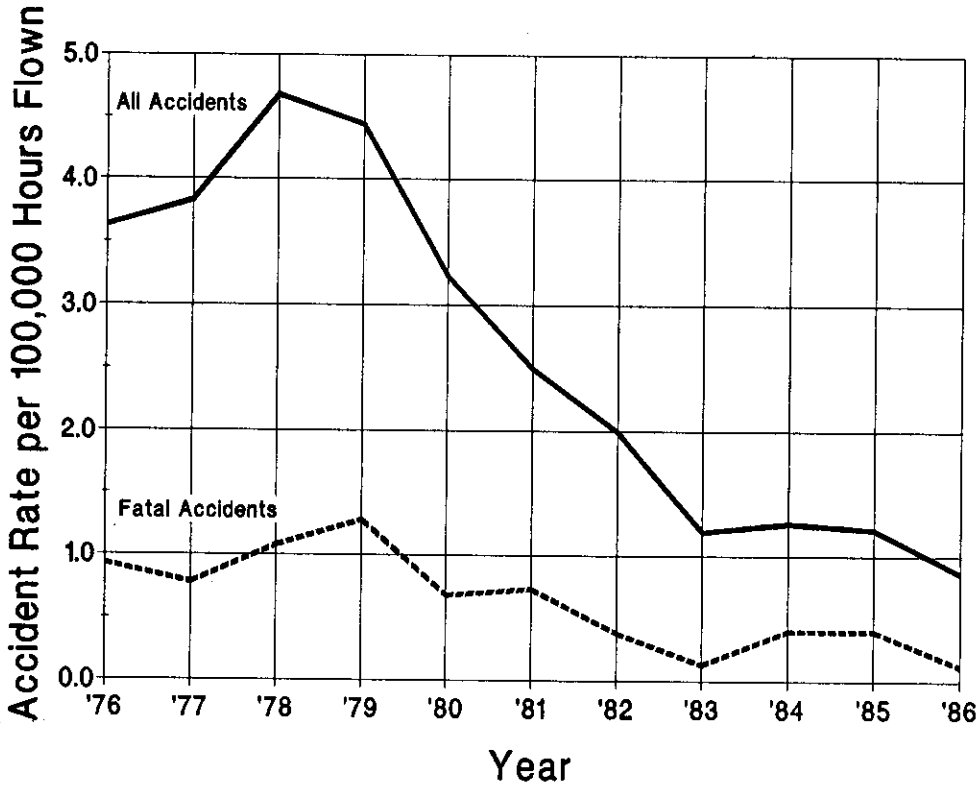


Table 36 - MOST PREVALENT FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Type of Occurrence	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Collision with object/terrain	2	12.5	5.6	23.9	0	.0	2.2	36.7
Loss of power	0	.0	5.0	21.4	0	.0	.8	13.3
Airframe/component/system fail/malf	3	18.8	2.6	11.1	1	50.0	.4	6.7
Encounter with weather/turbulence	4	25.0	1.6	6.8	1	50.0	.8	13.3
Gear collapsed/retracted	1	6.3	1.4	6.0	0	.0	.0	.0
Loss of control - in flight	1	6.3	1.4	6.0	0	.0	.4	6.7
Loss of control - on ground	3	18.8	1.4	6.0	0	.0	.0	.0
Fire/explosion	0	.0	1.0	4.3	0	.0	.4	6.7
Miscellaneous	1	6.3	.8	3.4	0	.0	.0	.0
Prop/rotor contact	0	.0	.8	3.4	0	.0	.2	3.3
Midair collision	0	.0	.6	2.6	0	.0	.4	6.7
Hard landing	0	.0	.4	1.7	0	.0	.0	.0
(All other types)	1	6.3	.8	3.4	0	.0	.0	.0
Total	16	100.0	23.4	100.0	2	100.0	6.0	100.0

Table 37 - MOST PREVALENT FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Phase of Operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Standing	0	.0	1.6	6.8	0	.0	.2	3.3
Taxi	2	12.5	2.2	9.4	0	.0	.2	3.3
Takeoff	2	12.5	4.0	17.1	0	.0	.6	10.0
Climb	3	18.8	.8	3.4	1	50.0	.4	6.7
Cruise	2	12.5	2.8	12.0	0	.0	1.2	20.0
Descent	0	.0	1.0	4.3	0	.0	.4	6.7
Approach	3	18.8	6.0	25.6	1	50.0	2.0	33.3
Landing	3	18.8	4.0	17.1	0	.0	.0	0.0
Maneuvering	0	.0	.4	1.7	0	.0	.4	6.7
Not reported	0	.0	.2	.9	0	.0	.2	3.3
Other	1	6.3	.4	1.7	0	.0	.4	6.7
Total	16	100.0	23.4	100.0	2	100.0	6.0	100.0

Table 38 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
SCHEDULED 14 CFR 135 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	12	75.0	14.2	60.7	2	100.0	4.2	70.0
Personnel	7	43.8	8.4	35.9	1	50.0	2.8	46.7
Weather	7	43.8	6.2	26.5	1	50.0	2.8	46.7
Powerplant	2	12.5	5.0	21.4	0	.0	.8	13.3
Terrain	1	6.3	4.4	18.8	0	.0	1.4	23.3
Landing Gear	2	12.5	3.6	15.4	0	.0	.0	.0
Miscellaneous	4	25.0	3.2	13.7	1	50.0	1.0	16.7
Airframe	1	6.3	2.8	12.0	1	50.0	1.2	20.0
Systems	2	12.5	1.8	7.7	1	50.0	.4	6.7
Undetermined	0	.0	1.8	7.7	0	.0	.6	10.0
Airport/Airways/ Facilities	4	25.0	1.6	6.8	0	.0	.0	.0
Rotorcraft	0	.0	.8	3.4	0	.0	.2	3.3
Undetermined	0	.0	1.0	4.6	0	.0	.6	10.0
Instruments/Equipment/ Accessories	2	12.5	.6	2.6	0	.0	.4	6.7
Total	16		23.4		2		6.0	

Nonscheduled 14 CFR 135 Operations

During 1986 there were 116 accidents involving nonscheduled 14 CFR 135 aircraft. This is the fewest accidents in any year in this report and represents a decrease of 25.3 percent from the average of 155.2 accidents per year in this category during the period 1976 through 1985. The 1986 accident rate is also the lowest among the 11 years covered in this review.

There were 31 fatal accidents in this category which were responsible for 65 fatalities in 1986. This is slightly better than the averages of 34.8 fatal accidents and 91.1 fatalities per year between 1976 and 1985. The fatal accident rate of 1.06 fatal accidents per 100,000 hours flown is essentially equal to the overall rate of 1.11 during that ten year period.

One of the accidents reported in this section involved an on-ground collision between two nonscheduled 14 CFR 135 aircraft. Therefore, this section lists 116 accidents involving 117 aircraft.

Table 39 - SUMMARY OF LOSSES
NONSCHEDULED 14 CFR 135 OPERATIONS
1982 - 1986

	1982	1983	1984	1985	1986
Accidents					
Fatal	31	27	23	35	31
Involved Serious Injury	13	12	19	12	13
Involved Minor or No Injury	88	102	104	105	72
Total	132	141	146	152	116
Fatalities					
Passenger	45	27	22	39	26
Crew	27	30	30	36	35
Other Persons	0	5	0	1	4
Total	72	62	52	76	65
Aircraft Damaged (Nonscheduled 14 CFR 135)					
Destroyed	47	33	40	50	38
Substantial	83	105	104	102	76
Minor	3	2	1	2	1
None	0	2	2	1	2
Unknown / Not Reported	1	0	0	0	0
Total	134	142	147	155	117

Table 40 - ACCIDENT RATES
NONSCHEDULED 14 CFR 135 OPERATIONS

	1982	1983	1984	1985	1986
Aircraft Hours Flown	3,256,763	2,574,883	3,079,007	2,782,696	2,913,358
Accident Rates *					
All Accidents	4.05	5.48	4.74	5.46	3.98
Fatal Accidents	0.95	1.05	0.75	1.26	1.06

*Per Hundred Thousand Hours Flown

Table 41 - LIST OF ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
1/01	Kamuela, HI	Passenger	Cessna R172K	Destroyed	Fatal (1)	Loss of control - in flight
1/05	Grand Isle BL73, GM	Pax and Cargo	Sikorsky S-76A	Substantial	Fatal (3)	Loss of control - on ground
1/06	Charlotte, NC	Cargo	Piper PA-30	Substantial	None	Loss of power(partial) - non-mechanical
1/07	Tulsa, OK	Passenger	Aerospatiale SA319B	Substantial	None	Airframe/component/system failure/malfunction
1/15	Waimea, HI	Passenger	Bell 206B-3	Substantial	Minor	Loss of power(total) - mech failure/malfunction
1/17	Canton, OH	Passenger	Beech BE-90C	Substantial	None	Loss of control - in flight
1/21	Ellendale, MN	Passenger	Bell 206B	Destroyed	Fatal (3)	In flight encounter with weather
1/25	Sabine Pass, TX	Passenger	Bell 206L-1	None	Serious	In flight encounter with weather
1/26	La Habra, CA	Passenger	Bell 222UT	Substantial	Minor	In flight collision with object
1/27	Missoula, MT	Cargo	Bell 206L-1	Substantial	None	In flight collision with object
2/04	Parkland, FL	Cargo	Cessna 401	Substantial	None	Loss of power(total) - non-mechanical
2/07	Flagstaff, AZ	Passenger	Cessna TU206G	Substantial	None	Fire/explosion
2/08	Milwaukee, WI	Passenger	Cessna 401B	Substantial	None	Main gear collapsed
2/10	Milwaukee, WI	Cargo	Cessna 207	Substantial	None	Loss of power(total) - mech failure/malfunction
2/11	Nome, AK	Pax and Cargo	Cessna 207	Destroyed	Fatal (3)	In flight encounter with weather
2/11	Louisville, KY	Cargo	Beech H-18	Substantial	Serious	Loss of control - in flight
2/13	Kalaupapa, HI	Cargo	Beech E18S	Destroyed	Minor	Overrun
2/18	Grand Junction, CO	Passenger	Bell 47G3 B-2	Substantial	Minor	In flight encounter with weather
2/18	Rochester, MN	Passenger	Cessna 402B	Substantial	None	Undershoot

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
2/19	Burns, OR	Cargo	Cessna 340	Substantial	None	In flight encounter with weather
2/20	Meeker, CO	Passenger	Aerospatiale SA315B	Substantial	Minor	Roll over
2/21	Panama City, FL	Passenger	Piper PA-44	Substantial	Minor	In flight collision with terrain
2/22	Copperhill, TN	Cargo	Beech G18S	Destroyed	Fatal (1)	Loss of control - in flight
2/23	Mount Baldy, ID	Passenger	Bell 206B	Destroyed	Serious	In flight encounter with weather
2/26	Janesville, WI	Cargo	Beech G18S	Destroyed	Serious	In flight collision with terrain
2/27	Rochester, NY	Pax and Cargo	Beech 95-B55	Substantial	None	Main gear collapsed
3/04	Mount Pleasant, TN	Passenger	Beech B90	Substantial	None	Fire
3/06	Fayetteville, NC	Pax and Cargo	Grumman American AA5A	Substantial	None	Loss of control - on ground
3/07	New Boston, TX	Passenger	Hughes 369D	Substantial	Minor	Loss of control - in flight
3/10	Seattle, WA	Passenger	Beech 18	Substantial	None	Loss of control - on ground
3/11	Hanceville, AL	Cargo	Piper PA-28R-200	Substantial	None	Loss of power(total) - mech failure/malfunction
3/15	Houlton, ME	Cargo	Rockwell 680FL	Substantial	Minor	On ground encounter with weather
3/17	Tahoe Valley, CA	Passenger	Aerospatiale AS-350D	Destroyed	Minor	Loss of control - in flight
3/20	Maunaloa, HI	Cargo	Cessna U206C	Destroyed	Fatal (1)	Missing aircraft
3/23	Steins, NM	Cargo	Douglas C-47	Substantial	None	Loss of power(partial) - mech failure/malfunction
3/23	Philadelphia, PA	Pax and Cargo	Aerospatiale AS-350D	Destroyed	Minor	Explosion
3/25	Cedar Rapids, IA	Cargo	Beech G18S	Substantial	None	Loss of control - on ground
4/04	Point Aufer, LA	Passenger	Cessna 185F	Substantial	None	Loss of control - on ground

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
4/21	Lincoln, RI	Cargo	Cessna 310	Destroyed	Fatal (1)	Abrupt maneuver
4/22	Orlando, FL	Passenger	Beech 95-B55	Substantial	None	In flight collision with terrain
4/22	Buffalo, NY	Cargo	Cessna C-310R	Substantial	None	Hard landing
4/23	Panama City, FL	Cargo	Piper PA-60	Substantial	None	Nose gear collapsed
5/01	Bethel, AK	Passenger	Cessna 185	Substantial	None	On ground collision with terrain
5/05	Atmautluak, AK	Pax and Cargo	Piper PA-32-300	Substantial	Minor	Loss of power(total) - non-mechanical
5/07	Billings, MT	Cargo	Swearingen SA226AT	Destroyed	Fatal (1)	Loss of control - in flight
5/09	Grand Island, NE	Cargo	Aero Commander 680FL	Destroyed	Fatal (1)	Loss of power
5/12	Pine Spring, TX	Passenger	Bell 206B	Destroyed	Fatal (2)	Airframe/component/system failure/malfunction
5/17	Atlantic City, NJ	Passenger	Cessna 414A	Destroyed	Fatal (2)	On ground collision with object
6/01	Hobart Bay, AK	Passenger	Grumman G21A	Substantial	Minor	In flight collision with terrain
6/02	Peterson, AL	Passenger	Messerschmitt BO-105C	Destroyed	Fatal (3)	In flight collision with object
6/02	Bartlett, TX	Cargo	Mitsubishi MU-2B-35	Destroyed	Fatal (1)	Loss of control - in flight
6/11	Mt. Holly, VA	Passenger	Piper PA-23-250	Substantial	Minor	Overrun
6/12	Jacksonville, FL	Cargo	Cessna 210N	Substantial	Minor	Loss of power
6/16	Saint Marys, AK	Passenger	Cessna 207A	Destroyed	Fatal (1)	Loss of control - in flight
6/16	Theriot, LA	Pax and Cargo	Aerospatiale AS350D	Substantial	Serious	Loss of power(total) - mech failure/malfunction
6/22	Bulchitna Lake, AK	Pax and Cargo	DeHavilland DHC-2	Substantial	None	Loss of control - on ground
6/23	Oklahoma City, OK	Cargo	Beech E18S	Minor	None	On ground collision with object

