

**United States  
Department of the Interior**



**Aviation Safety Review  
Fiscal Year 01**

**Prepared by  
Office of Aircraft Services  
Aviation Safety Office  
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In FY 2001, the Department of the Interior experienced a successful year in aviation safety. Four aircraft accidents produced a rate of 4.71 accidents per 100,000 flight hours, the lowest rate since FY 1994 (4.68).

More importantly, there were no aviation-related fatalities or serious injuries in FY 2001.

Key to the Department's success has been the hard work and dedication of those involved in aviation. This past year, Department employees and vendors continued to improve the safety environment within Interior, as reflected by increased participation in the SAFECOM (Safety Communiqué) program and an increase in the number of people receiving aviation safety awards. We hope these trends continue!

Also key to this success has been the Department's Aviation Mishap Review Board (AMRB) process. Once the investigation has uncovered the relevant facts associated with an accident, an independent five-member board is convened to develop and recommend accident prevention measures. Last year, OAS convened five AMRBs that produced many excellent recommendations. We appreciate the hard work of those who participated in the AMRBs. Their contributions are having a positive impact on aviation safety.

The National Transportation Safety Board (NTSB) investigated each of the Department's accidents. The Office of Aircraft Services (OAS) participated in these investigations and provided assistance. To date, the NTSB has completed investigation and determined "probable cause" for three of the four FY 2001 accidents.

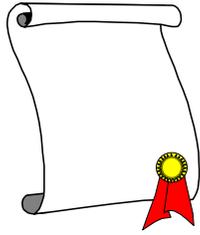
We hope you find the information in this Aviation Safety Review useful. Please direct comments or suggestions to the OAS Aviation Safety Office at (208) 387-5800.

I want to personally thank personnel throughout the Department for their efforts to safely and efficiently use aviation in support of bureau missions. I would especially like to recognize and congratulate those individuals (see page ii) who received Aviation Safety Awards.

I wish everyone a safe and successful FY 2002.



Michael A. Martin  
Acting Director, Office of Aircraft Services



***Interior Aviation Safety Award  
Recipients - FY 01***

In response to our request for Safety Award Nominees, the following personnel were recognized as follows:

***Award for Significant Contributions to Aviation Safety***

James Hood - NPS  
David Kreutzer - NPS  
Ray Touzeau - NPS

\*\*\*\*\*

***Award for In-Flight Actions***

Richard Dusseau - NPS  
Patty Christian - NPS (Non-crewmember)  
Linda Jeschke - NPS (Non-crewmember)  
Dan Stevenson - NPS (Non-crewmember)  
Mark Santee - BOR

\*\*\*\*\*

***Secretary's Award of Honor***

William W. Larned - FWS

***Award of Honor***

Marion W. Harris - NPS  
Adams H. Twitchell - NPS  
Michael T. Vivion - FWS

***Award of Excellence***

Roger W. Kaye - FWS

***Award of Distinction***

Donald B. Carlson - FWS  
Richard D. Ernst - FWS

\*\*\*\*\*

***Award of Merit***

Paul E. Ladegard - FWS  
Edward J. Mallek - FWS  
Michael T. Sharp - NPS  
Barton N. Stone - OAS

\*\*\*\*\*

***Airward***

Brandon Hampton - BLM  
Myles Elsing - Air Resources Helicopters  
Barry Kennedy - BLM  
Samuel Stivison - OAS  
Tammy Westover - Alaska DNR  
Skip Young - BLM

**U.S. Department of the Interior**

**Aviation Safety Review FY 01**

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## **Section I**

### **FY 01 Aviation Accidents**

In FY 01 the Department of the Interior flew 84,976.0 hours, at a cost of over 80 million dollars. Interior recorded four statistically accountable aircraft accidents at an annual rate of 4.71 per 100,000 flight hours, a slight improvement over last years rate of 5.48. Of note, this is the lowest rate since FY 94 when we recorded 4.68 per 100,00 flight hours. More importantly, there were no fatalities or serious injuries. During the past twenty-seven years Interior has experienced annual accident rates as high as 18.87 per 100,000 flight hours (FY 75) and as low as 3.73 (FY 85).

Interior's historical accident rate of 8.67 per 100,000 flight hours continues to improve from its initial rate of 18.87 in FY 75.

The National Transportation Safety Board (NTSB) investigated all four of our accidents with assistance from the Office of Aircraft Services. Mishap investigations often reveal important information that may improve working conditions or mishap prevention measures. In cooperation with the NTSB, key issues associated with each accident have been identified and are included in this report. These issues are based on facts discovered during the investigations and may or may not be included in the final reports. We feel this information is important and will provide our aviation community with timely information necessary to help prevent future accidents.

The four Interior accidents involved three airplanes and one helicopter. Pages 2 through 9 provide information about each of the mishaps.

**AIRCRAFT ACCIDENT  
01-1F01-O-FNP**

<b>AIRCRAFT DATA:</b> Bell 206 L-1	<b>DATE:</b> October 30, 2000
<b>BUREAU:</b> National Park Service	<b>LOCATION:</b> Mesa Verde NP, CO
<b>INJURIES:</b> None	<b>SOURCE:</b> Fleet (Bureau of Reclamation)



**Narrative:** On October 30, 2000, at 1130 Mountain daylight time, a Bell 206 L-1 helicopter, N613, sustained substantial damage when a tail rotor blade failed during approach to a helicopter landing pad at Mesa Verde National Park, Colorado. The airline transport certificated pilot, the sole occupant, was not injured. The flight was a public use flight operating under Title 14 CFR Part 91 and no flight plan was filed. Visual meteorological conditions prevailed. The flight originated from the pad about 0930. The pilot conducted a normal landing and during inspection following shutdown, the pilot found that one tail rotor blade had shed the trailing edge counterweight and trailing edge skin. He also found that three of the four mounting points for the tail rotor gearbox had fractured. Both tail rotor blades, which had accumulated approximately 30.8 hours since new, were sent to the NTSB Materials Laboratory for examination. The helicopter was repaired and when the shipping container containing new tail rotor blades was opened and the blades unpacked, the repair station rejected one blade for visual abnormalities in the area of the trailing edge counterweight.

## Key Issues

- Pilot's skill and outstanding judgment

## Discussion

The pilot's skill and judgment enabled the immediate identification of the emergency and resulted in the quick and appropriate response to the emergency.

The pilot's actions prevented injury to himself and other personnel on the ground and further damage to the aircraft.

**Probable Cause:** The National Transportation Safety Board determines that the probable cause of this accident was: The manufacturer's use of improper materials, and inadequate quality control of the tail rotor blades during the manufacturing process, which resulted in fatigue failure of the blade.

**Contributing Factors:** None.

**AIRCRAFT ACCIDENT  
01-1E01-O-FWS**

<b>AIRCRAFT DATA:</b> Piper PA-18	<b>DATE:</b> April 21, 2001
<b>BUREAU:</b> U.S. Fish and Wildlife Service	<b>LOCATION:</b> King Salmon, AK
<b>INJURIES:</b> None	<b>SOURCE:</b> Fleet



**Narrative:** On April 21, 2001, about 1400 Alaska daylight time, a tundra tire equipped Piper PA-18 airplane, N745, sustained substantial damage during landing at the King Salmon Airport, King Salmon, Alaska. The airplane was being operated as a visual flight rules (VFR) cross-country government flight, under Title 14, CFR Part 91, when the accident occurred. The airplane was operated by the U.S. Department of the Interior, U.S. Fish and Wildlife Service. The commercial certificated pilot, the sole occupant, was not injured. Visual meteorological conditions prevailed, and VFR company flight following procedures were in effect. The flight originated at the Cold Bay Airport, Cold Bay, Alaska, about 1010. The wind conditions were reported to the pilot as 070 degrees at 6 knots. After touchdown, the airplane veered to the left. The pilot applied right rudder and right brake pressure, but the airplane continued to the left. The right wingtip and the right aileron struck the gravel-covered ground along the left side of the runway.

## Key Issues

- Pilot's judgment
- Failure to comply with Departmental mishap reporting policy

## Discussion

The pilot, using a three-point landing technique, attempted to land with a quartering tailwind.

The pilot continued his flight to Anchorage without having the damage checked by a mechanic.

The pilot failed to comply with 352 DM 6, 2.2 that requires immediate reporting of damage or injury to the OAS Safety Office or the mishap reporting hotline.

**Probable Cause:** The National Transportation Safety Board determines the probable cause(s) of this accident as follows: The pilot's inadequate compensation for wind conditions, and inadequate weather evaluation resulting in a loss of directional control during the landing roll.

**Contributing Factors:** Factors in the accident were the presence of a quartering tailwind, and an inadvertent ground loop.