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
6/23	Oklahoma City, OK	Cargo	Swearingen SA-226TC	Substantial	None	On ground collision with object
6/25	New York, NY	Cargo	Enstrom F-28A	Substantial	None	In flight encounter with weather
7/01	Lincoln, NE	Cargo	Fairchild SA-227	Substantial	None	Undershoot
7/09	Indianapolis, IN	Cargo	Beech BE-58	Substantial	None	In flight collision with terrain
7/10	Augusta, GA	Passenger	Bell 206B	Substantial	None	In flight collision with object
7/14	Ekuk, AK	Passenger	Cessna 207	Substantial	None	In flight collision with object
7/17	Staten Island, NY	Pax and Cargo	Bell B-222A	Substantial	None	Explosion
7/21	Chapel Hill, NC	Passenger	Bell 222UT	Substantial	Minor	Loss of power(total) - mech failure/malfunction
7/22	Isla Verde, PR	Cargo	Douglas DC-3	Destroyed	Fatal (1)	Loss of power(total) - mech failure/malfunction
7/26	Yosemite Nation, CA	Passenger	Piper PA-32-260	Destroyed	Fatal (3)	In flight collision with terrain
8/07	Arcadia, FL	Cargo	Mooney M20E	Substantial	None	Loss of power(total) - mech failure/malfunction
8/07	Emporia, KS	Cargo	Aero Commander 500-B	Substantial	None	Loss of power
8/08	Tyonek, AK	Cargo	Piper PA-32-300	Substantial	Minor	Loss of control - in flight
8/08	Clark, CO	Passenger	Hughes 369D	Substantial	Minor	Loss of control - in flight
8/08	Duxsbury, VT	Cargo	Aero Commander 680FL	Destroyed	Fatal (1)	In flight collision with terrain
8/10	Grangeville, ID	Passenger	Bell 206L-1	Destroyed	Minor	In flight collision with object
8/17	Caribou Lake, AK	Cargo	Cessna 185-F	Substantial	None	Loss of control - on ground
8/20	Kamishak Bay, AK	Passenger	Cessna U206	Substantial	None	Loss of control - on ground
8/21	Frenchglen, OR	Passenger	Cessna T207A	Destroyed	Fatal (6)	Loss of control - in flight
8/28	Texarkana, AR	Cargo	Lockheed 18-56	Destroyed	Fatal (2)	Loss of control - in flight

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
8/28	Lander, WY	Passenger	Cessna 441	Destroyed	Fatal (7)	In flight collision with terrain
9/04	Talkeetna, AK	Cargo	Cessna TU206A	Substantial	None	Nose over
9/17	Mountain Villag, AK	Mail Only	Cessna 207A	Substantial	None	Airframe/component/system failure/malfunction
9/17	St. Paul, MN	Cargo	Piper PA-31-310	Substantial	None	failure/malfunction Airframe/component/system failure/malfunction
9/19	American River, AK	Passenger	DeHavilland DHC-3	Substantial	Minor	In flight collision with terrain
9/22	Old Monroe, MO	Passenger	Cessna T210M	Substantial	None	Loss of power(total) - mech failure/malfunction
9/23	Galax, VA	Passenger	Bell 222UT	Destroyed	Fatal (3)	In flight encounter with weather
9/25	Hanning Bay, AK	Pax and Cargo	Cessna A185F	Substantial	None	On ground encounter with weather
9/28	Chicago, IL	Cargo	Beech E18S	Destroyed	Fatal (1)	Loss of power(total) - mech failure/malfunction
9/30	Laredo, TX	Cargo	Beech TC-45J	Substantial	None	Main gear collapsed
10/07	Jacksonville, FL	Cargo	Smith Aerostar 600	Substantial	None	In flight collision with terrain
10/10	Lower Loon, ID	Passenger	Britten Norman 2A-20	Substantial	None	Main gear collapsed
10/15	Greenville, MA	Passenger	Cessna 185	Substantial	Fatal (1)	In flight encounter with weather
10/16	Lompoc, CA	Passenger	Bell 206B-3	Destroyed	Fatal (2)	Loss of control - in flight
10/16	Fishers Island, NY	Passenger	Piper PA-28-181	Destroyed	Fatal (2)	On ground collision with object
10/21	Nightmute, AK	Cargo	Short Bros SC7 Ser. 3	Substantial	None	In flight collision with terrain
10/23	Chicago, IL	Passenger	Beech B-58	Destroyed	Serious	Loss of power(total) - non-mechanical
10/30	Eleele Kauai, HI	Passenger	Piper PA-31-350	Substantial	None	Loss of power
11/01	Lake Tahoe, CA	Passenger	Lear Jet 24	Substantial	None	In flight encounter with weather
11/01	Jacksonville, FL	Cargo	Cessna 210	Substantial	Serious	Loss of power(total) - non-mechanical

Table 41 - LIST OF ACCIDENTS (Continued)
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Date	Location	Type of Operation	Aircraft Type	Aircraft Damage	Degree of Injury	First Occurrence
11/01	Mustang Island, GM	Passenger	Bell 206B	Substantial	Serious	Loss of power(partial) - mech failure/malfunction
11/05	Charleston, WV	Pax and Cargo	Gates Learjet 23	None	Serious	Incapacitation of pilot
11/06	Butte, MT	Cargo	Cessna 421C	Destroyed	Fatal (1)	In flight encounter with weather
11/06	Henderson, NV	Mail Only	Cessna 401	Destroyed	Fatal (2)	Explosion
11/06	Staten Island, NY	Cargo	Bell 206B	Substantial	Serious	In flight collision with object
11/07	Billings, MT	Passenger	Bell 206L-3	Destroyed	Serious	Airframe/component/system failure/malfunction
11/11	Buckeye, AZ	Passenger	Cessna T-210N	Substantial	Serious	Overrun
11/12	Pittsburgh, PA	Cargo	Beech BE18H	Substantial	None	Main gear collapsed
11/18	Fremont, OH	Cargo	Cessna 402C	Substantial	None	In flight encounter with weather
11/19	Manokotak, AK	Passenger	Cessna 207A	Substantial	None	Loss of control - on ground
11/19	Beckley, WV	Passenger	Beech BE-55	Substantial	None	On ground collision with object
11/20	Moose Creek, ID	Cargo	Cessna U206F	Destroyed	Fatal (1)	In flight collision with terrain
12/03	Pendleton, OR	Passenger	Bell 206L-1	Destroyed	Fatal (3)	In flight encounter with weather
12/03	Jamestown, TN	Passenger	Bell 206L-1	Destroyed	Fatal (4)	In flight encounter with weather
12/03	Barre, VT	Cargo	Aero Commander 680	Substantial	None	Overrun
12/04	Uganik Pass, AK	Passenger	Cessna U206G	Substantial	None	In flight collision with terrain
12/12	Hagerstown, IN	Cargo	Aero Commander 500B	Destroyed	Serious	In flight collision with object
12/13	San Jose, CA	Cargo	Piper PA-32R-300	Substantial	None	Loss of power
12/29	Wheeling, IL	Passenger	Piper PA-32-301	Substantial	None	In flight encounter with weather
12/30	Merrillville, IN	Cargo	Piper PA-31T	Destroyed	Fatal (1)	Loss of power(partial) - mech failure/malfunction

Table 42 - PERSONS BY ROLE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Role of Person	Degree of Injury				
	Fatal	Serious	Minor	None	Total
Pilot	27	10	19	60	116
Copilot	1	1	1	5	8
Cabin attendants	0	0	2	0	2
Other crew	7	2	1	5	15
Passenger	26	15	27	105	173
Total aboard	61	28	50	175	314
Others on ground	4	2	0	0	6
Grand total	65	30	50	175	320
Percent	20.3	9.4	15.6	54.7	

Table 43 - AIRCRAFT BY DAMAGE AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Aircraft damage	Degree of injury				Aircraft	
	Fatal	Serious	Minor	None	No.	Percent
None	0	2	0	0	2	1.7
Minor	0	0	0	1	1	0.9
Substantial	2	6	15	53	76	65.0
Destroyed	29	5	4	0	38	32.5
Aircraft						
Number -	31	13	19	54	117	
Percent -	26.5	11.1	16.2	46.2		

Table 44 - AIRCRAFT BY FIRST OCCURRENCE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

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	0.9
Airframe/component/system failure/malfunction	3	0	1	1	0	0	3	2	5	4.3
Fire/explosion	1	0	0	0	0	0	1	0	1	0.9
Fire	1	0	0	0	0	0	1	0	1	0.9
Explosion	1	1	0	1	0	0	1	2	3	2.6
Main gear collapsed	5	0	0	0	0	0	5	0	5	4.3
Nose gear collapsed	1	0	0	0	0	0	1	0	1	0.9
Hard landing	1	0	0	0	0	0	1	0	1	0.9
In flight collision with object	3	2	2	1	0	0	5	3	8	6.8
In flight collision with terrain	5	3	1	4	0	0	8	5	13	11.1
In flight encounter with weather	5	1	2	7	1	0	7	7	15	12.8
Loss of control - in flight	1	4	1	8	0	0	5	9	14	12.0
Loss of control - on ground	8	0	0	1	0	0	9	0	9	7.7
Nose over	1	0	0	0	0	0	1	0	1	0.9
On ground collision with object	3	0	0	2	0	1	2	2	5	4.3
On ground collision with terrain	1	0	0	0	0	0	1	0	1	0.9
On ground encounter with weather	1	1	0	0	0	0	2	0	2	1.7
Overrun	1	2	1	0	0	0	3	1	4	3.4
Loss of power	3	1	0	1	0	0	4	1	5	4.3
Loss of power (total) - mech failure/malfunction	4	2	1	2	0	0	7	2	9	7.7
Loss of power(partial) - mech failure/malfunction	1	0	1	1	0	0	2	1	3	2.6
Loss of power (total) - non-mechanical	1	1	2	0	0	0	3	1	4	3.4
Loss of power (partial) - non-mechanical	1	0	0	0	0	0	1	0	1	0.9
Roll over	0	1	0	0	0	0	1	0	1	0.9
Undershoot	2	0	0	0	0	0	2	0	2	1.7
Missing aircraft	0	0	0	1	0	0	0	1	1	0.9
Miscellaneous/other	0	0	1	0	1	0	0	0	1	0.9
Aircraft										
Number -	54	19	13	31	2	1	76	38	117	
Percent -	46.2	16.2	11.1	26.5	1.7	0.9	65.0	32.5		

Table 45 - AIRCRAFT BY FIRST OCCURRENCE AND BROAD PHASE OF OPERATION
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Type of first occurrence	Phase of operation											Aircraft	
	Stndg	Taxi	Tkoff	Climb	Cruis	Dscnt	Aprch	Landg	Manvr	Other	Unk	No.	Percent
Abrupt maneuver	0	0	0	0	0	0	0	0	1	0	0	1	0.9
Airframe/component/system failure/malfunction	0	0	1	1	0	0	1	1	0	0	1	5	4.3
Fire/explosion	0	0	0	1	0	0	0	0	0	0	0	1	0.9
Fire	0	0	0	0	0	0	1	0	0	0	0	1	0.9
Explosion	0	0	0	2	1	0	0	0	0	0	0	3	2.6
Main gear collapsed	0	1	1	0	0	0	0	3	0	0	0	5	4.3
Nose gear collapsed	0	0	0	0	0	0	0	1	0	0	0	1	0.9
Hard landing	0	0	0	0	0	0	0	1	0	0	0	1	0.9
In flight collision w/ obj.	0	0	4	0	2	0	0	1	1	0	0	8	6.8
In flight collision w/ terrain	0	0	2	2	1	0	2	5	1	0	0	13	11.1
In flight encounter w/ weather	0	0	1	1	6	1	3	2	1	0	0	15	12.8
Loss of control - in flight	0	0	5	0	2	0	3	0	4	4	0	14	12.0
Loss of control - on ground	1	1	4	0	0	0	0	3	0	0	0	9	7.7
Nose over	0	0	0	0	0	0	0	1	0	0	0	1	0.9
On ground collision w/ obj.	0	2	2	0	0	0	0	1	0	0	0	5	4.3
On ground collision w/ terrain	0	1	0	0	0	0	0	0	0	0	0	1	0.9
On ground encounter w/ weather	0	0	0	0	0	0	0	2	0	0	0	2	1.7
Overrun	0	0	0	0	0	0	0	4	0	0	0	4	3.4
Loss of power	0	0	0	1	3	0	1	0	0	0	0	5	4.3
Loss of power (total) - mech failure/malfunction	0	0	0	3	5	1	0	0	0	0	0	9	7.7
Loss of power(partial) - mech failure/malfunction	0	0	1	0	1	1	0	0	0	0	0	3	2.6
Loss of power (total) - non-mechanical	0	0	1	0	1	0	1	0	1	0	0	4	3.4
Loss of power (partial) - non-mechanical	0	0	1	0	0	0	0	0	0	0	0	1	0.9
Roll over	0	0	0	0	0	0	0	0	1	0	0	1	0.9
Undershoot	0	0	0	0	0	0	1	1	0	0	0	2	1.7
Missing aircraft	0	0	0	0	0	0	0	0	0	0	1	1	0.9
Miscellaneous/other	0	0	0	0	1	0	0	0	0	0	0	1	0.9
Aircraft													
Number -	1	5	23	10	24	3	13	26	10	1	1	117	
Percent -	0.9	4.3	19.7	8.5	20.5	2.6	11.1	22.2	8.5	0.9	0.9		

Table 46 - AIRCRAFT BY PHASE OF OPERATION AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Phase of operation	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
Standing - idling rotors	0	0	0	1	0	0	1	0	1	0.9
Taxi	1	0	0	0	0	0	1	0	1	0.9
Taxi - to takeoff	1	0	0	0	0	0	1	0	1	0.9
Taxi - from landing	3	0	0	0	0	1	2	0	3	2.6
Takeoff	2	1	0	3	0	0	3	3	6	5.2
Takeoff - ground run	5	0	0	1	0	0	5	1	6	5.2
Takeoff - initial climb	3	5	3	0	0	0	10	1	11	9.5
Climb	1	1	1	0	0	0	1	2	3	2.6
Climb - to cruise	2	0	0	5	0	0	2	5	7	6.0
Cruise	5	0	4	3	0	0	7	5	12	10.3
Cruise - normal	3	3	2	4	2	0	6	4	12	10.3
Descent - normal	2	0	0	1	0	0	2	1	3	2.6
Approach	0	0	0	3	0	0	0	3	3	2.6
Approach - VFR pattern - downwind	0	0	0	1	0	0	0	1	1	0.9
Approach - VFR pattern - final approach	2	0	1	1	0	0	2	2	4	3.4
Approach - FAF/outer marker to threshold (IFR)	2	0	0	1	0	0	2	1	3	2.6
Approach - missed approach (IFR)	0	1	1	0	0	0	1	1	2	1.7
Landing	2	1	0	0	0	0	2	1	3	2.6
Landing - flare/touchdown	9	1	0	0	0	0	10	0	10	8.6
Landing - roll	9	2	1	1	0	0	12	1	13	11.2
Maneuvering	1	2	0	3	0	0	3	3	6	5.2
Maneuvering - turn to reverse direction	0	0	0	2	0	0	0	2	2	1.7
Hover	0	2	0	0	0	0	2	0	2	1.7
Other	1	0	0	0	0	0	1	0	1	0.9
Unknown	0	0	0	1	0	0	0	1	1	0.9
Aircraft										
Number -	54	19	13	31	2	1	76	38	117	
Percent -	46.6	16.4	11.2	25.9	1.7	0.9	65.5	31.9		

Table 47 - AIRCRAFT BY CONDITION OF LIGHT AND TYPE OF WEATHER
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Condition of light	Type of weather			Aircraft	
	VMC	IMC	Not reptd	No.	Percent
Dawn	2	2	1	5	4.3
Daylight	66	7	0	73	62.4
Night (dark)	21	9	0	30	25.6
Night (bright)	3	0	0	3	2.6
Dusk	2	2	0	4	3.4
Not reported	2	0	0	2	1.7
Aircraft					
Number -	96	20	1	117	
Percent -	82.1	17.1	0.9		

Table 48 - AIRCRAFT BY TYPE OF OPERATION AND DEGREE OF INJURY
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Type of Operation	Degree of Injury				Aircraft	
	None	Minor	Serious	Fatal	No.	Percent
Domestic Passenger	21	13	6	15	55	47.0
Domestic Cargo	26	4	5	12	47	40.2
Domestic Pass/Cargo	5	2	2	2	11	9.4
Domestic Mail	1	0	0	1	2	1.7
International Cargo	1	0	0	1	2	1.7
Aircraft						
Number -	54	19	13	31	117	
Percent -	46.2	16.2	11.1	26.5		

Table 49 - AIRCRAFT BY PROXIMITY TO AIRPORT AND FLIGHT PLAN
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Accident location	Flight plan					Aircraft	
	None	VFR	IFR	Cmpny VFR	Other	No.	Percent
Off airport/airstrip	31	11	13	13	0	68	58.1
On airport	8	4	26	4	1	43	36.8
On airstrip	0	3	0	1	0	4	3.4
Not Reported	0	1	0	1	0	2	1.7
Aircraft							
Number -	39	19	39	19	1	117	
Percent -	33.3	16.2	33.3	16.2	0.9		

Table 50 - AIRCRAFT BY OCCURRENCE OF FIRE AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Aircraft fire	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
None	49	17	12	13	2	1	70	18	91	77.8
In-flight	1	0	0	0	0	0	1	0	1	0.9
On ground	2	2	1	17	0	0	3	19	22	18.8
In-flight and on ground	1	0	0	1	0	0	1	1	2	1.7
Not Reported	1	0	0	0	0	0	1	0	1	0.9
Aircraft										
Number -	54	19	13	31	2	1	76	38	117	
Percent -	46.2	16.2	11.1	26.5	1.7	0.9	65.0	32.5		

Table 51 - AIRCRAFT BY TYPE OF AIRCRAFT AND DEGREE OF INJURY AND BY DAMAGE
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

Type of aircraft	Degree of injury				Aircraft damage				Aircraft	
	None	Minor	Ser	Fatal	None	Minor	Subs	Dest	No.	Percent
All fixed wing *	49	9	7	23	1	1	60	26	88	75.2
Fixed Wing Single Recip. Eng.	19	4	2	9	0	0	26	8	34	29.1
Fixed Wing Multiple Recip. Eng.	22	5	4	11	0	1	26	15	42	35.9
Fixed Wing Turboprop	7	0	0	3	0	0	7	3	10	8.5
Fixed Wing Trubojet	1	0	1	0	1	0	1	0	2	1.7
All Rotorcraft *	5	10	6	8	1	0	16	12	29	24.8
Rotorcraft, Recip. Engine	1	0	0	0	0	0	1	0	1	.9
Rotorcraft, Turbine Engine	4	10	6	8	1	0	15	12	28	23.9
Aircraft										
Number -	54	19	13	31	2	1	76	38	117	
Percent -	46.2	16.2	11.1	26.5	1.7	.9	65.0	32.5		

* Not included in column totals

Table 52 - BROAD CAUSE/FACTOR ASSIGNMENTS*
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

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
Pilot	28	91	16	47	28	95
Weather	0	3	14	37	14	39
Terrain	0	3	10	27	10	30
Miscellaneous	1	4	8	25	9	28
Powerplant	2	17	4	8	5	22
Personnel	3	10	3	11	6	17
Landing Gear	1	6	0	2	1	8
Systems	0	2	3	7	3	9
Airport/Airways/Facilities	1	2	0	5	1	7
Undetermined	1	7	0	0	1	7
Airframe	0	2	2	3	2	5
Instruments/Equipment/Accessories	0	1	3	4	3	5
Rotorcraft	1	3	0	1	1	4
Number of Aircraft					31	117

---

* Multiple causes and factors may be assigned in an accident

Table 53 - ACCIDENTS, FATAL ACCIDENTS, FATALITIES, AND RATES
NONSCEDULED 14 CFR 135 OPERATIONS
1977 - 1986

Year	Accidents	Fatal Accidents	Fatalities		Hours Flown	Accident Rate per 100,000* Aircraft Hours Flown	
			Total	Aboard Aircraft In This Category		Total	Fatal
1976	137	31	100	97	2,703,203	5.07	1.15
1977	158	31	118	115	3,304,220	4.78	0.94
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

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

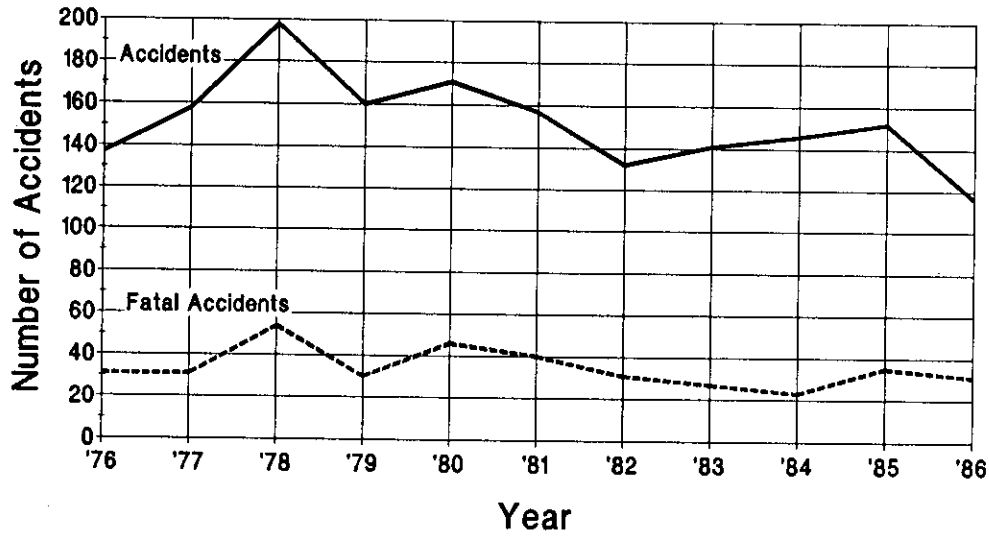


Figure 14 - NUMBER OF FATALITIES
NONSCHEDULED 14 CFR 135 OPERATIONS

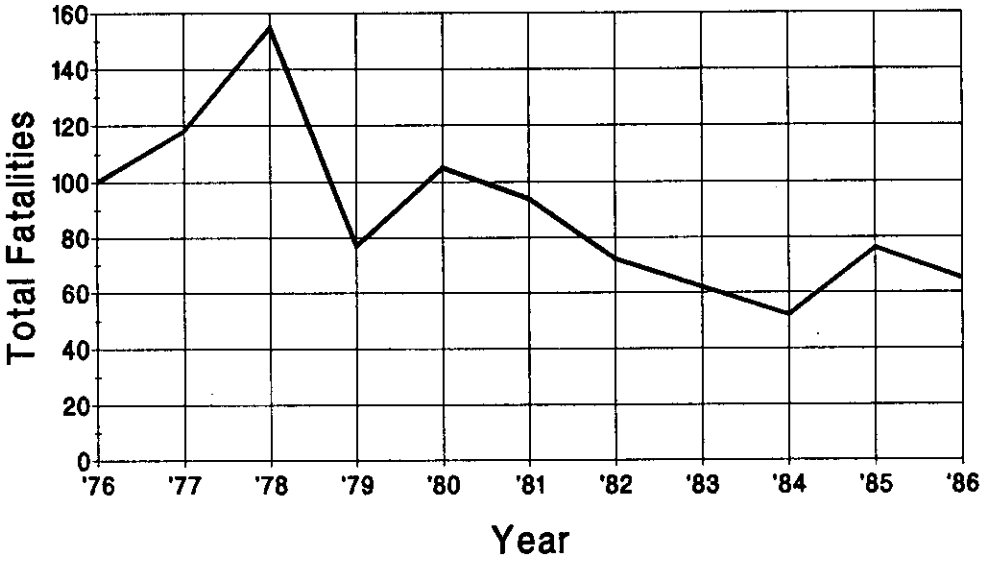


Figure 15 - ACCIDENT RATES
NONSCHEDULED 14 CFR 135 OPERATIONS

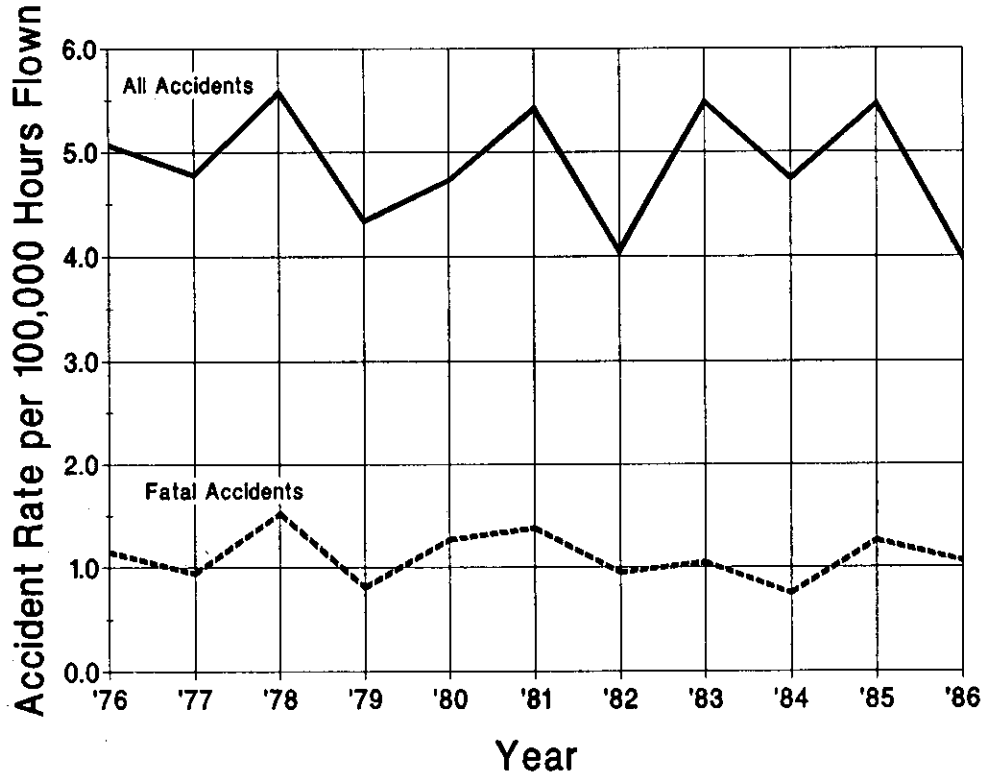


Table 54 - MOST PREVALENT FIRST OCCURRENCES IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Type of Occurrence	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Collision with object/terrain	27	23.1	40.0	27.1	7	22.6	12.0	37.7
Loss of power	22	18.8	31.6	21.4	4	12.9	3.8	11.9
Loss of control - in flight	14	12.0	15.8	10.7	8	25.8	4.8	15.1
Airframe/component/system fail/malf	5	4.3	11.0	7.5	1	3.2	1.0	3.1
Loss of control - on ground	9	7.7	10.6	7.2	0	.0	.0	.0
Encounter with weather/turbulence	17	14.5	10.4	7.1	7	22.6	5.0	15.7
Gear collapsed/retracted	6	5.1	6.0	4.1	0	.0	.0	.0
Miscellaneous	5	4.3	5.2	3.5	0	.0	0.0	0.0
Undershoot	2	1.7	2.8	1.9	0	.0	.4	1.3
Midair collision	0	.0	2.4	1.6	0	.0	1.6	5.0
Prop/rotor contact	0	.0	2.4	1.6	0	.0	.8	2.5
Roll over	1	.9	2.0	1.4	0	.0	.4	1.3
Fire/explosion	5	4.3	1.8	1.2	0	.0	.0	.0
Hard landing	1	.9	1.8	1.2	0	.0	.0	.0
Nose over/down	1	.9	1.6	1.1	0	.0	.0	.0
Missing aircraft	0	.0	.0	.0	1	3.2	.4	1.3
Undetermined	0	.0	.0	.0	0	.0	.8	2.5
(All other types)	2	1.7	2.0	1.4	3	9.7	.8	2.5
Total	117	100.0	147.4	100.0	31	100.0	31.8	100.0

Table 55 - MOST PREVALENT FIRST PHASES OF OPERATION IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Phase of Operation	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Standing	1	.9	5.0	3.4	1	3.2	1.4	4.4
Taxi	5	4.3	7.0	4.7	0	.0	.0	.0
Takeoff	23	19.7	32.2	21.8	4	12.9	4.8	15.1
Climb	10	8.5	4.6	3.1	5	16.1	1.0	3.1
Cruise	24	20.5	27.0	18.3	7	22.6	6.6	20.8
Descent	3	2.6	7.0	4.7	1	3.2	2.8	8.8
Approach	13	11.1	20.6	14.0	6	19.4	8.6	27.0
Landing	26	22.2	31.4	21.3	1	3.2	1.4	4.4
Maneuvering	10	8.5	9.6	6.5	5	16.1	3.2	10.1
Not reported	0	.0	.6	2.8	0	.0	.0	.0
Other	2	1.7	3.0	2.0	1	3.2	2.0	6.3
Total	117	100.0	147.4	100.0	31	100.0	31.8	100.0

Table 56 - BROAD CAUSE/FACTOR ASSIGNMENTS IN ALL ACCIDENTS AND IN FATAL ACCIDENTS
NONSCHEDULED 14 CFR 135 OPERATIONS
1986 AND 1981 - 1985

	All Accidents				Fatal Accidents			
	1986		1981 - 1985		1986		1981 - 1985	
Broad Cause/Factor	No.	Percent	Mean	Percent	No.	Percent	Mean	Percent
Pilot	95	81.2	108.0	73.3	28	90.3	24.8	78.0
Personel	17	14.5	27.6	18.7	6	19.4	6.2	19.5
Weather	39	33.3	49.8	33.8	14	45.2	15.0	47.2
Miscellaneous	28	23.9	36.4	24.7	9	29.0	8.6	27.0
Powerplant	22	18.8	31.6	21.4	5	16.1	3.4	10.7
Airport/Airways/ Facilities	7	6.0	13.0	8.8	1	3.2	.4	1.3
Landing Gear	8	6.8	17.4	11.8	1	3.2	.6	1.9
Terrain	30	25.6	45.6	30.9	10	32.3	8.6	27.0
Airframe	5	4.3	6.0	4.1	2	6.5	2.0	6.3
Systems	8	6.8	5.8	3.9	3	9.7	.6	1.9
Instruments/Equipment/ Accessories	5	4.3	2.8	1.9	3	9.7	1.2	3.8
Rotorcraft	4	3.4	4.8	3.3	1	3.2	.4	1.3
Undetermined	7	6.0	10.0	6.8	1	3.2	4.8	15.1
Total	117		147.4		31		31.8	

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES L. KOLSTAD
Acting Chairman

/s/ JIM BURNETT
Member

/s/ JOHN K. LAUBER
Member

/s/ JOSEPH NALL
Member

/s/ LEMOINE V. DICKINSON, JR.
Member

APPENDIX A
MIDAIR COLLISION ACCIDENTS
U.S. AIR CARRIER OPERATIONS
1976 - 1986

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
1976	3	3	10	0	0	1	0	2
1977	1	1	3	0	0	0	0	1
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
	23	17	213	1	1	4	5	12

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 cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage."

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

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

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

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

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

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

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

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

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

PHASE OF OPERATION: The particular phase of the flight or operation will be that phase of flight in which the first occurrence or circumstance occurred. In the event that there was more than one occurrence in one operational phase, the same phase is recorded for each of these occurrences.

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 better than the formerly-used "Accident Types". It had long been recognized that several of the pre-1982 Accident Types (e.g., ground loop/swerve) were events which do not necessarily produce either injury or damage. Therefore, the nomenclature was changed to Occurrences (which does not imply injury or damage). Some Accident Types were retained as Occurrences, others were eliminated or combined with others to become one or more Occurrences. In some cases several Occurrences replace a single Accident Type.