**AIRCRAFT ACCIDENT  
01-1F03-O-LLM**

<b>AIRCRAFT DATA:</b> Twin Otter DHC-6	<b>DATE:</b> May 1, 2001
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Star, ID
<b>INJURIES:</b> None	<b>SOURCE:</b> Fleet



**Narrative:** On May 1, 2001, approximately 1030 Mountain daylight time, a deHavilland DHC-6-300, N49SJ, registered to the Department of the Interior, Office of Aircraft Services as a public use flight, was substantially damaged when the aircraft veered off the runway at Star Parachute Airport, Star, Idaho, and collided with the terrain. Visual meteorological conditions prevailed and no flight plan was filed. Neither the commercial pilot nor the passenger were injured. The flight originated from Boise, Idaho, at an unknown time. The pilot reported that during the landing roll, the aircraft began to veer to the left. When aileron and rudder control were not effective to re-align the aircraft's direction of travel, the pilot transferred over to the nose wheel steering control. The pilot applied corrective input all the way to the right when he heard a "clink" sound. The aircraft exited the side of the runway and collided with the terrain. Post-accident inspection of the aircraft found that the nose wheel steering cable was broken.

## Key Issues

## Discussion

- Pilot's judgment

The pilot elected to use the nose wheel steering during a crosswind landing and at an excessive ground speed.

The pilot also applied nose wheel steering outside the parameters recommended in the Pilot's Operating Handbook.

- Aircraft operations/maintenance

Pre-existing metal fatigue was discovered in the nose wheel steering cable during the post-accident investigation.

- Flight plans/flight following

The informal flight plan with smokejumpers and flight following with tower were not in compliance with OPM 01-02.

- Mishap reporting

The mishap was not reported to OAS as required by 352 DM 6.

**Probable Cause:** The National Transportation Safety Board determines the probable cause(s) of this accident as follows: Fatigue failure of the nose wheel steering cable during the landing roll.

**Contributing Factors:** Rough/uneven terrain was a factor.

**AIRCRAFT ACCIDENT  
01-1F04-C-LLM**

<b>AIRCRAFT DATA:</b> Aero Commander 500	<b>DATE:</b> August 21, 2001
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Elko, NV
<b>INJURIES:</b> None	<b>SOURCE:</b> Contract



**Narrative:** On August 21, 2001, at 1503 hours Pacific daylight time, an Aero Commander 500, N975AA, had both main landing gear collapse on landing at Elko, Nevada. Avcenter, Inc., was operating the airplane as a public use fire command and control flight under the provisions of 14 CFR Part 91. The commercial pilot and two passengers were not injured; the airplane sustained substantial damage. The local flight departed Elko about 1330. Visual meteorological conditions prevailed, and a company VFR flight plan had been filed. The operator reported that the airplane touched down and began its landing roll. About 100 feet down the runway, both main landing gear collapsed. The resulting skid ground off the belly skin and damaged several structural airframe components.

### Key Issues

- Crew resource management
  
  
  
  
  
  
  
  
  
  
- Post mishap actions

### Discussion

Both Air Tactical Group Supervisors (ATGS) confirmed that the gear were down and locked.

ATGS supervisor coordinated with the pilot and ensured the engines were shutdown before the occupants exited the aircraft.

After the mishap the aircraft was moved and partially disassembled by the vendor prior to the arrival of investigators.

**The accident is under investigation by the NTSB; preliminary information is subject to change.**

## Section II

### FY 98, and FY 00 Aviation Accidents - Follow-up

At the time the Annual Safety Review is published each year many accidents have not yet been finalized by the National Transportation Safety Board (NTSB). To complete the information flow, the following material pertains to accidents presented in the FY98 and FY00 Aviation Safety Review.

#### AIRCRAFT ACCIDENT 98-8F02-C-LLM

<b>AIRCRAFT DATA:</b> Aero Commander 690	<b>DATE:</b> July 28, 1998
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Ely, NV
<b>INJURIES:</b> None	<b>SOURCE:</b> Contract

**Narrative:** On July 28, 1998, at 1500 hours Pacific daylight time, an Aero Commander 690, N349AC, sustained left wing spar damage following left wheel separation from its strut while taxiing for takeoff at the Ely, Nevada Airport. The aircraft was operated as public use by the Bureau of Land Management, U.S. Department of the Interior for fire reconnaissance missions. Visual meteorological conditions prevailed and a company visual flight rules (VFR) flight plan was filed. The aircraft sustained substantial damage and the airline transport pilot and his observer were not injured. According to the pilot and observer's statements, they were taxiing out for departure when the left main wheel came off its axle. As the strut grounded on the taxiway, the wing damage occurred. The aircraft was examined by investigators from the Office of Aircraft Services, U.S. Department of the Interior. They reported that the rear spar was fractured in the area of the wheel well. The left wing and fuselage crown skin was wrinkled and several wing ribs were damaged. The air pressure in the right tire was found to be 125 psi.

**Probable Cause:** The National Transportation Safety Board determines that the probable cause(s) of this accident was: The failure and separation of the left main gear wheel halves due to overload as a result of excessive air pressure.

**Contributing Factors:** A contributing factor was the inadequate maintenance/service of the main gear tires.

**AIRCRAFT ACCIDENT  
98-8E03-C-LLM**

<b>AIRCRAFT DATA:</b> Hughes 369D	<b>DATE:</b> September 27, 1998
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Homer, AK
<b>INJURIES:</b> Serious - 1	<b>SOURCE:</b> Contract

**Narrative:** On September 27, 1998, at 0825 Alaska daylight time, a Hughes 369D helicopter, N1091P, sustained minor damage to two main rotor blades when they struck a disembarking passenger during a toe-in landing to a remote beach site. The passenger who was struck by the rotating blades sustained serious injuries. The commercial pilot and the one other passenger were not injured. The government flight was being operated on an end use contract by the U.S. Bureau of Land Management to conduct land surveys. The helicopter was owned by Temsco Helicopters, Inc., of Ketchikan, Alaska. The flight was conducted under 14 CFR Part 135, and had departed the Research Motor Vessel (M/V) Nancy H at 0755, to drop the two passengers at a remote beach site. Visual meteorological conditions prevailed at the time of the accident, and a flight plan was filed with the M/V Nancy H. The pilot told the NTSB investigator-in-charge during a telephone interview on September 27 that after completing a toe-in landing, he signaled the passengers that they could exit the helicopter. The first passenger exited off the front of the skids, and walked uphill into the turning rotor blades, sustaining serious injuries to his back and head. The helicopter immediately began to vibrate violently, and the pilot relocated to a landing site and shut down the engine. He stated that he did not turn on his emergency locator transmitter (ELT). At 1130 the U.S. Coast Guard began a search resulting from satellite receipt of an ELT beacon. At 1140 the M/V Nancy H reported the helicopter overdue to the Coast Guard. At 1257 the helicopter was located, and the occupants were rescued at 1329.

**Probable Cause:** The National Transportation Safety Board determines that the probable cause(s) of this accident was: The passenger not following the instructions given by the pilot.

**Contributing Factors:** Contributing factors were the rising terrain and the pilot's diverted attention during the toe-in landing.

**AIRCRAFT ACCIDENT  
00-0E01-A-FNP**

<b>AIRCRAFT DATA:</b> Cessna 185	<b>DATE:</b> June 19, 2000
<b>BUREAU:</b> National Park Service	<b>LOCATION:</b> Talkeetna, AK
<b>INJURIES:</b> Fatalities - 4	<b>SOURCE:</b> Rental

**Narrative:** On June 19, 2000, about 1815 Alaska daylight time, a wheel/ski equipped Cessna 185E airplane, N1589F, was destroyed when it crashed in a remote area of the Denali National Park and Preserve, about 52 miles west of Talkeetna, Alaska, at latitude 62 degrees, 42.489 minutes north, and longitude 151 degrees, 45.385 minutes west. The airplane was being operated as a visual flight rules (VFR) U.S. Government flight by the U.S. Department of the Interior, National Park Service, Talkeetna, Alaska, when the accident occurred. The airplane, provided by Hudson Air Service Inc., Talkeetna, was utilized as an on-demand Title 14 CFR Part 135 flight. The airline transport certificated pilot, and the three passengers received fatal injuries. A VFR flight plan was filed. The flight was conducted to transport a National Park Service ranger, and two volunteer rangers to the Denali National Park base camp, located at 7,200 feet MSL on the Kahiltna glacier, about 48 miles northwest of Talkeetna. The three rangers were to begin mountain patrol operations on Mt. McKinley. The closest official weather observation station is Talkeetna. At 1757, one ranger aboard the airplane contacted the Talkeetna Ranger Station by radio and stated the flight was returning to Talkeetna. About 1800, the pilot contacted an air taxi pilot on the ground at the base camp, and reported that weather conditions had closed in over the Kahiltna glacier, preventing a landing, and he was diverting toward an area west of the base. On June 19, 2000, at 1753, an Aviation Routine Weather Report (METAR) was reporting in part: Wind, 220 degrees (true) at 13 knots, gusts to 21 knots; visibility, 10 statute miles; clouds and sky condition, 2,500 feet scattered, 4,100 feet broken, 4,900 feet overcast; temperature, 55 degrees F; dew point, 44 degrees F; altimeter, 29.68 inHg; remarks, pressure rapidly rising.