To describe an accident, up to seven Occurrences may be used, as contrasted to only two Accident Types in the pre-1982 data base. The Occurrences are only the highest level classification mechanism 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 since 1982 to describe the probable cause of, and related factors in an accident. Appendices B, C and D contain cause/factor tables for 1985 air carrier accidents. Each line of those tables depicts either a specific Finding or an aggregation of Findings (those for which frequencies are enclosed in parentheses). The example below is taken from a 1982 Part 121 accident record and illustrates the relationship between Occurrences and Findings. Findings 1 and 2 were cited as the probable cause of the accident. Finding 3 was cited as a factor.

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

Previous editions of this annual review of air carrier accident data included tables comparing accidents in the current year with mean numbers of accidents in the preceding five-year period on an Accident Type basis. To perpetuate this practice to the extent feasible, Occurrences and Accident Types have each been grouped as necessary in order to produce comparable (if not equivalent) "Historical Comparison Categories". All tables in this report which are entitled "Most Prevalent Occurrences ..." employ this categorization of Occurrences and Accident Types. The categories are defined in the three- page table at the end of Appendix A.

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.

HISTORICAL COMPARISON CATEGORY	PRE-1982 ACCIDENT TYPES	1982 AND LATER OCCURRENCES
Abrupt maneuver	Evasive maneuver	Abrupt maneuver
Altitude deviation, uncontrolled	Uncontrolled alt deviation	Altitude deviation, uncontrolled
Airframe/component/system fail/malf	Airframe failure - in flight Propeller/rotor failure - - propeller - tail rotor - main rotor	Airframe/component/system - on ground failure/malf
Collision with object/terrain	Wheels-up landing Wheels-down landing in water Collision with ground/water - controlled Collision between aircraft - one airborne - both on ground Collided with: wires/poles; trees; residence/s; buildings; fence; fenceposts; electric towers; runway or approach lights; airport hazard; animals; crop; flagman; loader; ditches; snowbank; parked aircraft (unattended); automobile; dirt bank; other.	In flight collision with object In flight collision with terrain On ground collision with object On ground collision with terrain Gear not extended
Ditching	Ditching	Ditching
Dragged wing, rotor, pod, float	Dragged wingtip, pod, or float	Dragged wing, rotor, pod or float
Encounter with weather/ turbulence	Turbulence Hail damage to aircraft Lightning strike	In flight encounter with weather On ground encounter with weather Vortex turbulence encountered
Engine tearaway	Engine tearaway	Engine tearaway
Fire/Explosion	Fire or explosion - in flight - on ground	Fire/explosion Fire Explosion
Gear collapsed/retracted	Gear collapsed Gear retracted	Gear collapsed Main gear collapsed Nose gear collapsed Tail gear collapsed Complete gear collapsed Other gear collapsed
Hard landing	Hard landing	Hard landing
Loss of control - in flight	Collision with ground/water- uncontrolled Stall - Spin - Spiral - Mush	Loss of control - in flight

HISTORICAL COMPARISON CATEGORY	PRE-1982 ACCIDENT TYPES	1982 AND LATER OCCURRENCES
Loss of control - on ground	Ground-water loop-swerve	Loss of control - on ground
Loss of power	Engine failure or malfunction	Loss of power Loss of power (total) - mech failure/malfunction Loss of power (partial) - mech failure/malfunction Loss of power (total) - non-mech Loss of power (partial) - non-mech
Midair collision	Collision between aircraft-both in flight	Midair collision
Miscellaneous	Miscellaneous/Other Overshoot	Cargo shift Decompression Forced landing Harzardous materials leak/spill (fumes/smoke) Near collision between aircraft Overrun Miscellaneous/other
Missing aircraft	Missing Acft not recovered	Missing aircraft
Nose over/down	Nose over/down	Nose down Nose over
Prop blast or jet exhaust/ suction	Jet intake/exh acdnt to pers Propeller/jet/rotor blast	Propeller blast or jet exhaust/suction
Prop/rotor contact	Prop rotor acdnt to person	Propeller/rotor contact
Roll over	Roll over	Roll over
Undershoot	Undershoot	Undershoot
Undetermined	Undetermined	Undetermined

APPENDIX C

DETAILED CAUSE/FACTOR ASSIGNMENTS
14 CFR 121 125 127 OPERATIONS

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE	(4)	(6)	(10)	(41)	(36)	(77)
AIRCRAFT	(1)	(1)	(2)	(9)	(4)	(13)
STRUCTURE	(1)	(0)	(1)	(6)	(0)	(6)
WING	(0)	(0)	(0)	(1)	(0)	(1)
WING	(0)	(0)	(0)	(1)	(0)	(1)
FATIGUE	0	0	0	1	0	1
LANDING GEAR	(0)	(0)	(0)	(2)	(0)	(2)
LANDING GEAR,MAIN GEAR	(0)	(0)	(0)	(1)	(0)	(1)
FATIGUE	0	0	0	1	0	1
LANDING GEAR,GEAR LOCKING MECHANISM	(0)	(0)	(0)	(1)	(0)	(1)
CORRODED	0	0	0	1	0	1
DOOR	(0)	(0)	(0)	(2)	(0)	(2)
DOOR,ENTRANCE STAIR	(0)	(0)	(0)	(2)	(0)	(2)
FAILURE,PARTIAL	0	0	0	1	0	1
PREVIOUS DAMAGE	0	0	0	1	0	1
FLIGHT CONTROL SYSTEM	(1)	(0)	(1)	(1)	(0)	(1)
FLT CONTROL SYST,ELEVATOR CONTROL	(1)	(0)	(1)	(1)	(0)	(1)
JAMMED	1	0	1	1	0	1
SYSTEMS	(0)	(0)	(0)	(3)	(1)	(4)
FIRE WARNING SYSTEM	(0)	(0)	(0)	(2)	(1)	(3)
FIRE WARNING SYSTEM,POWERPLANT	(0)	(0)	(0)	(2)	(1)	(3)
FAILURE,TOTAL	0	0	0	0	1	1
FALSE INDICATION	0	0	0	1	0	1
SHORTED	0	0	0	1	0	1
AUTOPILOT/FLIGHT DIRECTOR	(0)	(0)	(0)	(1)	(0)	(1)
AUTOPILOT/FLIGHT DIRECTOR	(0)	(0)	(0)	(1)	(0)	(1)
ERRATIC	0	0	0	1	0	1
MISCELLANEOUS	(0)	(1)	(1)	(0)	(3)	(3)
MISC EQPT/FURNISHINGS	(0)	(1)	(1)	(0)	(2)	(2)
MISC EQPT/FURNISHINGS	(0)	(1)	(1)	(0)	(1)	(1)
IMPROPER	0	1	1	0	1	1
MISC EQPT/FURNISHINGS,SLIDES	(0)	(0)	(0)	(0)	(1)	(1)
FAILURE,TOTAL	0	0	0	0	1	1
AIRCRAFT PERFORMANCE	(0)	(0)	(0)	(0)	(1)	(1)
AIRCRAFT PERFORMANCE,HYDROPLANING CONDITION	(0)	(0)	(0)	(0)	(1)	(1)
WATER	0	0	0	0	1	1
AIRCRAFT ENVIRONMENT	(0)	(0)	(0)	(0)	(4)	(4)
AIRPORT	(0)	(0)	(0)	(0)	(3)	(3)
AIRPORT FACILITIES	(0)	(0)	(0)	(0)	(3)	(3)
AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION	(0)	(0)	(0)	(0)	(3)	(3)
DISPLACED THRESHOLD	0	0	0	0	1	1
SNOW COVERED	0	0	0	0	1	1
WET	0	0	0	0	1	1
TERRAIN/RUNWAY	(0)	(0)	(0)	(0)	(1)	(1)
ROUGH/UNEVEN	0	0	0	0	1	1
ENVIRONMENTAL CONDITIONS	(0)	(4)	(4)	(9)	(12)	(21)
WEATHER CONDITION	(0)	(3)	(3)	(9)	(9)	(18)
BELOW APPROACH MINIMUMS	0	1	1	0	1	1
DOWNDRAFT	0	0	0	1	0	1
FOG	0	1	1	0	2	2

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
ENVIRONMENTAL CONDITIONS (Continued)						
WEATHER CONDITION (Continued)						
LOW CEILING	0	1	1	0	2	2
MOUNTAIN WAVE	0	0	0	1	0	1
SNOW	0	0	0	0	1	1
TAILWIND	0	0	0	0	1	1
TURBULENCE	0	0	0	4	0	4
TURBULENCE,CLEAR AIR	0	0	0	3	1	4
TURBULENCE(THUNDERSTORMS)	0	0	0	0	1	1
OBJECT	(0)	(1)	(1)	(0)	(3)	(3)
AIRCRAFT MOVING ON GROUND	0	1	1	0	1	1
FENCE	0	0	0	0	1	1
RUNWAY LIGHT	0	0	0	0	1	1
HUMAN PERFORMANCE	(3)	(1)	(4)	(23)	(16)	(39)
AIRCRAFT	(0)	(0)	(0)	(2)	(2)	(4)
LANDING GEAR	(0)	(0)	(0)	(1)	(0)	(1)
GEAR EXTENSION	(0)	(0)	(0)	(1)	(0)	(1)
NOT POSSIBLE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
FLIGHT CONTROLS	(0)	(0)	(0)	(0)	(1)	(1)
SPOILER EXTENSION	(0)	(0)	(0)	(0)	(1)	(1)
DELAYED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
MISCELLANEOUS EQUIPMENT	(0)	(0)	(0)	(1)	(1)	(2)
SEAT BELT	(0)	(0)	(0)	(1)	(1)	(2)
DELAYED	(0)	(0)	(0)	(0)	(1)	(1)
FLIGHT ATTENDANT	0	0	0	0	1	1
NOT USED	(0)	(0)	(0)	(1)	(0)	(1)
FLIGHT ATTENDANT	0	0	0	1	0	1
OPERATIONS	(3)	(1)	(4)	(21)	(14)	(35)
PLANNING-DECISION	(3)	(1)	(4)	(11)	(2)	(13)
PLANNING-DECISION	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
PREFLIGHT PLANNING/PREPARATION	(0)	(1)	(1)	(0)	(1)	(1)
INADEQUATE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT OF OTHER AIRCRAFT	0	1	1	0	1	1
AIRCRAFT PREFLIGHT	(2)	(0)	(2)	(2)	(0)	(2)
INADEQUATE	(2)	(0)	(2)	(2)	(0)	(2)
PILOT IN COMMAND	1	0	1	1	0	1
COPILOT	1	0	1	1	0	1
IN-FLIGHT PLANNING/DECISION	(1)	(0)	(1)	(2)	(0)	(2)
IMPROPER	(1)	(0)	(1)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	1	0	1
PILOT OF OTHER AIRCRAFT	1	0	1	1	0	1
VISUAL LOOKOUT	(0)	(0)	(0)	(1)	(0)	(1)
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
GROUND PERSONNEL	0	0	0	1	0	1
WEATHER EVALUATION	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
WEATHER EVALUATION (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
JUDGEMENT	(0)	(0)	(0)	(1)	(0)	(1)
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PASSENGER	0	0	0	1	0	1
PROCEDURES/DIRECTIVES	(0)	(0)	(0)	(2)	(1)	(3)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
FLIGHT ENGINEER	0	0	0	1	0	1
NOT FOLLOWED	(0)	(0)	(0)	(1)	(1)	(2)
COPILOT	0	0	0	0	1	1
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
PLANNED APPROACH	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
MAINTENANCE	(0)	(0)	(0)	(1)	(2)	(3)
MAINTENANCE	(0)	(0)	(0)	(1)	(0)	(1)
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
COMPANY/OPERATOR MGMT	0	0	0	1	0	1
MAINTENANCE,INSPECTION OF AIRCRAFT	(0)	(0)	(0)	(0)	(1)	(1)
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
MAINTENANCE,LUBRICATION	(0)	(0)	(0)	(0)	(1)	(1)
NOT PERFORMED	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
METEOROLOGICAL SERVICE	(0)	(0)	(0)	(0)	(1)	(1)
METEOROLOGICAL SERVICE	(0)	(0)	(0)	(0)	(1)	(1)
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
NO PERSON SPECIFIED	0	0	0	0	1	1
AIRCRAFT HANDLING	(0)	(0)	(0)	(5)	(4)	(9)
AIRCRAFT HANDLING	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
COPILOT	0	0	0	1	0	1
AIRSPEED	(0)	(0)	(0)	(0)	(1)	(1)
EXCESSIVE	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
AIRSPEED(VREF)	(0)	(0)	(0)	(0)	(1)	(1)
EXCEEDED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
PROPER TOUCHDOWN POINT	(0)	(0)	(0)	(0)	(2)	(2)
NOT ATTAINED	(0)	(0)	(0)	(0)	(2)	(2)
PILOT IN COMMAND	0	0	0	0	2	2
GO-AROUND	(0)	(0)	(0)	(2)	(0)	(2)
NOT PERFORMED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
EMERGENCY PROCEDURE	(0)	(0)	(0)	(1)	(0)	(1)

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
EMERGENCY PROCEDURE (Continued)						
NOT FOLLOWED	(0)	(0)	(0)	(1)	(0)	(1)
PASSENGER	0	0	0	1	0	1
ROTATION	(0)	(0)	(0)	(1)	(0)	(1)
EXCESSIVE	(0)	(0)	(0)	(1)	(0)	(1)
COPILOT	0	0	0	1	0	1
COMMUNICATIONS/INFORMATION/ATC	(0)	(0)	(0)	(4)	(5)	(9)
INSTRUCTIONS,WRITTEN/VERBAL	(0)	(0)	(0)	(2)	(0)	(2)
NOT FOLLOWED	(0)	(0)	(0)	(2)	(0)	(2)
PASSENGER	0	0	0	2	0	2
COMMUNICATIONS	(0)	(0)	(0)	(1)	(1)	(2)
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1
NOT UNDERSTOOD	(0)	(0)	(0)	(1)	(0)	(1)
FLIGHT ENGINEER	0	0	0	1	0	1
CREW/GROUP COORDINATION	(0)	(0)	(0)	(0)	(1)	(1)
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
COPILOT	0	0	0	0	1	1
SUPERVISION	(0)	(0)	(0)	(1)	(1)	(2)
INADEQUATE	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	0	1
FLIGHT ATTENDANT	0	0	0	0	1	1
UNSAFE/HAZARDOUS CONDITION	(0)	(0)	(0)	(0)	(1)	(1)
NOT IDENTIFIED	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1
UNSAFE/HAZARDOUS CONDITION WARNING	(0)	(0)	(0)	(0)	(1)	(1)
NOT ISSUED	(0)	(0)	(0)	(0)	(1)	(1)
NWS PERSONNEL	0	0	0	0	1	1
DIRECT UNDERLYING CAUSE FACTORS:	(1)	(0)	(1)	(2)	(4)	(6)
IMPROPER USE OF PROCEDURE	(0)	(0)	(0)	(0)	(2)	(2)
INADEQUATE INITIAL TRAINING	(0)	(0)	(0)	(0)	(1)	(1)
COPILOT	0	0	0	0	1	1
INFORMATION INSUFFICIENT	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1
IMPROPER DECISION	(0)	(0)	(0)	(0)	(1)	(1)
PANIC	(0)	(0)	(0)	(0)	(1)	(1)
OTHER PERSONNEL	0	0	0	0	1	1
PROCEDURE INADEQUATE	(1)	(0)	(1)	(1)	(1)	(2)
PROCEDURE INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
FAA(ORGANIZATION)	0	0	0	0	1	1
COMPANY/OPERATOR MGMT	1	0	1	1	0	1
AIRCRAFT/EQUIPMENT INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN	(0)	(0)	(0)	(1)	(0)	(1)
MANUFACTURER	0	0	0	1	0	1
INDIRECT UNDERLYING CAUSE FACTORS:	(0)	(0)	(0)	(0)	(2)	(2)

CAUSE/FACTOR TABLE
14 CFR 121 125 127 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
INDIRECT UNDERLYING CAUSE FACTORS: (Continued)						
INSUFFICIENT STANDARDS/REQUIREMENTS	(0)	(0)	(0)	(0)	(2)	(2)
INSUFFICIENT STANDARDS/REQUIREMENTS	(0)	(0)	(0)	(0)	(1)	(1)
MANUFACTURER	0	0	0	0	1	1
AIRMAN	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1

APPENDIX D

DETAILED CAUSE/FACTOR ASSIGNMENTS
SCHEDULED 14 CFR 135 OPERATIOS

CAUSE/FACTOR TABLE
SCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE	(12)	(12)	(24)	(50)	(35)	(85)
AIRCRAFT	(5)	(4)	(9)	(14)	(6)	(20)
STRUCTURE	(2)	(0)	(2)	(5)	(0)	(5)
LANDING GEAR	(0)	(0)	(0)	(3)	(0)	(3)
LANDING GEAR,MAIN GEAR	(0)	(0)	(0)	(1)	(0)	(1)
PREVIOUS DAMAGE	0	0	0	1	0	1
LANDING GEAR,EMERGENCY EXTENSION ASSEMBLY	(0)	(0)	(0)	(1)	(0)	(1)
DISCONNECTED	0	0	0	1	0	1
LANDING GEAR,NORMAL RETRACTION/EXTENSION ASSEMBLY	(0)	(0)	(0)	(1)	(0)	(1)
DISABLED	0	0	0	1	0	1
FLIGHT CONTROL SYSTEM	(2)	(0)	(2)	(2)	(0)	(2)
FLT CONTROL SYST,AILERON CONTROL	(2)	(0)	(2)	(2)	(0)	(2)
LOSS,TOTAL	1	0	1	1	0	1
SEPARATION	1	0	1	1	0	1
SYSTEMS	(3)	(2)	(5)	(4)	(4)	(8)
ELECTRICAL SYSTEM	(3)	(1)	(4)	(3)	(1)	(4)
ELECTRICAL SYSTEM	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
ELECTRICAL SYSTEM,ELECTRIC WIRING	(3)	(0)	(3)	(3)	(0)	(3)
ARCING	1	0	1	1	0	1
CHAFED	1	0	1	1	0	1
INCORRECT	1	0	1	1	0	1
FLIGHT/NAV INSTRUMENTS	(0)	(1)	(1)	(0)	(3)	(3)
FLIGHT/NAV INSTRUMENTS	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,PARTIAL	0	1	1	0	1	1
FLIGHT/NAV INSTRUMENTS,ALTIMETER	(0)	(0)	(0)	(0)	(1)	(1)
INCORRECT	0	0	0	0	1	1
FLIGHT/NAV INSTRUMENTS,ATTITUDE INDICATOR	(0)	(0)	(0)	(0)	(1)	(1)
FALSE INDICATION	0	0	0	0	1	1
OTHER SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
WARNING SYSTEM(OTHER)	(0)	(0)	(0)	(1)	(0)	(1)
DISABLED	0	0	0	1	0	1
POWERPLANT	(0)	(2)	(2)	(3)	(2)	(5)
ENGINE ASSEMBLY	(0)	(2)	(2)	(0)	(2)	(2)
ENGINE ASSEMBLY,BEARING	(0)	(2)	(2)	(0)	(2)	(2)
BINDING(MECHANICAL)	0	1	1	0	1	1
DISTORTED	0	1	1	0	1	1
PROPELLER SYSTEM/ACCESSORIES	(0)	(0)	(0)	(3)	(0)	(3)
PROPELLER SYSTEM/ACCESSORIES,BLADE	(0)	(0)	(0)	(1)	(0)	(1)
FATIGUE	0	0	0	1	0	1
PROPELLER SYSTEM/ACCESSORIES,GOVERNOR	(0)	(0)	(0)	(1)	(0)	(1)
LEAK	0	0	0	1	0	1
PROPELLER SYSTEM/ACCESSORIES,FEATHERING SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
INOPERATIVE	0	0	0	1	0	1
MISCELLANEOUS	(0)	(0)	(0)	(2)	(0)	(2)
FLUID	(0)	(0)	(0)	(1)	(0)	(1)
FLUID,OIL	(0)	(0)	(0)	(1)	(0)	(1)
LEAK	0	0	0	1	0	1

SCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS CAUSE FACTOR		TOTAL	ALL ACCIDENTS CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
AIRCRAFT (Continued)						
MISCELLANEOUS (Continued)						
MISC EQPT/FURNISHINGS	(0)	(0)	(0)	(1)	(0)	(1)
MISC EQPT/FURNISHINGS	(0)	(0)	(0)	(1)	(0)	(1)
LOOSE	0	0	0	1	0	1
AIRCRAFT ENVIRONMENT	(0)	(1)	(1)	(0)	(5)	(5)
ATC SYSTEMS	(0)	(1)	(1)	(0)	(1)	(1)
METEOROLOGICAL SERVICES	(0)	(1)	(1)	(0)	(1)	(1)
METEOROLOGICAL SERVICES	(0)	(1)	(1)	(0)	(1)	(1)
INADEQUATE	0	1	1	0	1	1
AIRPORT	(0)	(0)	(0)	(0)	(3)	(3)
AIRPORT FACILITIES	(0)	(0)	(0)	(0)	(3)	(3)
AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION	(0)	(0)	(0)	(0)	(3)	(3)
ROUGH/UNEVEN	0	0	0	0	1	1
WATER,ROUGH	0	0	0	0	2	2
TERRAIN/RUNWAY	(0)	(0)	(0)	(0)	(1)	(1)
SNOW COVERED	0	0	0	0	1	1
ENVIRONMENTAL CONDITIONS	(0)	(6)	(6)	(2)	(20)	(22)
WEATHER CONDITION	(0)	(4)	(4)	(2)	(12)	(14)
BELOW APPROACH MINIMUMS	0	1	1	0	2	2
CROSSWIND	0	0	0	0	2	2
FOG	0	1	1	0	3	3
ICING CONDITIONS	0	0	0	1	0	1
LOW CEILING	0	1	1	0	1	1
OBSCURATION	0	0	0	0	1	1
RAIN	0	1	1	0	1	1
SNOW	0	0	0	0	1	1
TAILWIND	0	0	0	0	1	1
TURBULENCE IN CLOUDS	0	0	0	1	0	1
LIGHT CONDITION	(0)	(2)	(2)	(0)	(2)	(2)
DARK NIGHT	0	2	2	0	2	2
OBJECT	(0)	(0)	(0)	(0)	(6)	(6)
AIRCRAFT MOVING ON GROUND	0	0	0	0	2	2
AIRPORT FACILITY	0	0	0	0	3	3
APPROACH LIGHT/NAVAID	0	0	0	0	1	1
HUMAN PERFORMANCE	(7)	(1)	(8)	(34)	(4)	(38)
AIRCRAFT	(0)	(0)	(0)	(2)	(0)	(2)
LANDING GEAR	(0)	(0)	(0)	(2)	(0)	(2)
GEAR EXTENSION	(0)	(0)	(0)	(1)	(0)	(1)
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
GEAR DOWN AND LOCKED	(0)	(0)	(0)	(1)	(0)	(1)
INADVERTENT DEACTIVATION	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
OPERATIONS	(7)	(1)	(8)	(32)	(4)	(36)
PLANNING-DECISION	(1)	(0)	(1)	(10)	(1)	(11)
PROPER ASSISTANCE	(0)	(0)	(0)	(2)	(0)	(2)
NOT PERFORMED	(0)	(0)	(0)	(2)	(0)	(2)
GROUND PERSONNEL	0	0	0	2	0	2
IN-FLIGHT PLANNING/DECISION	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
IN-FLIGHT PLANNING/DECISION (Continued)						
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
IFR PROCEDURE	(1)	(0)	(1)	(1)	(0)	(1)
IMPROPER	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
COMPENSATION FOR WIND CONDITIONS	(0)	(0)	(0)	(3)	(0)	(3)
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT POSSIBLE	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
CHECKLIST	(0)	(0)	(0)	(2)	(0)	(2)
INATTENTIVE	(0)	(0)	(0)	(1)	(0)	(1)
COPILOT	0	0	0	1	0	1
NOT FOLLOWED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
JUDGEMENT	(0)	(0)	(0)	(0)	(1)	(1)
POOR	(0)	(0)	(0)	(0)	(1)	(1)
COPILOT	0	0	0	0	1	1
PLANNED APPROACH	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
MAINTENANCE	(1)	(0)	(1)	(3)	(0)	(3)
MAINTENANCE	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
OTHER MAINTENANCE PSNL	0	0	0	1	0	1
MAINTENANCE,SERVICE OF AIRCRAFT	(1)	(0)	(1)	(1)	(0)	(1)
IMPROPER	(1)	(0)	(1)	(1)	(0)	(1)
COMPANY MAINTENANCE PSNL	1	0	1	1	0	1
MAINTENANCE,MAJOR REPAIR	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
AIRPORT	(0)	(0)	(0)	(0)	(1)	(1)
RUNWAY MAINTENANCE	(0)	(0)	(0)	(0)	(1)	(1)
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
AIRPORT PERSONNEL	0	0	0	0	1	1
AIRCRAFT HANDLING	(5)	(1)	(6)	(17)	(2)	(19)
AIRCRAFT HANDLING	(1)	(0)	(1)	(3)	(0)	(3)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT POSSIBLE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
POOR	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
AIRSPEED	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
AIRSPEED (Continued)						
UNCONTROLLED						
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
PROPER ALTITUDE						
NOT MAINTAINED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	(1)	(0)	(1)	(1)	(0)	(1)
	1	0	1	1	0	1
DECISION HEIGHT						
NOT IDENTIFIED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	(1)	(0)	(1)	(1)	(0)	(1)
	1	0	1	1	0	1
DESCENT						
MISJUDGED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	(1)	(0)	(1)	(1)	(0)	(1)
	1	0	1	1	0	1
MINIMUM DESCENT ALTITUDE						
NOT IDENTIFIED	(0)	(1)	(1)	(1)	(1)	(2)
COPILOT	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
NOT MAINTAINED						
PILOT IN COMMAND	(0)	(1)	(1)	(0)	(1)	(1)
	0	1	1	0	1	1
PROPER ALIGNMENT						
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
COPILOT	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
PROPER TOUCHDOWN POINT						
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
PROPER GLIDEPATH						
NOT ATTAINED	(1)	(0)	(1)	(2)	(0)	(2)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
NOT MAINTAINED						
PILOT IN COMMAND	(1)	(0)	(1)	(1)	(0)	(1)
	1	0	1	1	0	1
GROUND LOOP/SWERVE						
UNCONTROLLED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
DIRECTIONAL CONTROL						
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
ROTATION						
PREMATURE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
STALL						
INADVERTENT	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
WHEELS UP LANDING						
INADVERTENT	(0)	(0)	(0)	(1)	(1)	(2)
COPILOT	(0)	(0)	(0)	(1)	(0)	(1)
	0	0	0	1	0	1
INTENTIONAL						
	(0)	(0)	(0)	(0)	(1)	(1)

SCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
WHEELS UP LANDING (Continued)						
PILOT IN COMMAND	0	0	0	0	1	1
COMMUNICATIONS/INFORMATION/ATC	(0)	(0)	(0)	(2)	(0)	(2)
SUPERVISION	(0)	(0)	(0)	(2)	(0)	(2)
INADEQUATE	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
DIRECT UNDERLYING CAUSE FACTORS:	(0)	(1)	(1)	(2)	(4)	(6)
IMPROPER USE OF PROCEDURE	(0)	(1)	(1)	(0)	(4)	(4)
DIVERTED ATTENTION	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
EXPECTANCY	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
LACK OF FAMILIARITY WITH AIRCRAFT	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
LACK OF TOTAL EXPERIENCE IN KIND OF AIRCRAFT	(0)	(0)	(0)	(0)	(1)	(1)
COPILOT	0	0	0	0	1	1
AIRCRAFT/EQUIPMENT INADEQUATE	(0)	(0)	(0)	(2)	(0)	(2)
AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN	(0)	(0)	(0)	(1)	(0)	(1)
MANUFACTURER	0	0	0	1	0	1
CONTROL LOCATION	(0)	(0)	(0)	(1)	(0)	(1)
MANUFACTURER	0	0	0	1	0	1

APPENDIX E

DETAILED CAUSE/FACTOR ASSIGNMENTS
NONSCHEDULED 14 CFR 135 OPERATIONS

CAUSE/FACTOR TABLE
NONSCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE	FACTOR	TOTAL	CAUSE	FACTOR	TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE	(75)	(70)	(145)	(272)	(214)	(486)
AIRCRAFT	(6)	(12)	(18)	(49)	(29)	(78)
STRUCTURE	(2)	(2)	(4)	(13)	(7)	(20)
FUSELAGE	(0)	(0)	(0)	(0)	(1)	(1)
FUSELAGE,INSTRUMENT/ELECTRICAL PANEL	(0)	(0)	(0)	(0)	(1)	(1)
BURNED	0	0	0	0	1	1
WING	(0)	(1)	(1)	(2)	(1)	(3)
WING	(0)	(1)	(1)	(1)	(1)	(2)
EXPLODED	0	1	1	0	1	1
ICE	0	0	0	1	0	1
WING,WING RIB	(0)	(0)	(0)	(1)	(0)	(1)
UNDETERMINED	0	0	0	1	0	1
LANDING GEAR	(1)	(0)	(1)	(7)	(3)	(10)
LANDING GEAR,MAIN GEAR	(0)	(0)	(0)	(3)	(1)	(4)
ASSEMBLY	0	0	0	1	0	1
OVERLOAD	0	0	0	0	1	1
PREVIOUS DAMAGE	0	0	0	2	0	2
LANDING GEAR,NOSE GEAR	(0)	(0)	(0)	(1)	(0)	(1)
FAILURE,TOTAL	0	0	0	1	0	1
LANDING GEAR,NOSE GEAR ASSEMBLY	(0)	(0)	(0)	(0)	(1)	(1)
OVERLOAD	0	0	0	0	1	1
LANDING GEAR,SKID ASSEMBLY	(1)	(0)	(1)	(1)	(0)	(1)
MOVEMENT RESTRICTED	1	0	1	1	0	1
LANDING GEAR,NORMAL BRAKE SYSTEM	(0)	(0)	(0)	(0)	(1)	(1)
FAILURE,PARTIAL	0	0	0	0	1	1
LANDING GEAR,GEAR LOCKING MECHANISM	(0)	(0)	(0)	(2)	(0)	(2)
DISCONNECTED	0	0	0	1	0	1
UNLOCKED	0	0	0	1	0	1
FLIGHT CONTROL SYSTEM	(0)	(1)	(1)	(0)	(1)	(1)
FLT CONTROL SYST,ELEVATOR CONTROL	(0)	(1)	(1)	(0)	(1)	(1)
MOVEMENT RESTRICTED	0	1	1	0	1	1
ROTOR DRIVE SYSTEM	(1)	(0)	(1)	(2)	(0)	(2)
ROTOR DRIVE SYSTEM,ENGINE TO TRANSMISSION DRIVE	(1)	(0)	(1)	(1)	(0)	(1)
DISCONNECTED	1	0	1	1	0	1
ROTOR DRIVE SYSTEM,TAIL ROTOR DRIVE SHAFT	(0)	(0)	(0)	(1)	(0)	(1)
FAILURE,TOTAL	0	0	0	1	0	1
ROTOR SYSTEM	(0)	(0)	(0)	(2)	(1)	(3)
ROTOR SYSTEM,MAIN ROTOR BLADE	(0)	(0)	(0)	(1)	(0)	(1)
VIBRATION	0	0	0	1	0	1
ROTOR SYSTEM,MAIN ROTOR HUB DAMPER	(0)	(0)	(0)	(1)	(0)	(1)
FAILURE,PARTIAL	0	0	0	1	0	1
ROTOR SYSTEM,TAIL ROTOR HUB	(0)	(0)	(0)	(0)	(1)	(1)
SEPARATION	0	0	0	0	1	1
SYSTEMS	(0)	(4)	(4)	(2)	(9)	(11)
HYDRAULIC SYSTEM	(0)	(0)	(0)	(1)	(1)	(2)
HYDRAULIC SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
LEAK	0	0	0	1	0	1