**Probable Cause:** The National Transportation Safety Board determines the probable cause(s) of this accident as follows: The pilot's continued flight into known adverse weather conditions and subsequent in-flight break-up.

**Contributing Factors:** Factors in the accident were weather conditions consisting of low ceilings, turbulence, and an occluded front with convective activity, and inadequate oversight of the flight by company management.

**AIRCRAFT ACCIDENT  
00-0F02-A-LLM**

<b>AIRCRAFT DATA:</b> Cessna 337	<b>DATE:</b> July 12, 2000
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Battle Mountain, NV
<b>INJURIES:</b> None	<b>SOURCE:</b> Rental

**Narrative:** On July 12, 2000, at 1845 hours Pacific daylight time, a Cessna 337G, N3273D, landed gear up at the Battle Mountain, Nevada, airport. The airplane was operated by the U.S. Department of the Interior, as a public use airplane under 14 CFR Part 91, and sustained substantial damage. The commercial pilot and one passenger were not injured. Visual meteorological conditions existed for the cross-country flight that had departed the Boise, Idaho, airport at an unknown time, and was scheduled to terminate at Battle Mountain. A company Visual Flight Rules (VFR) flight plan had been filed. In an interview with a Federal Aviation Administration inspector, the pilot stated that he forgot to put the landing gear down. He indicated that because he had kept his airspeed up during the descent, the landing gear warning horn did not activate. He had flown the airplane earlier that day from Battle Mountain to Boise to exchange firefighting crews, and no discrepancies were noted with the landing gear system.

**Probable Cause:** The National Transportation Safety Board determines that the probable cause(s) of this accident was: Failure of the pilot to extend the landing gear, and his failure to follow the published before landing checklist concerning extension of the landing gear.

**Contributing Factors:** None.

**AIRCRAFT ACCIDENT  
00-0F03-C-LLM**

<b>AIRCRAFT DATA:</b> Bell 206 L-1	<b>DATE:</b> August 3, 2000
<b>BUREAU:</b> Bureau of Land Management	<b>LOCATION:</b> Montello, NV
<b>INJURIES:</b> Fatalities - 1    Serious - 1	<b>SOURCE:</b> Contract

**Narrative:** On August 3, 2000, at 1855 hours Pacific daylight time, a Bell 206 L-1, N10864, was destroyed when the helicopter abruptly rolled to the right and impacted terrain during hover after takeoff at Montello, Nevada. The helicopter was operated under 14 CFR Part 91 in support of firefighting activities as a public use aircraft by the U.S. Bureau of Land Management. One passenger was fatally injured and the other passenger was seriously injured. The commercial certificated pilot was not injured. Visual meteorological conditions prevailed and no flight plan was filed for the positioning flight that was destined for Wells, Nevada. There were six ground-based crewmembers affiliated with the operation of the helicopter that witnessed the accident. All of the witnesses were together as a group about 50 feet south of the departing helicopter. The witnesses provided a consistent opinion that the helicopter was clear of the ground, in a stable hover at 2 to 5 feet above the ground, when it suddenly rolled to the right and crashed. Two witnesses described the rolling maneuver as "hard" and "violent." There was some disagreement about whether the helicopter rolled to the right until inverted and then bounced back to the left back up on its skids, versus rolling to the right one complete revolution to end up upright. Some commented that the flying dirt and debris from the helicopter was confusing. None of the witnesses described the maneuver as a yawing or spinning maneuver, but rather as a roll about the longitudinal axis. The pilot reported that between 1500 and 1830 there was a windstorm with wind gusts of 50-60 knots associated with a thunderstorm that passed west of their location. He tied down the main and tail rotor blades before the windstorm, and by 1845, the weather was clear enough to return to Wells and the wind had decreased to 5-10 knots. He preflighted the helicopter and untied the rotors. He said that the start and pretakeoff checks were normal. He performed a normal hydraulics-off control check. He "picked the helicopter up" to a 3-foot hover height and glanced down at the engine torque gauge. Suddenly, the helicopter did a "violent snap roll" to the right coming to rest upright. He estimated the whole event only lasted about 1/4 second. The pilot added that there was no yaw associated with the event, it was pure roll, and the engine operated "fine" the entire time. The engine was still running after the accident and he had to shut it off manually. There was no change in audible tone prior to the roll. He did not recall any movement or abnormal feedback in the antitorque pedals or the cyclic and collective controls prior to the accident. The pilot emphasized the violent nature of the roll. It was the pilot's opinion that even an abrupt, full right cyclic input could not have produced the rate of roll he experienced. The rotor blade tie-down retention straps were found stowed inside the cabin after the accident.

**Probable Cause:** The National Transportation Safety Board determines that the probable cause(s) of this accident was: The loss of control in hovering flight and impact with terrain for undetermined reasons.

**Contributing Factors:** None.

## Section III

### Accident Statistics and Trends - Introduction

This section of the review presents a statistical overview of aviation accidents, incidents, and flight times within the Department of the Interior (DOI). Whenever possible, total flight times and accidents are subdivided into fleet, contract, and rental aircraft. Historical records from previous years are also included for comparison.

The statistics are divided into two major parts. The first reflects DOI accident history and rates from FY 75 to FY 01. Several comparisons are presented using data collected from FY 97 through FY 01. The last section reviews events reported through the SAFECOM reporting system.

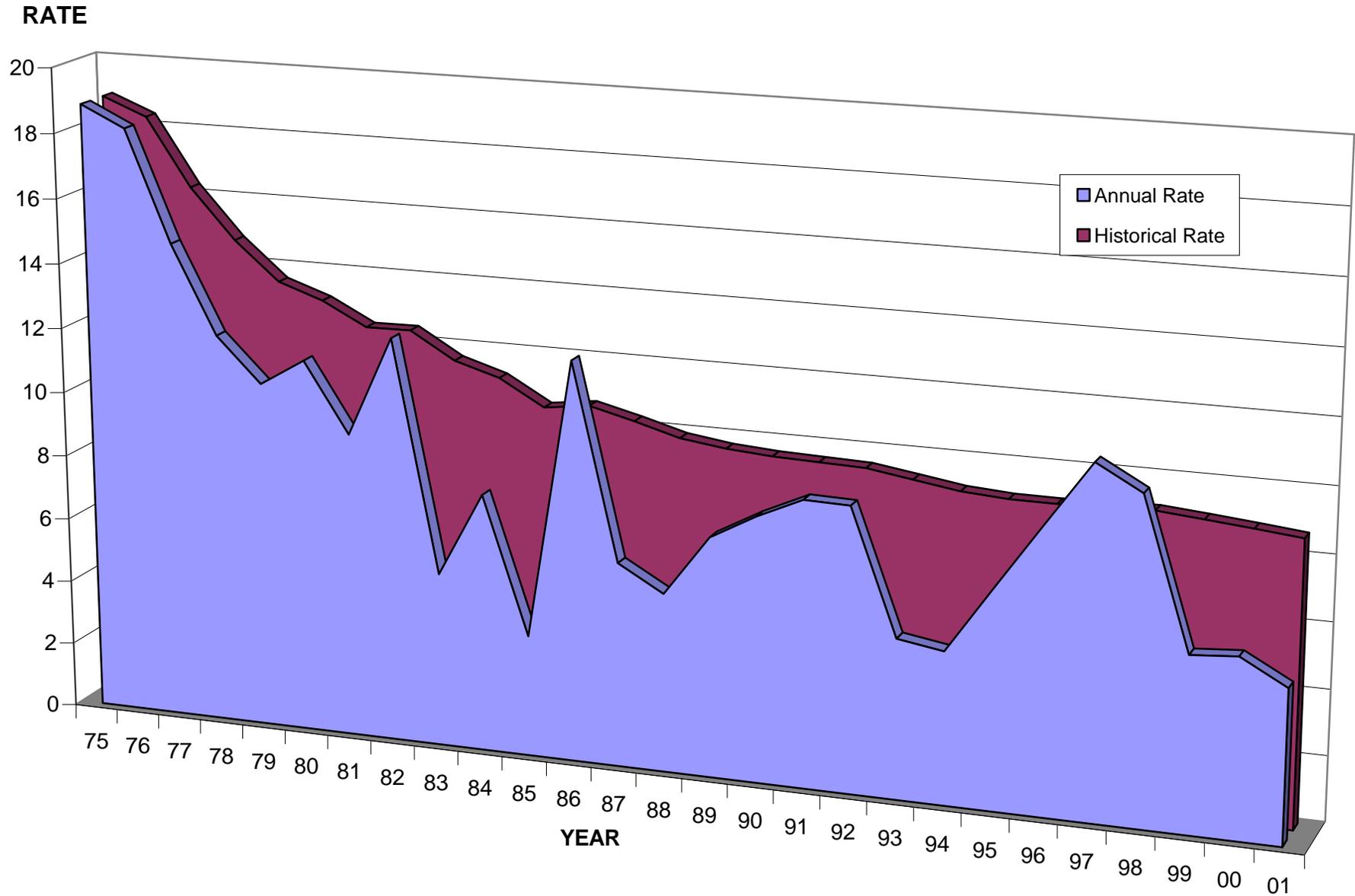
All accident rates in this report are based on 100,000 flight hours. They are determined by dividing the number of accidents by the flight hours, then multiplying that number by 100,000. The historical average is determined by dividing the total number of accidents by the total flight hours recorded since FY 75, then multiplying that number by 100,000.

#### Historical Records from FY 75 to FY 01

In FY 01 the Department of the Interior flew 84,976.0 hours. Interior recorded only four statistically accountable aircraft accidents for an annual rate of 4.71 per 100,000 flight hours.

Graph 1/Table 1	ACCIDENT RATE HISTORY. A comparison of annual and historical accident rates from FY 75 through FY 01
Graph 2/Table 2	TOTAL FLIGHT HOURS. A comparison of annual flight hours which are subdivided according to the source (Fleet, Rental, and Contract). The historical column reflects cumulative flight times.
Graph 3/Table 3	FATAL ACCIDENT RATE HISTORY. A summary of annual and historical rates from FY 75 through FY 01
Graph 4/Table 4	FATALITY RATE HISTORY. A comparison of annual and historical fatality rates from FY 75 through FY 01
Graph 5/Table 5	BUREAU FLIGHT HOURS. A comparison of bureau flight hours for FY 01 BUREAU STATISTICS. Bureau flight hours and accidents from FY 97 to FY 01
Graph 6	SOURCE COMPARISONS. A comparison of flight hours, accidents, and accident rates by source (Fleet, Rental, and Contract) from FY 97 to FY 01
Graph 7	AIRCRAFT COMPARISONS. A comparison of airplane and helicopter accidents and accident rates from FY 97 to FY 01  Graph 7a - AIRPLANE PHASE OF FLIGHT COMPARISONS. A comparison of number of airplane accidents per phase of flight FY 97 to FY 01  Graph 7b- HELICOPTER PHASE OF FLIGHT COMPARISONS. A comparison of number of helicopter accidents per phase of flight from FY 97 to FY 01
Graph 8	FATAL ACCIDENT COMPARISONS. A comparison of airplane and helicopter fatal accidents and fatal accident rates from FY 97 to FY 01

# ACCIDENT RATE HISTORY



	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01
Annual Rate	18.87	18.22	14.81	12.10	10.73	11.57	9.41	12.49	5.36	7.96	3.73	12.30	6.29	5.50	7.37	8.14	8.78	8.74	4.91	4.68	6.72	8.73	10.71	9.95	5.37	5.48	4.71
Historical Rate	18.87	18.32	16.25	14.73	13.56	13.09	12.39	12.41	11.60	11.19	10.41	10.59	10.25	9.86	9.68	9.58	9.53	9.49	9.28	9.07	8.98	8.97	9.03	9.06	8.94	8.81	8.67

Graph 1

# ACCIDENT RATE HISTORY

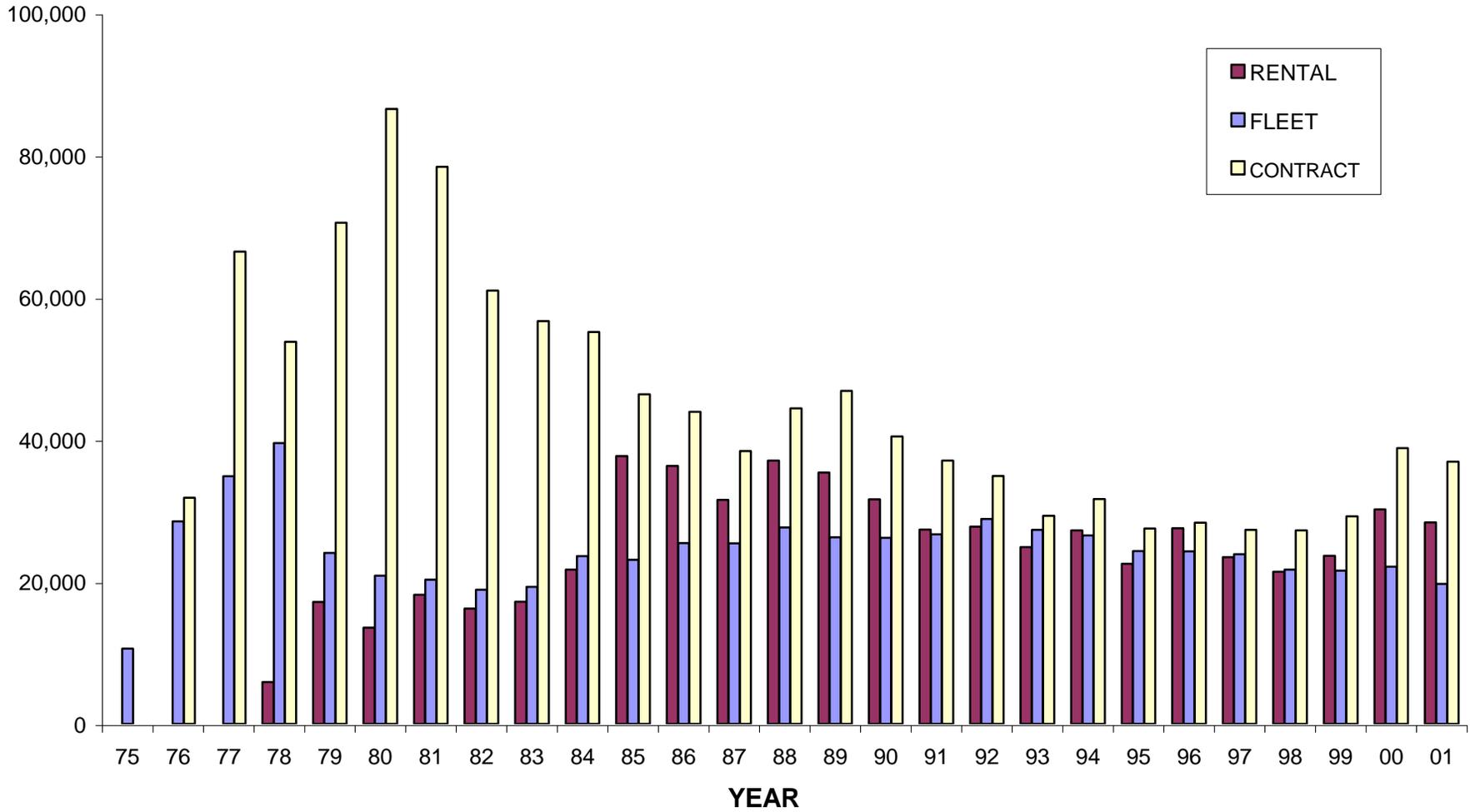
Year	Rental		Fleet		Contract		Total (Annual)			Total (Historical)		
	Accident	Rate	Accident	Rate	Accident	Rate	Accident	Accident *	Rate	Accident	Accident*	Rate
75	0	0.00	2	18.87	n/a**	n/a	2	4	18.87	2	4	18.87
76	0	0.00	3	10.51	8	25.13	11	7	18.22	13	11	18.32
77	0	0.00	4	11.47	11	16.56	15	4	14.81	28	15	16.25
78	0	0.00	4	10.12	8	14.87	12	2	12.10	40	17	14.73
79	1	5.82	3	12.46	8	11.34	12	6	10.73	52	23	13.56
80	0	0.00	6	28.75	8	9.24	14	2	11.57	66	25	13.09
81	1	5.50	1	4.92	9	11.48	11	1	9.41	77	26	12.39
82	1	6.16	6	31.79	5	8.20	12	1	12.49	89	27	12.41
83	1	5.81	0	0.00	4	7.06	5	1	5.36	94	28	11.60
84	2	9.20	1	4.23	5	9.06	8	2	7.96	102	30	11.19
85	1	2.65	1	4.32	2	4.31	4	4	3.73	106	34	10.41
86	2	5.51	4	15.72	7	15.94	13	3	12.30	119	37	10.59
87	0	0.00	3	11.80	3	7.81	6	0	6.29	125	37	10.25
88	3	8.10	2	7.23	1	2.25	6	0	5.50	131	37	9.86
89	3	8.48	2	7.61	3	6.40	8	2	7.37	139	39	9.68
90	5	15.82	1	3.82	2	4.94	8	0	8.14	147	39	9.58
91	6	21.93	2	7.50	0	0.00	8	1	8.78	155	40	9.53
92	0	0.00	8	27.74	0	0.00	8	0	8.74	163	40	9.49
93	2	8.04	1	3.66	1	3.41	4	2	4.91	167	42	9.28
94	1	3.67	2	7.53	1	3.16	4	0	4.68	171	42	9.07
95	3	13.30	1	4.11	1	3.63	5	1	6.72	176	43	8.98
96	2	7.26	4	16.46	1	3.53	7	0	8.73	183	43	8.97
97	2	8.52	4	16.73	2	7.32	8	0	10.71	191	43	9.03
98	2	9.34	2	9.20	3	11.02	7	1	9.95	198	44	9.06
99	1	4.22	1	4.63	2	6.84	4	1	5.37	202	45	8.94
00	2	6.62	1	4.51	2	5.15	5	0	5.48	207	45	8.81
01	0	0.00	3	15.23	1	2.70	4	0	4.71	211	45	8.67
<b>Total</b>	<b>41</b>	<b>6.78</b>	<b>72</b>	<b>10.88</b>	<b>98</b>	<b>8.38</b>	<b>211</b>	<b>45</b>	<b>8.67</b>			