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
AIRCRAFT (Continued)						
SYSTEMS (Continued)						
HYDRAULIC SYSTEM (Continued)						
HYDRAULIC SYSTEM,LINE	(0)	(0)	(0)	(0)	(1)	(1)
FATIGUE	0	0	0	0	1	1
FLIGHT/NAV INSTRUMENTS	(0)	(1)	(1)	(0)	(3)	(3)
FLIGHT/NAV INSTRUMENTS,TURN AND BANK	(0)	(0)	(0)	(0)	(1)	(1)
INOPERATIVE	0	0	0	0	1	1
FLIGHT/NAV INSTRUMENTS,ATTITUDE INDICATOR	(0)	(0)	(0)	(0)	(1)	(1)
INOPERATIVE	0	0	0	0	1	1
FLIGHT/NAV INSTRUMENTS,COURSE INDICATOR	(0)	(1)	(1)	(0)	(1)	(1)
DISCONNECTED	0	1	1	0	1	1
COMM/NAV EQUIPMENT	(0)	(1)	(1)	(0)	(1)	(1)
COMM/NAV EQUIPMENT,TRANSMITTER	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
AUTOPILOT/FLIGHT DIRECTOR	(0)	(1)	(1)	(0)	(2)	(2)
AUTOPILOT/FLIGHT DIRECTOR	(0)	(1)	(1)	(0)	(2)	(2)
ENGAGED	0	0	0	0	1	1
UNDETERMINED	0	1	1	0	1	1
AIR COND/HEATING/PRESSURIZATION	(0)	(0)	(0)	(0)	(1)	(1)
AIR COND/HEATING/PRESSURIZATION,CABIN TEMP CONTRO	(0)	(0)	(0)	(0)	(1)	(1)
SWITCHED OFF	0	0	0	0	1	1
OTHER SYSTEM	(0)	(1)	(1)	(1)	(1)	(2)
PITOT/STATIC SYSTEM	(0)	(1)	(1)	(0)	(1)	(1)
LEAK	0	1	1	0	1	1
PNEUMATIC SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
CRACKED	0	0	0	1	0	1
POWERPLANT	(3)	(6)	(9)	(26)	(9)	(35)
ENGINE ASSEMBLY	(1)	(5)	(6)	(8)	(6)	(14)
ENGINE ASSEMBLY	(1)	(0)	(1)	(2)	(1)	(3)
FAILURE,PARTIAL	0	0	0	1	0	1
FIRE	1	0	1	1	0	1
UNDETERMINED	0	0	0	0	1	1
ENGINE ASSEMBLY,BEARING	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
ENGINE ASSEMBLY,MASTER ROD	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
ENGINE ASSEMBLY,CONNECTING ROD	(0)	(0)	(0)	(2)	(0)	(2)
FAILURE,TOTAL	0	0	0	1	0	1
OVERLOAD	0	0	0	1	0	1
ENGINE ASSEMBLY,CYLINDER	(0)	(1)	(1)	(2)	(1)	(3)
CRACKED	0	0	0	1	0	1
FAILURE,TOTAL	0	1	1	0	1	1
SEPARATION	0	0	0	1	0	1
ENGINE ASSEMBLY,RING	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
ENGINE ASSEMBLY,VALVE	(0)	(0)	(0)	(2)	(0)	(2)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
AIRCRAFT (Continued)						
POWERPLANT (Continued)						
ENGINE ASSEMBLY (Continued)						
ENGINE ASSEMBLY,VALVE (Continued)						
FAILURE,TOTAL	0	0	0	1	0	1
FATIGUE	0	0	0	1	0	1
ENGINE ASSEMBLY,BLOWER/IMPELLER	(0)	(1)	(1)	(0)	(1)	(1)
FAILURE,TOTAL	0	1	1	0	1	1
TURBINE ASSEMBLY	(0)	(0)	(0)	(4)	(0)	(4)
TURBINE ASSEMBLY,SEAL	(0)	(0)	(0)	(1)	(0)	(1)
WORN	0	0	0	1	0	1
TURBINE ASSEMBLY,TURBINE BLADE	(0)	(0)	(0)	(1)	(0)	(1)
FAILURE,TOTAL	0	0	0	1	0	1
TURBINE ASSEMBLY,SHAFT BEARING	(0)	(0)	(0)	(2)	(0)	(2)
FAILURE,TOTAL	0	0	0	1	0	1
OVERTEMPERATURE	0	0	0	1	0	1
EXHAUST SYSTEM	(0)	(0)	(0)	(2)	(0)	(2)
EXHAUST SYSTEM,MUFFLER	(0)	(0)	(0)	(1)	(0)	(1)
EXPLODED	0	0	0	1	0	1
EXHAUST SYSTEM,STACK	(0)	(0)	(0)	(1)	(0)	(1)
LOOSE	0	0	0	1	0	1
PROPELLER SYSTEM/ACCESSORIES	(2)	(0)	(2)	(2)	(0)	(2)
PROPELLER SYSTEM/ACCESSORIES,FEATHERING SYSTEM	(2)	(0)	(2)	(2)	(0)	(2)
INCORRECT	1	0	1	1	0	1
MOVEMENT RESTRICTED	1	0	1	1	0	1
ACCESSORY DRIVE ASSY	(0)	(0)	(0)	(1)	(0)	(1)
ACCESSORY DRIVE ASSY,DRIVE SHAFT	(0)	(0)	(0)	(1)	(0)	(1)
DISINTEGRATED	0	0	0	1	0	1
BLEED AIR SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
BLEED AIR SYSTEM,SENSITIVE VALVE	(0)	(0)	(0)	(1)	(0)	(1)
DISCONNECTED	0	0	0	1	0	1
FUEL SYSTEM	(0)	(0)	(0)	(3)	(2)	(5)
FUEL SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
EXHAUSTION	0	0	0	1	0	1
FUEL SYSTEM,SELECTOR VALVE	(0)	(0)	(0)	(1)	(0)	(1)
BINDING(MECHANICAL)	0	0	0	1	0	1
FUEL SYSTEM,RAM AIR	(0)	(0)	(0)	(0)	(1)	(1)
BLOCKED(PARTIAL)	0	0	0	0	1	1
FUEL SYSTEM,FUEL CONTROL	(0)	(0)	(0)	(1)	(0)	(1)
LEAK	0	0	0	1	0	1
FUEL SYSTEM,FUEL SHUTOFF	(0)	(0)	(0)	(0)	(1)	(1)
LOW COMPRESSION	0	0	0	0	1	1
LUBRICATING SYSTEM	(0)	(1)	(1)	(2)	(1)	(3)
LUBRICATING SYSTEM	(0)	(1)	(1)	(2)	(1)	(3)
BLOCKED(PARTIAL)	0	0	0	1	0	1
CONTAMINATION	0	0	0	1	0	1

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
AIRCRAFT (Continued)						
POWERPLANT (Continued)						
LUBRICATING SYSTEM (Continued)						
LUBRICATING SYSTEM (Continued)						
LACK OF	0	1	1	0	1	1
TURBOSHAFT ENGINE	(0)	(0)	(0)	(3)	(0)	(3)
TURBOSHAFT ENGINE	(0)	(0)	(0)	(1)	(0)	(1)
FAILURE,PARTIAL	0	0	0	1	0	1
TURBOSHAFT ENGINE,GAS GENERATOR	(0)	(0)	(0)	(1)	(0)	(1)
BRITTLE FRACTURE	0	0	0	1	0	1
TURBOSHAFT ENGINE,FREE (POWER) TURBINE	(0)	(0)	(0)	(1)	(0)	(1)
BURST	0	0	0	1	0	1
MISCELLANEOUS	(1)	(0)	(1)	(8)	(4)	(12)
FLUID	(1)	(0)	(1)	(6)	(3)	(9)
FLUID,FUEL	(1)	(0)	(1)	(4)	(1)	(5)
EXHAUSTION	0	0	0	3	0	3
FUMES	1	0	1	1	0	1
LOW LEVEL	0	0	0	0	1	1
FLUID,OIL	(0)	(0)	(0)	(2)	(0)	(2)
OVERTEMPERATURE	0	0	0	1	0	1
STARVATION	0	0	0	1	0	1
FLUID,HYDRAULIC	(0)	(0)	(0)	(0)	(2)	(2)
LEAK	0	0	0	0	1	1
LOSS,PARTIAL	0	0	0	0	1	1
MISC EQPT/FURNISHINGS	(0)	(0)	(0)	(1)	(0)	(1)
MISC EQPT/FURNISHINGS	(0)	(0)	(0)	(1)	(0)	(1)
OTHER	0	0	0	1	0	1
AIRCRAFT PERFORMANCE	(0)	(0)	(0)	(1)	(1)	(2)
AIRCRAFT PERFORMANCE,TAKEOFF CAPABILITY	(0)	(0)	(0)	(0)	(1)	(1)
EXCEEDED	0	0	0	0	1	1
AIRCRAFT PERFORMANCE,TWO OR MORE ENGINES	(0)	(0)	(0)	(1)	(0)	(1)
INOPERATIVE	0	0	0	1	0	1
AIRCRAFT ENVIRONMENT	(1)	(12)	(13)	(5)	(43)	(48)
AIRPORT	(1)	(0)	(1)	(2)	(5)	(7)
AIRPORT FACILITIES	(1)	(0)	(1)	(2)	(5)	(7)
AIRPORT FACILITIES	(0)	(0)	(0)	(1)	(0)	(1)
INADEQUATE	0	0	0	1	0	1
AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION	(1)	(0)	(1)	(1)	(4)	(5)
FOREIGN SUBSTANCE COVERED	1	0	1	1	0	1
INADEQUATE	0	0	0	0	1	1
ROUGH/UNEVEN	0	0	0	0	2	2
SNOW COVERED	0	0	0	0	1	1
AIRPORT FACILITIES,WIND DIRECTION INDICATOR	(0)	(0)	(0)	(0)	(1)	(1)
UNAVAILABLE	0	0	0	0	1	1
TERRAIN/RUNWAY	(0)	(12)	(12)	(3)	(38)	(41)
DIRT BANK	0	0	0	0	2	2
DITCH	0	0	0	0	3	3
HIGH TERRAIN	0	2	2	0	2	2
HIGH OBSTRUCTION(S)	0	1	1	0	5	5

NONSCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
AIRCRAFT ENVIRONMENT (Continued)						
TERRAIN/RUNWAY (Continued)						
ICY	0	0	0	0	1	1
LOOSE GRAVEL/SANDY	0	0	0	0	1	1
NONE SUITABLE	0	0	0	0	1	1
MOUNTAINOUS/HILLY	0	6	6	0	10	10
RISING	0	2	2	0	2	2
ROUGH/UNEVEN	0	0	0	1	4	5
SNOWBANK	0	0	0	0	1	1
WATER,ROUGH	0	1	1	1	2	3
WEAK ICE	0	0	0	1	0	1
WET	0	0	0	0	4	4
ENVIRONMENTAL CONDITIONS	(1)	(34)	(35)	(9)	(92)	(101)
WEATHER CONDITION	(0)	(26)	(26)	(5)	(63)	(68)
CROSSWIND	0	1	1	0	5	5
CLOUDS	0	1	1	1	2	3
DOWNDRAFT	0	0	0	0	2	2
FOG	0	5	5	0	10	10
GUSTS	0	3	3	0	7	7
HAZE	0	0	0	0	1	1
HIGH WIND	0	2	2	0	2	2
HIGH DENSITY ALTITUDE	0	3	3	1	4	5
ICING CONDITIONS	0	1	1	1	4	5
LOW CEILING	0	5	5	0	9	9
OBSCURATION	0	1	1	0	3	3
RAIN	0	1	1	0	3	3
SNOW	0	1	1	0	3	3
TAILWIND	0	0	0	0	3	3
TURBULENCE	0	2	2	0	4	4
WHITEOUT	0	0	0	1	1	2
UNFAVORABLE WIND	0	0	0	1	0	1
LIGHT CONDITION	(0)	(5)	(5)	(0)	(14)	(14)
DUSK	0	0	0	0	2	2
NIGHT	0	0	0	0	1	1
DARK NIGHT	0	5	5	0	11	11
OBJECT	(1)	(3)	(4)	(4)	(15)	(19)
AIRCRAFT MOVING ON GROUND	0	0	0	0	1	1
AIRCRAFT PARKED	0	0	0	0	1	1
AIRPORT FACILITY	0	0	0	1	0	1
ANIMAL(S)	0	0	0	1	0	1
APPROACH LIGHT/NAVAID	0	0	0	0	1	1
BIRD(S)	0	0	0	1	0	1
FENCE	0	0	0	0	3	3
RESIDENCE	1	0	1	1	0	1
TREE(S)	0	3	3	0	7	7
WIRE,STATIC	0	0	0	0	1	1
WIRE,TRANSMISSION	0	0	0	0	1	1
HUMAN PERFORMANCE	(67)	(12)	(79)	(209)	(50)	(259)
AIRCRAFT	(1)	(1)	(2)	(8)	(1)	(9)
LANDING GEAR	(0)	(1)	(1)	(3)	(1)	(4)
GEAR RETRACTION	(0)	(0)	(0)	(1)	(0)	(1)

NONSCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
AIRCRAFT (Continued)						
LANDING GEAR (Continued)						
GEAR RETRACTION (Continued)						
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
GEAR EXTENSION	(0)	(1)	(1)	(2)	(1)	(3)
NOT PERFORMED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
PREMATURE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
FUEL SYSTEM	(0)	(0)	(0)	(1)	(0)	(1)
FUEL SUPPLY	(0)	(0)	(0)	(1)	(0)	(1)
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
POWERPLANT CONTROLS	(1)	(0)	(1)	(3)	(0)	(3)
PROPELLER FEATHERING	(0)	(0)	(0)	(1)	(0)	(1)
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
WRONG ENGINE SHUTDOWN	(0)	(0)	(0)	(1)	(0)	(1)
PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
WRONG PROPELLER FEATHERED	(1)	(0)	(1)	(1)	(0)	(1)
SELECTED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
AUTOPILOT	(0)	(0)	(0)	(1)	(0)	(1)
AUTOPILOT	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER USE OF	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
OPERATIONS	(66)	(11)	(77)	(201)	(49)	(250)
PLANNING-DECISION	(37)	(6)	(43)	(106)	(24)	(130)
PLANNING-DECISION	(2)	(0)	(2)	(5)	(0)	(5)
IMPROPER	(2)	(0)	(2)	(5)	(0)	(5)
PILOT IN COMMAND	1	0	1	4	0	4
NO PERSON SPECIFIED	1	0	1	1	0	1
PREFLIGHT PLANNING/PREPARATION	(3)	(1)	(4)	(8)	(2)	(10)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
INACCURATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
INADEQUATE	(3)	(0)	(3)	(5)	(1)	(6)
PILOT IN COMMAND	3	0	3	5	1	6
POOR	(0)	(1)	(1)	(1)	(1)	(2)
PILOT IN COMMAND	0	1	1	1	1	2
AIRCRAFT PREFLIGHT	(1)	(0)	(1)	(4)	(0)	(4)
INADEQUATE	(1)	(0)	(1)	(2)	(0)	(2)
PILOT IN COMMAND	1	0	1	2	0	2
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
AIRCRAFT PREFLIGHT (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
POOR	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
AIRCRAFT WEIGHT AND BALANCE	(1)	(1)	(2)	(1)	(2)	(3)
EXCEEDED	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
IMPROPER	(1)	(0)	(1)	(1)	(1)	(2)
NO PERSON SPECIFIED	1	0	1	1	0	1
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT	(0)	(1)	(1)	(2)	(1)	(3)
NO MODIFIER SPECIFIED	(0)	(1)	(1)	(0)	(1)	(1)
NO PERSON SPECIFIED	0	1	1	0	1	1
ATTEMPTED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
SELECTED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
PROPER ASSISTANCE	(1)	(0)	(1)	(1)	(0)	(1)
NOT USED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
IN-FLIGHT PLANNING/DECISION	(7)	(0)	(7)	(16)	(3)	(19)
DELAYED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
IMPROPER	(5)	(0)	(5)	(6)	(0)	(6)
PILOT IN COMMAND	5	0	5	6	0	6
INACCURATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
INADEQUATE	(0)	(0)	(0)	(4)	(1)	(5)
PILOT IN COMMAND	0	0	0	4	1	5
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
POOR	(1)	(0)	(1)	(3)	(1)	(4)
PILOT IN COMMAND	1	0	1	3	1	4
PREMATURE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
WIND INFORMATION	(0)	(0)	(0)	(1)	(1)	(2)
MISREAD	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
NOT OBTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
FUEL CONSUMPTION CALCULATIONS	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
FUEL CONSUMPTION CALCULATIONS (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
VFR FLIGHT INTO IMC	(5)	(2)	(7)	(5)	(2)	(7)
CONTINUED	(2)	(0)	(2)	(2)	(0)	(2)
PILOT IN COMMAND	2	0	2	2	0	2
INADVERTENT	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
INTENTIONAL	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
INITIATED	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
PERFORMED	(2)	(0)	(2)	(2)	(0)	(2)
PILOT IN COMMAND	2	0	2	2	0	2
VFR PROCEDURES	(1)	(0)	(1)	(1)	(0)	(1)
NOT FOLLOWED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
FLIGHT MANUALS	(0)	(0)	(0)	(0)	(1)	(1)
IMPROPER	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
PERFORMANCE DATA	(1)	(0)	(1)	(4)	(0)	(4)
DISREGARDED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
NOT UNDERSTOOD	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
NOT USED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
REFUELING	(0)	(0)	(0)	(2)	(0)	(2)
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT ATTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
VISUAL LOOKOUT	(1)	(0)	(1)	(7)	(1)	(8)
INADEQUATE	(1)	(0)	(1)	(5)	(1)	(6)
PILOT IN COMMAND	1	0	1	4	1	5
PILOT OF OTHER AIRCRAFT	0	0	0	1	0	1
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
REDUCED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
WEATHER EVALUATION	(1)	(0)	(1)	(3)	(2)	(5)
INACCURATE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
WEATHER EVALUATION (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
MISJUDGED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
NOT PERFORMED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
FLIGHT INTO KNOWN ADVERSE WEATHER	(1)	(0)	(1)	(3)	(1)	(4)
ATTEMPTED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
CONTINUED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
INADVERTENT	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
SELECTED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
IFR PROCEDURE	(2)	(0)	(2)	(4)	(0)	(4)
NOT FOLLOWED	(2)	(0)	(2)	(3)	(0)	(3)
PILOT IN COMMAND	2	0	2	3	0	3
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
FLIGHT TO ALTERNATE DESTINATION	(0)	(0)	(0)	(1)	(0)	(1)
DELAYED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
COMPENSATION FOR WIND CONDITIONS	(2)	(0)	(2)	(7)	(3)	(10)
IMPROPER	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
INADEQUATE	(2)	(0)	(2)	(6)	(2)	(8)
PILOT IN COMMAND	2	0	2	6	2	8
WRONG RUNWAY	(0)	(0)	(0)	(2)	(0)	(2)
SELECTED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
UNSUITABLE TERRAIN	(0)	(0)	(0)	(3)	(0)	(3)
NO MODIFIER SPECIFIED	(0)	(0)	(0)	(1)	(0)	(1)
NO PERSON SPECIFIED	0	0	0	1	0	1
SELECTED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
CHECKLIST	(0)	(0)	(0)	(4)	(1)	(5)
NOT FOLLOWED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT UNDERSTOOD	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT USED	(0)	(0)	(0)	(2)	(1)	(3)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
PLANNING-DECISION (Continued)						
CHECKLIST (Continued)						
PILOT IN COMMAND	0	0	0	2	1	3
JUDGEMENT	(4)	(0)	(4)	(7)	(1)	(8)
INACCURATE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
POOR	(3)	(0)	(3)	(6)	(1)	(7)
PILOT IN COMMAND	3	0	3	6	1	7
PROCEDURES/DIRECTIVES	(3)	(1)	(4)	(6)	(1)	(7)
NOT FOLLOWED	(3)	(1)	(4)	(5)	(1)	(6)
PILOT IN COMMAND	3	1	4	5	1	6
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
ALL AVAILABLE RUNWAY	(1)	(0)	(1)	(4)	(1)	(5)
EXCEEDED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
NOT USED	(0)	(0)	(0)	(3)	(1)	(4)
PILOT IN COMMAND	0	0	0	3	1	4
PLANNED APPROACH	(0)	(0)	(0)	(4)	(1)	(5)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
MISJUDGED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
POOR	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
MAINTENANCE	(1)	(1)	(2)	(7)	(4)	(11)
MAINTENANCE	(0)	(1)	(1)	(1)	(2)	(3)
IMPROPER	(0)	(1)	(1)	(1)	(1)	(2)
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
OTHER MAINTENANCE PSNL	0	1	1	0	1	1
INADEQUATE	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
MAINTENANCE,SERVICE OF AIRCRAFT	(0)	(0)	(0)	(1)	(0)	(1)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
OTHER MAINTENANCE PSNL	0	0	0	1	0	1
MAINTENANCE,INSPECTION OF AIRCRAFT	(0)	(0)	(0)	(3)	(0)	(3)
INATTENTIVE	(0)	(0)	(0)	(1)	(0)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
NO PERSON SPECIFIED	0	0	0	1	0	1
NOT PERFORMED	(0)	(0)	(0)	(1)	(0)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
MAINTENANCE,INSTALLATION	(1)	(0)	(1)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
MAINTENANCE (Continued)						
MAINTENANCE,INSTALLATION (Continued)						
IMPROPER	(1)	(0)	(1)	(1)	(0)	(1)
OTHER MAINTENANCE PSNL	1	0	1	1	0	1
MAINTENANCE,REPLACEMENT	(0)	(0)	(0)	(0)	(1)	(1)
IMPROPER	(0)	(0)	(0)	(0)	(1)	(1)
OTHER MAINTENANCE PSNL	0	0	0	0	1	1
MAINTENANCE,RECORDKEEPING	(0)	(0)	(0)	(0)	(1)	(1)
NOT MAINTAINED	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	0	1	1
MAINTENANCE,SERVICE BULLETINS	(0)	(0)	(0)	(1)	(0)	(1)
NOT FOLLOWED	(0)	(0)	(0)	(1)	(0)	(1)
COMPANY MAINTENANCE PSNL	0	0	0	1	0	1
AIRPORT	(1)	(0)	(1)	(1)	(0)	(1)
OTHER AIRPORT/RUNWAY MAINTENANCE	(1)	(0)	(1)	(1)	(0)	(1)
IMPROPER	(1)	(0)	(1)	(1)	(0)	(1)
AIRPORT PERSONNEL	1	0	1	1	0	1
METEOROLOGICAL SERVICE	(2)	(0)	(2)	(3)	(0)	(3)
METEOROLOGICAL SERVICE	(0)	(0)	(0)	(1)	(0)	(1)
NOT OBTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
HAZARDOUS WEATHER ADVISORY	(1)	(0)	(1)	(1)	(0)	(1)
DISREGARDED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
PREFLIGHT BRIEFING SERVICE	(1)	(0)	(1)	(1)	(0)	(1)
NOT USED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
AIRCRAFT HANDLING	(25)	(3)	(28)	(84)	(19)	(103)
AIRCRAFT HANDLING	(4)	(0)	(4)	(10)	(0)	(10)
IMPROPER	(1)	(0)	(1)	(2)	(0)	(2)
PILOT IN COMMAND	1	0	1	2	0	2
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT MAINTAINED	(1)	(0)	(1)	(4)	(0)	(4)
PILOT IN COMMAND	1	0	1	4	0	4
NOT POSSIBLE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
POOR	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
UNCONTROLLED	(1)	(0)	(1)	(1)	(0)	(1)
NO PERSON SPECIFIED	1	0	1	1	0	1
ABORTED LANDING	(0)	(0)	(0)	(0)	(1)	(1)
NOT POSSIBLE	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
ABORTED TAKEOFF	(1)	(0)	(1)	(1)	(1)	(2)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
ABORTED TAKEOFF (Continued)						
DELAYED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
PERFORMED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
AIRSPEED	(3)	(0)	(3)	(10)	(0)	(10)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
INADEQUATE	(2)	(0)	(2)	(2)	(0)	(2)
PILOT IN COMMAND	2	0	2	2	0	2
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT ATTAINED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
NOT MAINTAINED	(1)	(0)	(1)	(3)	(0)	(3)
PILOT IN COMMAND	1	0	1	3	0	3
NOT OBTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
AIRSPEED(VMC)	(0)	(0)	(0)	(1)	(0)	(1)
NOT ATTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
AIRSPEED(VS)	(1)	(0)	(1)	(1)	(0)	(1)
NOT MAINTAINED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
ALTITUDE	(1)	(0)	(1)	(2)	(0)	(2)
IMPROPER	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
PROPER ALTITUDE	(2)	(0)	(2)	(3)	(0)	(3)
NOT ATTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT MAINTAINED	(2)	(0)	(2)	(2)	(0)	(2)
PILOT IN COMMAND	2	0	2	2	0	2
AUTOROTATION	(0)	(0)	(0)	(1)	(2)	(3)
ATTEMPTED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
NOT ATTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
PERFORMED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
DECISION HEIGHT	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
DECISION HEIGHT (Continued)						
BELOW	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
DISTANCE	(1)	(0)	(1)	(2)	(0)	(2)
INADEQUATE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
DESCENT	(1)	(0)	(1)	(1)	(0)	(1)
UNCONTROLLED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
CLEARANCE	(7)	(1)	(8)	(8)	(1)	(9)
INADEQUATE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
MISJUDGED	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
NOT MAINTAINED	(4)	(0)	(4)	(4)	(0)	(4)
PILOT IN COMMAND	4	0	4	4	0	4
NOT POSSIBLE	(2)	(0)	(2)	(3)	(0)	(3)
PILOT IN COMMAND	2	0	2	3	0	3
CLIMB	(0)	(0)	(0)	(0)	(1)	(1)
NOT POSSIBLE	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
PROPER CLIMB RATE	(1)	(0)	(1)	(3)	(0)	(3)
INATTENTIVE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT ATTAINED	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
PROPER ALIGNMENT	(0)	(0)	(0)	(2)	(0)	(2)
NOT MAINTAINED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
PROPER TOUCHDOWN POINT	(0)	(0)	(0)	(3)	(1)	(4)
NOT ATTAINED	(0)	(0)	(0)	(3)	(1)	(4)
PILOT IN COMMAND	0	0	0	3	1	4
PROPER GLIDEPATH	(0)	(0)	(0)	(1)	(1)	(2)
NOT MAINTAINED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT POSSIBLE	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
LIFT-OFF	(0)	(0)	(0)	(1)	(0)	(1)
NOT ATTAINED	(0)	(0)	(0)	(1)	(0)	(1)

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
LIFT-OFF (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
LEVEL OFF	(0)	(0)	(0)	(1)	(0)	(1)
MISJUDGED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
FLARE	(0)	(0)	(0)	(3)	(1)	(4)
IMPROPER	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
MISJUDGED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
GO-AROUND	(0)	(0)	(0)	(3)	(1)	(4)
DELAYED	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
NOT PERFORMED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
GROUND LOOP/SWERVE	(0)	(0)	(0)	(1)	(0)	(1)
INADVERTENT	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
DIRECTIONAL CONTROL	(1)	(0)	(1)	(7)	(0)	(7)
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT MAINTAINED	(0)	(0)	(0)	(3)	(0)	(3)
PILOT IN COMMAND	0	0	0	3	0	3
NOT POSSIBLE	(1)	(0)	(1)	(3)	(0)	(3)
PILOT IN COMMAND	1	0	1	3	0	3
LOW PASS	(1)	(0)	(1)	(1)	(0)	(1)
INTENTIONAL	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
REMEDIAL ACTION	(0)	(1)	(1)	(3)	(2)	(5)
DELAYED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
INADEQUATE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT PERFORMED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
NOT POSSIBLE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
MISSED APPROACH	(0)	(0)	(0)	(1)	(0)	(1)
DELAYED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
EMERGENCY PROCEDURE	(1)	(0)	(1)	(2)	(1)	(3)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1

	FATAL ACCIDENTS CAUSE FACTOR	FATAL ACCIDENTS TOTAL		ALL ACCIDENTS CAUSE FACTOR	ALL ACCIDENTS TOTAL	
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)						
HUMAN PERFORMANCE (Continued)						
OPERATIONS (Continued)						
AIRCRAFT HANDLING (Continued)						
EMERGENCY PROCEDURE (Continued)						
INADEQUATE	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
NOT PERFORMED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
PRECAUTIONARY LANDING	(0)	(0)	(0)	(0)	(2)	(2)
PERFORMED	(0)	(0)	(0)	(0)	(2)	(2)
PILOT IN COMMAND	0	0	0	0	2	2
STALL	(0)	(0)	(0)	(1)	(0)	(1)
NOT CORRECTED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
STALL/SPIN	(0)	(1)	(1)	(0)	(1)	(1)
INADVERTENT	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
STALL/MUSH	(0)	(0)	(0)	(2)	(0)	(2)
INADVERTENT	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
WATER LOOP/SWERVE	(0)	(0)	(0)	(2)	(0)	(2)
INADVERTENT	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
UNCONTROLLED	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
WHEELS DOWN LANDING IN WATER	(0)	(0)	(0)	(2)	(0)	(2)
INADVERTENT	(0)	(0)	(0)	(2)	(0)	(2)
PILOT IN COMMAND	0	0	0	2	0	2
WHEELS UP LANDING	(0)	(0)	(0)	(1)	(2)	(3)
INADVERTENT	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
INTENTIONAL	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
ROTOR RPM	(0)	(0)	(0)	(1)	(1)	(2)
NOT MAINTAINED	(0)	(0)	(0)	(1)	(1)	(2)
PILOT IN COMMAND	0	0	0	1	1	2
VERTICAL TAKEOFF	(0)	(0)	(0)	(2)	(0)	(2)
IMPROPER	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
NOT POSSIBLE	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
COMMUNICATIONS/INFORMATION/ATC	(0)	(1)	(1)	(0)	(2)	(2)
TRAFFIC ADVISORY	(0)	(1)	(1)	(0)	(1)	(1)
NOT ISSUED	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
RADAR ASSISTANCE TO VFR AIRCRAFT	(0)	(0)	(0)	(0)	(1)	(1)