\* Non-Chargeable accidents

\*\* Contract flight hours not available in 1975.

# TOTAL FLIGHT HOURS

HOURS



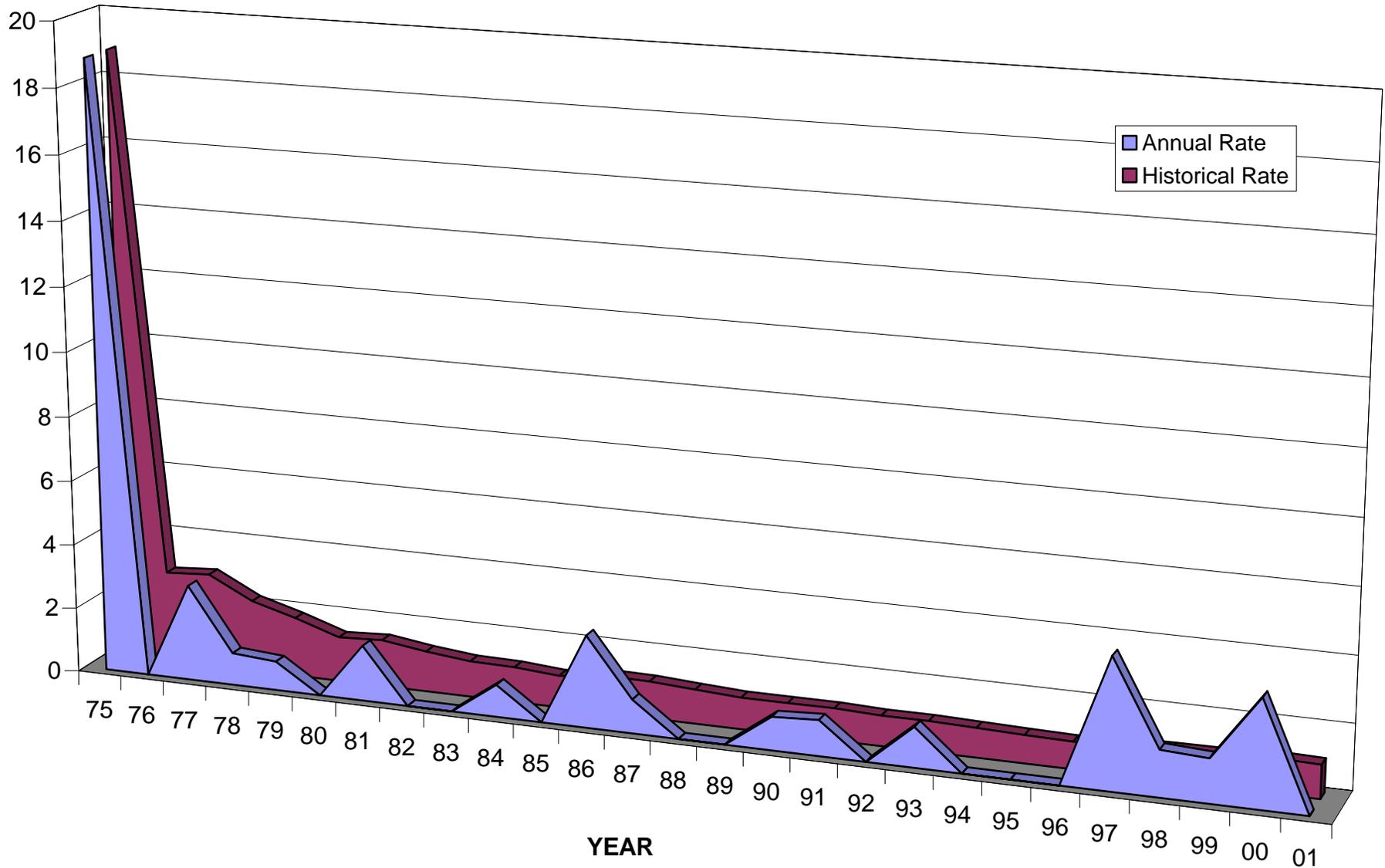
# TOTAL FLIGHT HOURS

Year	Rental	Fleet	Contract	Total (Annual)	Total (Historical)
75	0.0	10,598.8	n/a*	10,598.8	10,598.8
76	0.0	28,523.4	31,833.4	60,356.8	70,955.6
77	0.0	34,865.2	66,442.1	101,307.3	172,262.9
78	5,890.0	39,528.1	53,784.9	99,203.0	271,465.9
79	17,180.8	24,072.7	70,528.1	111,781.6	383,247.5
80	13,551.9	20,865.6	86,515.1	120,932.6	504,180.1
81	18,173.0	20,284.4	78,381.5	116,838.9	621,019.0
82	16,223.5	18,876.4	60,953.0	96,052.9	717,071.9
83	17,193.1	19,286.5	56,694.9	93,174.5	810,246.4
84	21,727.4	23,605.8	55,143.1	100,476.3	910,722.7
85	37,686.3	23,095.5	46,396.4	107,178.2	1,017,900.9
86	36,321.0	25,431.7	43,909.8	105,662.5	1,123,563.4
87	31,514.7	25,408.9	38,397.4	95,321.0	1,218,884.4
88	37,036.9	27,667.3	44,401.7	109,105.9	1,327,990.3
89	35,357.9	26,283.9	46,853.0	108,494.8	1,436,485.1
90	31,603.4	26,188.2	40,462.7	98,254.3	1,534,739.4
91	27,360.9	26,660.7	37,051.5	91,073.1	1,625,812.5
92	27,763.2	28,834.8	34,885.9	91,483.9	1,717,296.4
93	24,890.4	27,317.2	29,288.6	81,496.2	1,798,792.6
94	27,240.4	26,533.5	31,640.8	85,414.7	1,884,207.3
95	22,547.1	24,325.7	27,514.6	74,387.4	1,958,594.7
96	27,530.4	24,300.7	28,328.9	80,160.0	2,038,754.7
97	23,462.5	23,895.7	27,313.0	74,671.2	2,113,425.9
98	21,415.8	21,734.9	27,227.2	70,377.9	2,183,803.8
99	23,645.6	21,573.6	29,205.5	74,424.7	2,258,228.5
00	30,171.6	22,137.6	38,787.7	91,096.9	2,349,325.4
01	28,374.2	19,694.3	36,907.5	84,976.0	2,434,301.4
<b>Total</b>	<b>603,862.0</b>	<b>661,591.1</b>	<b>1,168,848.3</b>	<b>2,434,301.4</b>	

\* Contract flight hours not available in 1975.

# FATAL ACCIDENT RATE HISTORY

RATE



	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01
■ Annual Rate	18.87	0.00	2.96	1.00	0.89	0.00	1.71	0.00	0.00	0.99	0.00	2.84	1.04	0.00	0.00	1.02	1.10	0.00	1.23	0.00	0.00	0.00	4.01	1.42	1.34	3.29	0.00
■ Historical Rate	18.87	2.81	2.90	2.21	1.83	1.38	1.45	1.26	1.11	1.09	0.98	1.16	1.14	1.05	0.97	0.98	0.98	0.93	0.94	0.90	0.86	0.83	0.94	0.96	0.97	1.06	1.02

Graph 3

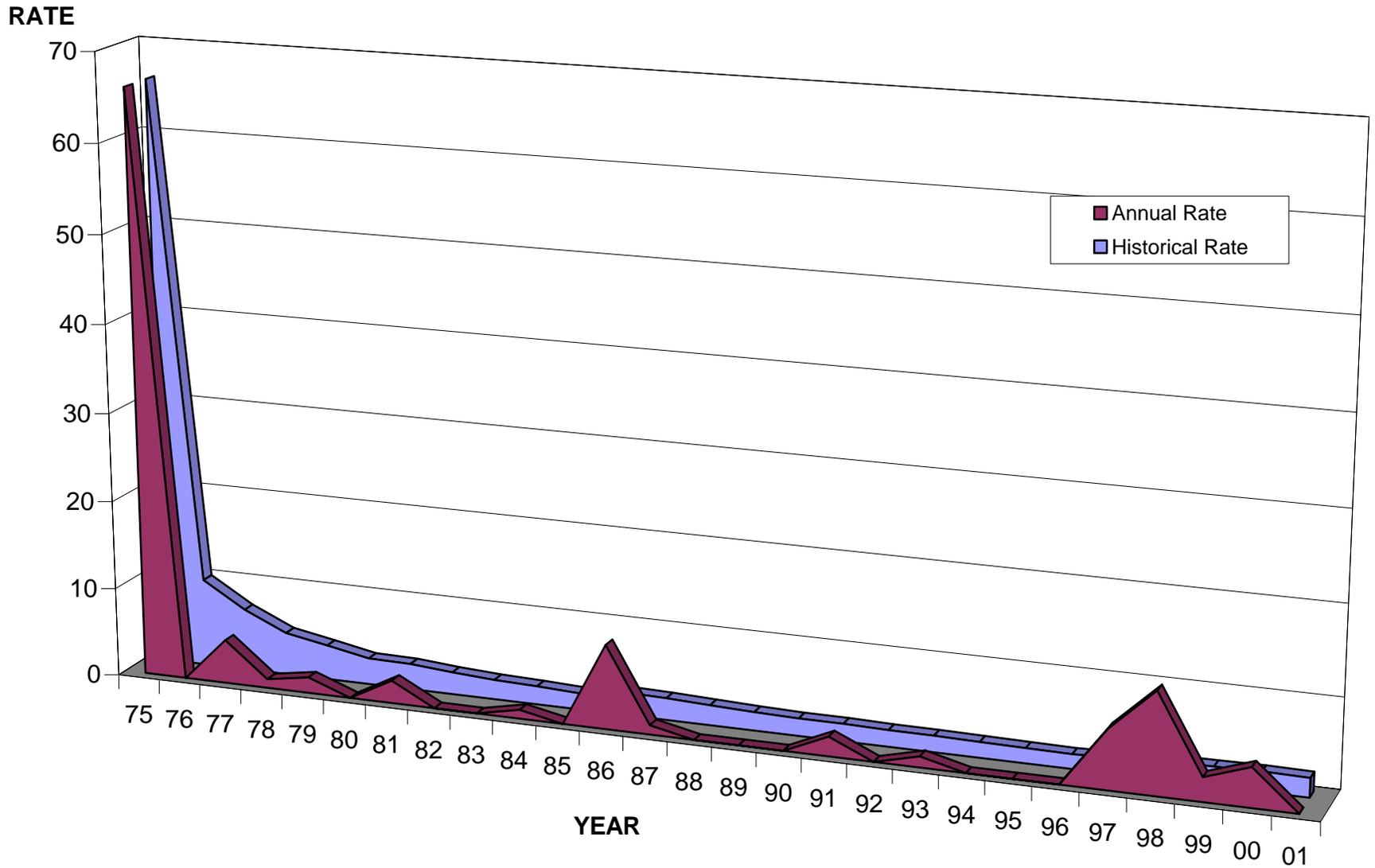
# FATAL ACCIDENT RATE HISTORY

Year	Rental		Fleet		Contract		Total (Annual)			Total (Historical)		
	Accident	Rate	Accident	Rate	Accident	Rate	Accident	Accident *	Rate	Accident	Accident *	Rate
75	0	0.00	2	18.87	0	n/a**	2	1	18.87	2	1	18.87
76	0	0.00	0	0.00	0	0.00	0	3	0.00	2	4	2.81
77	0	0.00	0	0.00	3	4.51	3	0	2.96	5	4	2.90
78	0	0.00	1	2.53	0	0.00	1	1	1.00	6	5	2.21
79	0	0.00	1	4.15	0	0.00	1	0	0.89	7	5	1.83
80	0	0.00	0	0.00	0	0.00	0	2	0.00	7	7	1.38
81	0	0.00	0	0.00	2	2.55	2	0	1.71	9	7	1.45
82	0	0.00	0	0.00	0	0.00	0	0	0.00	9	7	1.26
83	0	0.00	0	0.00	0	0.00	0	0	0.00	9	7	1.11
84	1	4.60	0	0.00	0	0.00	1	1	0.99	10	8	1.09
85	0	0.00	0	0.00	0	0.00	0	1	0.00	10	9	0.98
86	1	2.75	0	0.00	2	4.55	3	0	2.84	13	9	1.16
87	0	0.00	0	0.00	1	2.60	1	0	1.04	14	9	1.14
88	0	0.00	0	0.00	0	0.00	0	0	0.00	14	9	1.05
89	0	0.00	0	0.00	0	0.00	0	0	0.00	14	9	0.97
90	1	3.16	0	0.00	0	0.00	1	0	1.02	15	9	0.98
91	1	3.65	0	0.00	0	0.00	1	0	1.10	16	9	0.98
92	0	0.00	0	0.00	0	0.00	0	0	0.00	16	9	0.93
93	1	4.02	0	0.00	0	0.00	1	2	1.23	17	11	0.94
94	0	0.00	0	0.00	0	0.00	0	0	0.00	17	11	0.90
95	0	0.00	0	0.00	0	0.00	0	1	0.00	17	12	0.86
96	0	0.00	0	0.00	0	0.00	0	0	0.00	17	12	0.83
97	0	0.00	1	4.18	2	7.32	3	0	4.01	20	12	0.94
98	1	4.67	0	0.00	0	0.00	1	0	1.42	21	12	0.96
99	1	4.22	0	0.00	0	0.00	1	0	1.34	22	12	0.97
00	1	3.31	0	0.00	2	5.15	3	0	3.29	25	12	1.06
01	0	0.00	0	0.00	0	0.00	0	0	0.00	25	12	1.02
<b>Total</b>	<b>8</b>	<b>1.32</b>	<b>5</b>	<b>0.75</b>	<b>12</b>	<b>1.02</b>	<b>25</b>	<b>12</b>	<b>1.02</b>			

\* Non-chargeable fatal accidents.

\*\* Contract flight hours not available in 1975.