	FATAL ACCIDENTS		ALL ACCIDENTS		
	CAUSE FACTOR	TOTAL	CAUSE FACTOR	TOTAL	
AIRCRAFT, ENVIRONMENT, HUMAN PERFORMANCE (Continued)					
HUMAN PERFORMANCE (Continued)					
OPERATIONS (Continued)					
COMMUNICATIONS/INFORMATION/ATC (Continued)					
RADAR ASSISTANCE TO VFR AIRCRAFT (Continued)					
PERFORMED	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
UNDETERMINED	1	0	1	7	0	7
DIRECT UNDERLYING CAUSE FACTORS:	(12)	(28)	(40)	(20)	(47)	(67)
IMPROPER USE OF PROCEDURE	(5)	(7)	(12)	(9)	(18)	(27)
IMPROPER USE OF PROCEDURE	(1)	(1)	(2)	(3)	(5)	(8)
PILOT IN COMMAND	1	1	2	3	5	8
OTHER MAINTENANCE PSNL	1	0	1	1	0	1
COMPANY/OPERATOR MGMT	1	0	1	1	0	1
INATTENTIVE	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
COMPLACENCY	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
OVER CONFIDENCE IN PERSONAL ABILITY	(0)	(0)	(0)	(0)	(2)	(2)
PILOT IN COMMAND	0	0	0	0	2	2
ANXIETY/APPREHENSION	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
SELF-INDUCED PRESSURE	(0)	(0)	(0)	(0)	(2)	(2)
PILOT IN COMMAND	0	0	0	0	2	2
COMPANY-INDUCED PRESSURE	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1
PRESSURE INDUCED BY OTHERS	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
VISUAL/AURAL PERCEPTION	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
PHYSICAL IMPAIRMENT(ALCOHOL)	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
COPILOT	1	0	1	1	0	1
FATIGUE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
FATIGUE(FLIGHT SCHEDULE)	(0)	(1)	(1)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	1	1	0	1	1
QUALIFICATION	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
IMPROPER TRAINING	(0)	(0)	(0)	(1)	(0)	(1)
PILOT IN COMMAND	0	0	0	1	0	1
LACK OF RECENT EXPERIENCE IN TYPE OPERATION	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
IMPROPER USE OF EQUIPMENT/AIRCRAFT	(3)	(12)	(15)	(5)	(18)	(23)
IMPROPER USE OF EQUIPMENT/AIRCRAFT	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
DIVERTED ATTENTION	(0)	(0)	(0)	(1)	(0)	(1)

NONSCHEDULED 14 CFR 135 OPERATIONS
1986

	FATAL ACCIDENTS			ALL ACCIDENTS		
	CAUSE FACTOR		TOTAL	CAUSE FACTOR		TOTAL
DIRECT UNDERLYING CAUSE FACTORS: (Continued)						
IMPROPER USE OF EQUIPMENT/AIRCRAFT (Continued)						
DIVERTED ATTENTION (Continued)						
PILOT IN COMMAND	0	0	0	1	0	1
OVER CONFIDENCE IN PERSONAL ABILITY	(0)	(1)	(1)	(0)	(2)	(2)
PILOT IN COMMAND	0	1	1	0	2	2
OVER CONFIDENCE IN AIRCRAFT'S ABILITY	(1)	(2)	(3)	(1)	(2)	(3)
PILOT IN COMMAND	1	2	3	1	2	3
SELF-INDUCED PRESSURE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
PRESSURE INDUCED BY OTHERS	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
VISUAL/AURAL PERCEPTION	(0)	(1)	(1)	(0)	(2)	(2)
PILOT IN COMMAND	0	1	1	0	2	2
SPATIAL DISORIENTATION	(2)	(0)	(2)	(3)	(0)	(3)
PILOT IN COMMAND	2	0	2	3	0	3
VISUAL/AURAL DETECTION	(0)	(0)	(0)	(0)	(1)	(1)
PILOT IN COMMAND	0	0	0	0	1	1
PILOT OF OTHER AIRCRAFT	0	0	0	0	1	1
FATIGUE	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
OTHER PERSONNEL	0	0	0	0	1	1
FATIGUE(LACK OF SLEEP)	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
LACK OF FAMILIARITY WITH AIRCRAFT	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
LACK OF TOTAL INSTRUMENT TIME	(0)	(2)	(2)	(0)	(2)	(2)
PILOT IN COMMAND	0	2	2	0	2	2
INFORMATION INSUFFICIENT	(0)	(1)	(1)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	1	1	0	1	1
IMPROPER USE OF FACILITY	(1)	(0)	(1)	(1)	(1)	(2)
PRESSURE	(0)	(0)	(0)	(0)	(1)	(1)
COMPANY/OPERATOR MGMT	0	0	0	0	1	1
PHYSICAL IMPAIRMENT(OTHER CARDIOVASCULAR)	(1)	(0)	(1)	(1)	(0)	(1)
PILOT IN COMMAND	1	0	1	1	0	1
IMPROPER DECISION	(2)	(9)	(11)	(2)	(9)	(11)
COMPLACENCY	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
OVER CONFIDENCE IN PERSONAL ABILITY	(0)	(2)	(2)	(0)	(2)	(2)
PILOT IN COMMAND	0	2	2	0	2	2
ANXIETY/APPRENHENSION	(0)	(1)	(1)	(0)	(1)	(1)
PILOT IN COMMAND	0	1	1	0	1	1
PRESSURE	(0)	(1)	(1)	(0)	(1)	

APPENDIX F

N.T.S.B. FORM 6120.4

FACTUAL REPORT
AVIATION
ACCIDENT/INCIDENT

National Transportation Safety Board
Washington, D.C. 20594

National Transportation Safety Board

FACTUAL REPORT
AVIATION

1 NTSB Accident/Incident Number		
	2 1 [ ] Accident 2 [ ] Incident	3 Investigation 1 [ ] NTSB 2 [ ] FAA Delegated

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

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

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

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

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

Investigated By:

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

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

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

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

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Airport/Approach/Landing Information

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

25 Airport Name
_____
A Other

26 Airport Identifier
_____

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

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

29 Direction From Airport
_____ °mag
A Other

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

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

32 Runway Used Identifier
_____
A Other

33 Runway Length
_____ Feet
A Other

34 Runway Width
_____ Feet
A Other

35 Airport Elevation
_____ Ft. MSL
A Other

36 Runway/Landing Surface
1 ☐ Macadam
2 ☐ Asphalt
3 ☐ Concrete
4 ☐ Gravel
5 ☐ Dirt
6 ☐ Grass/turf
7 ☐ Snow
8 ☐ Ice
9 ☐ Water
10 ☐ Metal/wood
A Other

37 Runway/Landing Surface Condition
1 ☐ Dry
2 ☐ Wet
3 ☐ Ice covered
4 ☐ Snow—dry
5 ☐ Snow—wet
6 ☐ Snow—crusted
7 ☐ Snow—compacted
8 ☐ Vegetation
9 ☐ Water—calm
10 ☐ Water—choppy
11 ☐ Water—glassy
12 ☐ Rubber deposits
13 ☐ Soft
14 ☐ Rough
15 ☐ Slush covered
16 ☐ Holes
A Other

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

Aircraft Information

39 Aircraft Manufacturer

40 Aircraft Model/Series

41 Serial No.
_____
A Other

42 Certificated Maximum Gross Weight
_____
A Other

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

44 Type Airworthiness Certificate *(Multiple entry)*
Standard
1 ☐ Normal
2 ☐ Utility
3 ☐ Acrobatic
4 ☐ Transport
Special
5 ☐ Restricted
6 ☐ Limited
7 ☐ Provisional
8 ☐ Special flight
9 ☐ Experimental
A Other

45 Home Built
1 ☐ Yes
2 ☐ No
A Other

National Transportation Safety Board

FACTUAL REPORT AVIATION

NTSB Accident/Incident Number

Aircraft Information *(continued)*

46 Landing Gear *(Multiple entry)*

1 ☐ Tricycle—fixed
2 ☐ Tricycle—retractable
3 ☐ Tailwheel—all fixed
4 ☐ Tailwheel—all retractable
5 ☐ Tailwheel—retractable mains
6 ☐ Amphibian
7 ☐ Hull
8 ☐ Float
9 ☐ Emerg. float
10 ☐ Ski
11 ☐ Ski/wheel
12 ☐ Skid
13 ☐ High Skid
A Other

48 No. of Seats
_____
A Other

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

50 IFR Equipped
1 ☐ Yes
2 ☐ No
A Other

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

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

If not Engine powered, go to block 59

53 Engine Manufacturer

54 Engine Model and Series

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

56 Number of Engines
_____
A Other

If 3 or more engines enter times in Supp. C

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

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

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

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

62 Time Since Inspection
_____ Hours
A Other

63 Airframe Total Time
_____ Hours
A Other

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

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

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

Owner/Operator Information

71 Registered Aircraft Owner
Name

72 Address

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

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

75 Operator Certificate No.
_____
A Other

76 Operator Designator Code

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Owner/Operator Information *(continued)*

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

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

Type of Certificate(s) Held

79 None *(Go to block 83)*

80 Air Carrier Operating Certificate *(Check all applicable)*
1 Flag carrier/domestic (121)
2 Supplemental
3 All cargo (418)
4 Large helicopter (127)
5 Commuter air carrier
6 On-demand air taxi

81 Operating Certificate
Other operator of large aircraft

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

Regulation Flight Conducted Under

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

Type of Flight Operation Conducted

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

84a
1 Scheduled
2 Non-scheduled

84b
1 Domestic
2 International

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

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

86
1 Personal
2 Business
3 Instructional *(Including air carrier training)*
4 Executive/corporate
5 Aerial application
6 Aerial observation
7 Other work use
8 Public use
9 Ferry
10 Positioning
A Specify _____

First Pilot Information

87 Name *(Last, First, Initial)*
A Other

88 Pilot Certificate No.
A Other

89 Street Address
A Other

90 City
A Other

91 State

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

93 Age
_____ Yrs.
A Other

94 Sex
1 Male
2 Female

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

96 Principal Profession
1 Pilot—civilian
2 Pilot—military
3 Other—military
4 Aircraft mechanic
5 Business
6 Lawyer
7 Doctor/dentist
8 Police
9 Student
10 Clergy
11 Teacher
12 Engineer
13 Farmer/rancher
14 Retired
A Other

97 Certificate(s) *(Multiple entry)*
1 Student
2 Private
3 Commercial
4 Airline Transport
5 Flight Instructor
6 Flight Engineer
7 Military
8 None
9 Foreign
A Other

National Transportation Safety Board

FACTUAL REPORT AVIATION

NTSB Accident/Incident Number

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

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

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

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

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

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

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

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

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

106 Months Since Last BFR
_____ Months
A Other

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

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

109 Medical Certificate Validity
1 ☐ Valid medical—no waivers/limitations
2 ☐ Valid medical—with waivers/limitations
3 ☐ Non valid medical for this flight
4 ☐ Expired
5 ☐ No medical certificate
A Other

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

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

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

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

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

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

Flight Time	A All A/C	B This Make & Model	C Airplane Single Engine	D Airplane Multiengine	E Night	F Instrument Actual	G Instrument Simulated	H Rotorcraft	I Glider	J Lighter Than Air	K Other
125 Total Time											
126 Pilot in Command (PIC)											
127 Instructor											
128 This Make/Model											
129 Last 90 Days											
130 Last 30 Days											
131 Last 24 Hours											

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

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

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

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

136 Seatbelt Available
1 ☐ Yes
2 ☐ No A Other

137 Seatbelt Used
1 ☐ Yes
2 ☐ No A Other

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

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

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

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

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Pilot Information (continued)

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

143 Simulated Instrument Flight
1 Yes
2 No
A Other

144 Vision Restricting Device Used
1 Yes
2 No
A Other

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

Flight Itinerary Information

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

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

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

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

159 Type of Clearance
1 None
2 VFR
3 Special VFR
4 IFR
5 Special IFR
6 VFR on top
7 Cruise
8 Traffic Advisory
9 VFR Flight Following
A Other

160 Airspace
1 Uncontrolled
2 Controlled
3 Airport traffic area
4 Control zone
5 Airport advisory area
6 Positive control area
7 Terminal control area
8 Stage II TRSA
9 Stage III TRSA
10 Prohibited area
11 Restricted area
12 Military Operating Area (MOA)
13 Student Jet Training Area
14 Demo Area
15 Warning area
16 FAR 93 (Special air traffic areas)
A Other

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

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

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

Aircraft Loading Information

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

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

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

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

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

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

National Transportation Safety Board

FACTUAL REPORT AVIATION

NTSB Accident/Incident Number

Aircraft Loading Information *(continued)*

170 Load Description *(Multiple entry)*

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

Weather Information

180 Source of Weather Briefing *(Multiple entry)*

1 ☐ No record of briefing *(Go to block 183)*
2 ☐ National Weather Service (NWS)
3 ☐ Flight Service Station
4 ☐ PATWAS (Pilot Automated Tel. WX Answering Svc)
5 ☐ VRS (Voice Response System)
6 ☐ Company
7 ☐ Commercial weather service
8 ☐ TV/radio weather
9 ☐ Military
A Other

181 Method of Briefing *(Multiple entry)*

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

182 Completeness of Weather briefing

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

183 Investigator's Source of Weather Information

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

184 Weather Observation Facility

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

185 Basic Weather Conditions at Accident Site

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

186 Conditions of Light

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

187 Sky/Lowest/Cloud Condition

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

188 Lowest Ceiling

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

189 Visibility *(decimals)*

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

190 Temperature

_____ ° F
A Other

191 Dew Point

_____ ° F
A Other

192 Wind (From)

1 ☐ Variable
A _____ ° Magnetic
B Other

193 Wind Speed

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

194 Gusts

1 ☐ None
A _____ Kts.
B Other

195 Altimeter Setting

_____ " Hg
A Other

196 Density Altitude

_____ Feet
A Other

197 Restrictions to Visibility

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

198 Type of Precipitation

1 ☐ None *(Go to block 200)*
2 ☐ Rain (R)
3 ☐ Snow (S)
4 ☐ Hail (A)
5 ☐ Rain showers (RW)
6 ☐ Freezing rain (ZR)
7 ☐ Snow shower (SW)
8 ☐ Drizzle (L)
9 ☐ Ice pellets (IP)
10 ☐ Snow pellets (SP)
11 ☐ Snow grains (SG)
12 ☐ Freezing drizzle (ZL)
13 ☐ Ice crystals (IC)
14 ☐ Ice pellet shower (IPW)
A Other

199 Intensity of Precipitation

1 ☐ Light
2 ☐ Moderate
3 ☐ Heavy
A Other

National Transportation Safety Board

FACTUAL REPORT
AVIATION

NTSB Accident/Incident Number

Accident Information

200 Aircraft Damage
1 ☐ None
2 ☐ Minor
3 ☐ Substantial
4 ☐ Destroyed

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

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

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

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

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

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

Part Failure/Incorrect Part

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

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

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

*U.S.GOVERNMENT PRINTING OFFICE:1989-242-320:80145