# FATALITY RATE HISTORY



	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01
Annual Rate	66.0	0.00	4.94	1.00	1.79	0.00	2.56	0.00	0.00	0.99	0.00	9.46	1.04	0.00	0.00	0.00	2.20	0.00	1.23	0.00	0.00	0.00	6.69	11.3	2.68	4.39	0.00
Historical Rate	66.0	9.87	6.97	4.79	3.91	2.98	2.89	2.51	2.22	2.08	1.86	2.58	2.46	2.26	2.09	1.95	1.97	1.86	1.83	1.75	1.68	1.62	1.80	2.11	2.12	2.21	2.13

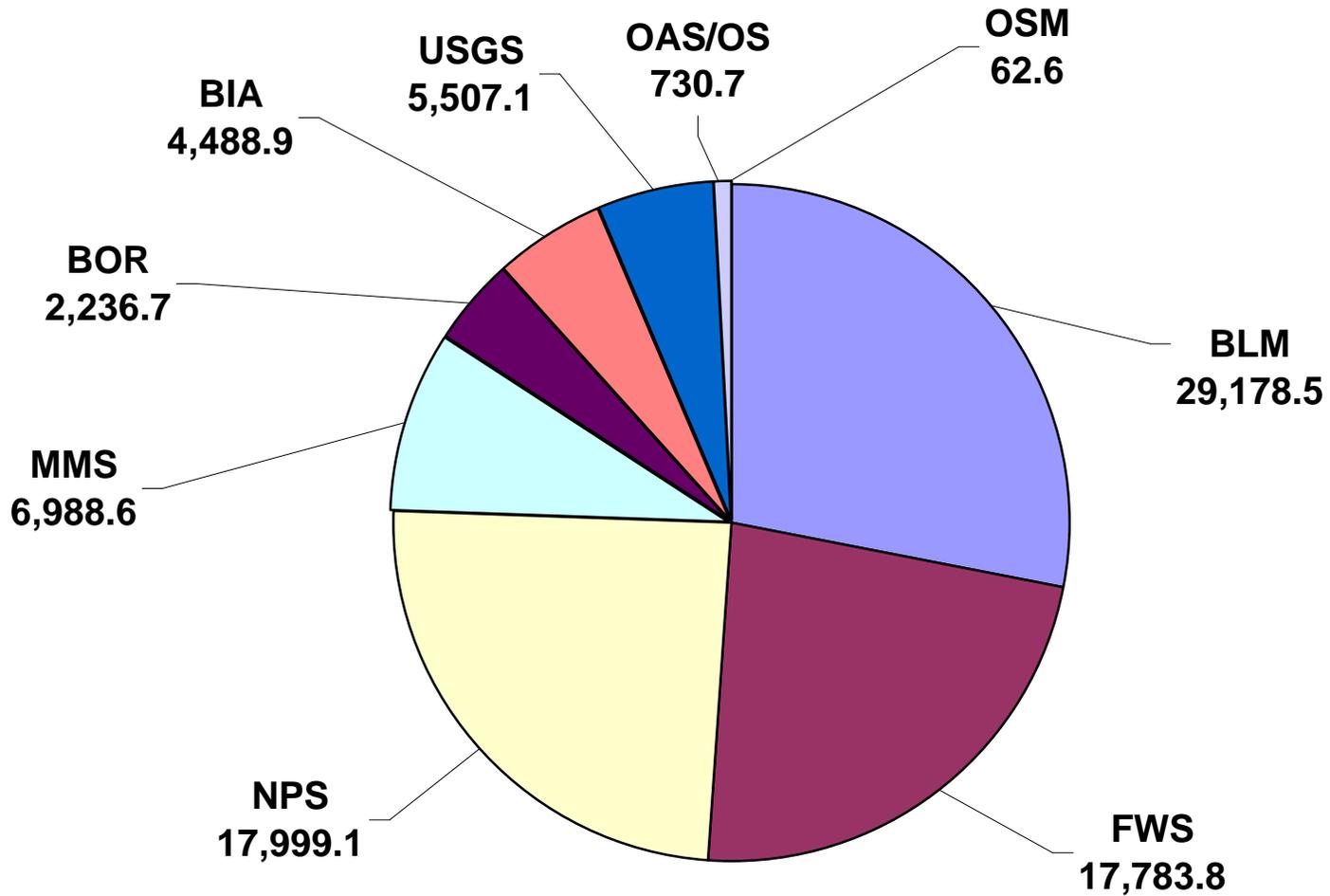
# FATALITY RATE HISTORY

Year	Rental		Fleet		Contract		Total (Annual)			Total (Historical)		
	Fatalities	Rate	Fatalities	Rate	Fatalities	Rate	Fatalities	Fatalities*	Rate	Fatalities	Fatalities*	Rate
75	0	0.00	7	66.04	0	n/a*	7	3	66.04	7	3	66.04
76	0	0.00	0	0.00	0	0.00	0	13	0.00	7	16	9.87
77	0	0.00	0	0.00	5	7.52	5	0	4.94	12	16	6.97
78	0	0.00	1	2.53	0	0.00	1	1	1.00	13	17	4.79
79	0	0.00	2	8.31	0	0.00	2	0	1.79	15	17	3.91
80	0	0.00	0	0.00	0	0.00	0	5	0.00	15	22	2.98
81	0	0.00	0	0.00	3	3.82	3	2	2.56	18	24	2.89
82	0	0.00	0	0.00	0	0.00	0	0	0.00	18	24	2.51
83	0	0.00	0	0.00	0	0.00	0	0	0.00	18	24	2.22
84	1	4.60	0	0.00	0	0.00	1	2	0.99	19	26	2.08
85	0	0.00	0	0.00	0	0.00	0	1	0.00	19	27	1.86
86	4	11.01	0	0.00	6	13.66	10	4	9.46	29	31	2.58
87	0	0.00	0	0.00	1	2.60	1	1	1.04	30	32	2.46
88	0	0.00	0	0.00	0	0.00	0	0	0.00	30	32	2.26
89	0	0.00	0	0.00	0	0.00	0	0	0.00	30	32	2.09
90	0	0.00	0	0.00	0	0.00	0	1	0.00	30	33	1.95
91	2	7.31	0	0.00	0	0.00	2	1	2.20	32	34	1.97
92	0	0.00	0	0.00	0	0.00	0	0	0.00	32	34	1.86
93	1	4.02	0	0.00	0	0.00	1	4	1.23	33	38	1.83
94	0	0.00	0	0.00	0	0.00	0	0	0.00	33	38	1.75
95	0	0.00	0	0.00	0	0.00	0	1	0.00	33	39	1.68
96	0	0.00	0	0.00	0	0.00	0	0	0.00	33	39	1.62
97	0	0.00	1	4.18	4	14.65	5	2	6.69	38	41	1.80
98	8	37.36	0	0.00	0	0.00	8	1	11.36	46	42	2.11
99	2	8.45	0	0.00	0	0.00	2	0	2.68	48	42	2.12
00	3	9.94	0	0.00	1	2.57	4	2	4.39	52	44	2.21
01	0	0.00	0	0.00	0	0.00	0	0	0.00	52	44	2.13
<b>Total</b>	<b>21</b>	<b>3.47</b>	<b>11</b>	<b>1.66</b>	<b>20</b>	<b>1.71</b>	<b>52</b>	<b>44</b>	<b>2.13</b>			

\* Non-DOI fatalities associated with DOI aircraft accidents.

\*\* Contract flight hours not available in 1975.

# BUREAU FLIGHT HOURS FY 01



Total flight hours - 84,976.0

# BUREAU STATISTICS

## 5 YEAR HISTORY

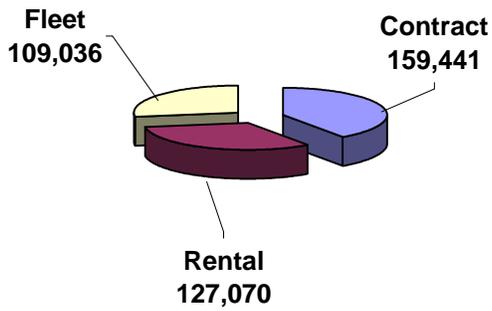
Bureau	Statistic	FY 97	FY 98	FY 99	FY 00	FY01	TOTAL
BLM	Hours	21,688.0	17,959.0	20,780.8	31,422.1	29,178.5	121,028.4
	Accidents	2	3(1)	2(1)	3	2	12(2)
	Rate	9.2	16.7	9.6	9.5	6.8	9.9
FWS	Hours	17,504.7	18,315.9	17,209.5	19,117.9	17,783.8	89,931.8
	Accidents	2	2	1	1	1	7
	Rate	11.4	10.9	5.8	5.2	5.6	7.8
NPS	Hours	17,419.6	16,742.3	18,177.5	19,283.1	17,999.1	89,621.6
	Accidents	2	0	0	1	1	4
	Rate	11.5	0.0	0.0	5.2	5.6	4.5
MMS	Hours	6,131.5	6,399.1	6,537.2	7,574.9	6,988.6	33,631.3
	Accidents	0	0	0	0	0	0
	Rate	0.0	0.0	0.0	0.0	0.0	0.0
BOR	Hours	3,045.6	2,626.0	2,978.6	2,510.8	2,236.7	13,397.7
	Accidents	0	1	0	0	0	1
	Rate	0.0	38.1	0.0	0.0	0.0	7.6
BIA	Hours	3,721.8	3,145.8	4,083.5	5,714.3	4,488.9	21,154.3
	Accidents	1	1	0	0	0	2
	Rate	26.9	31.8	0.0	0.0	0.0	9.5
USGS	Hours	4,571.4	4,629.3	4,004.2	4,769.2	5,507.1	23,481.2
	Accidents	1	0	0	0	0	1
	Rate	21.8	0.0	0.0	0.0	0.0	4.3
OAS/OS	Hours	539.3	470.6	619.5	662.0	730.7	3,022.1
	Accidents	0	0	1	0	0	1
	Rate	0.0	0.0	161.4	0.0	0.0	33.1
OSM	Hours	49.3	89.9	33.9	42.6	62.6	278.3
	Accidents	0	0	0	0	0	0
	Rate	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	Hours	74,671.2	70,377.9	74,424.7	91,096.9	84,976.0	395,546.7
	Accidents	8	7(1)	4(1)	5	4	28(2)
	Rate	10.7	9.9	5.3	5.5	4.7	7.1

( ) Indicates non-accountable accidents or non-chargeable accidents.

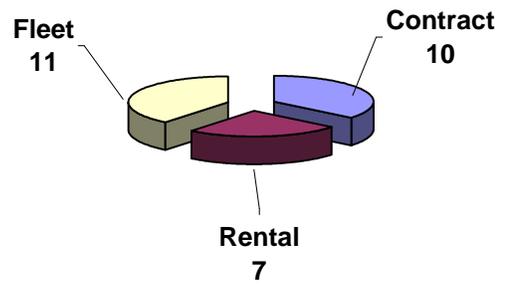
# SOURCE COMPARISONS

## FY 97 - FY 01

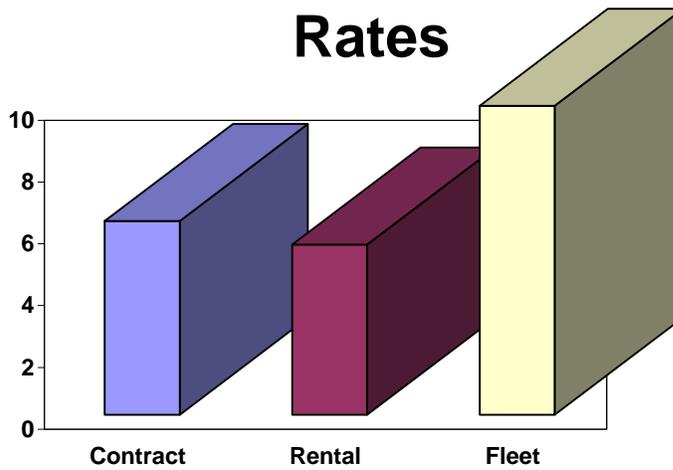
### Hours



### Accidents



### Rates



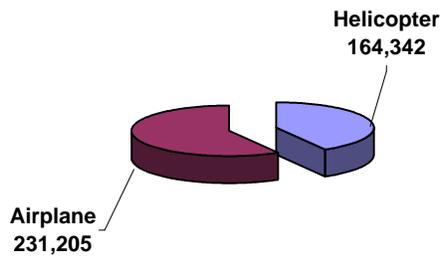
Accident Rate per 100,000 flight hours

Contract = 6.27  
Rental = 5.50  
Fleet = 10.08

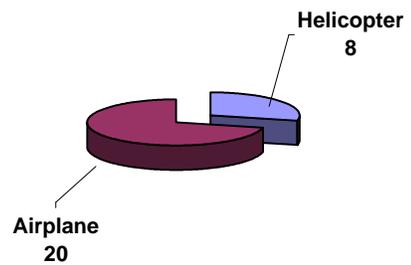
# AIRCRAFT COMPARISONS

## FY 97 - FY 01

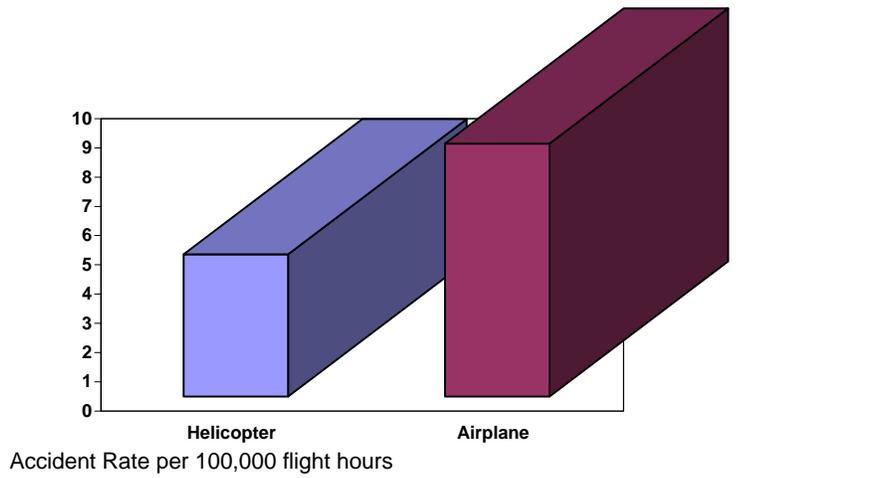
### Hours



### Accidents

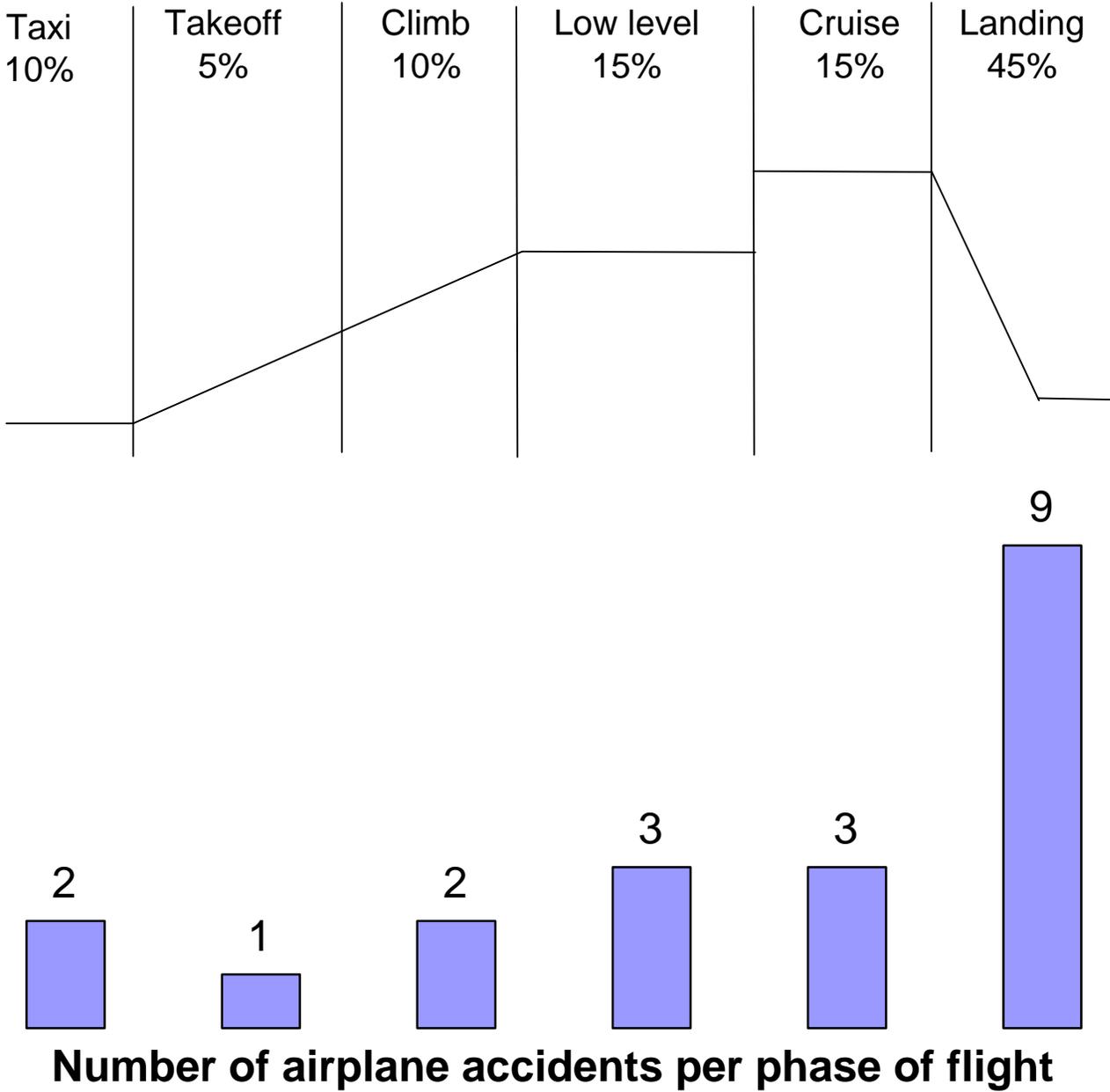


### Rates

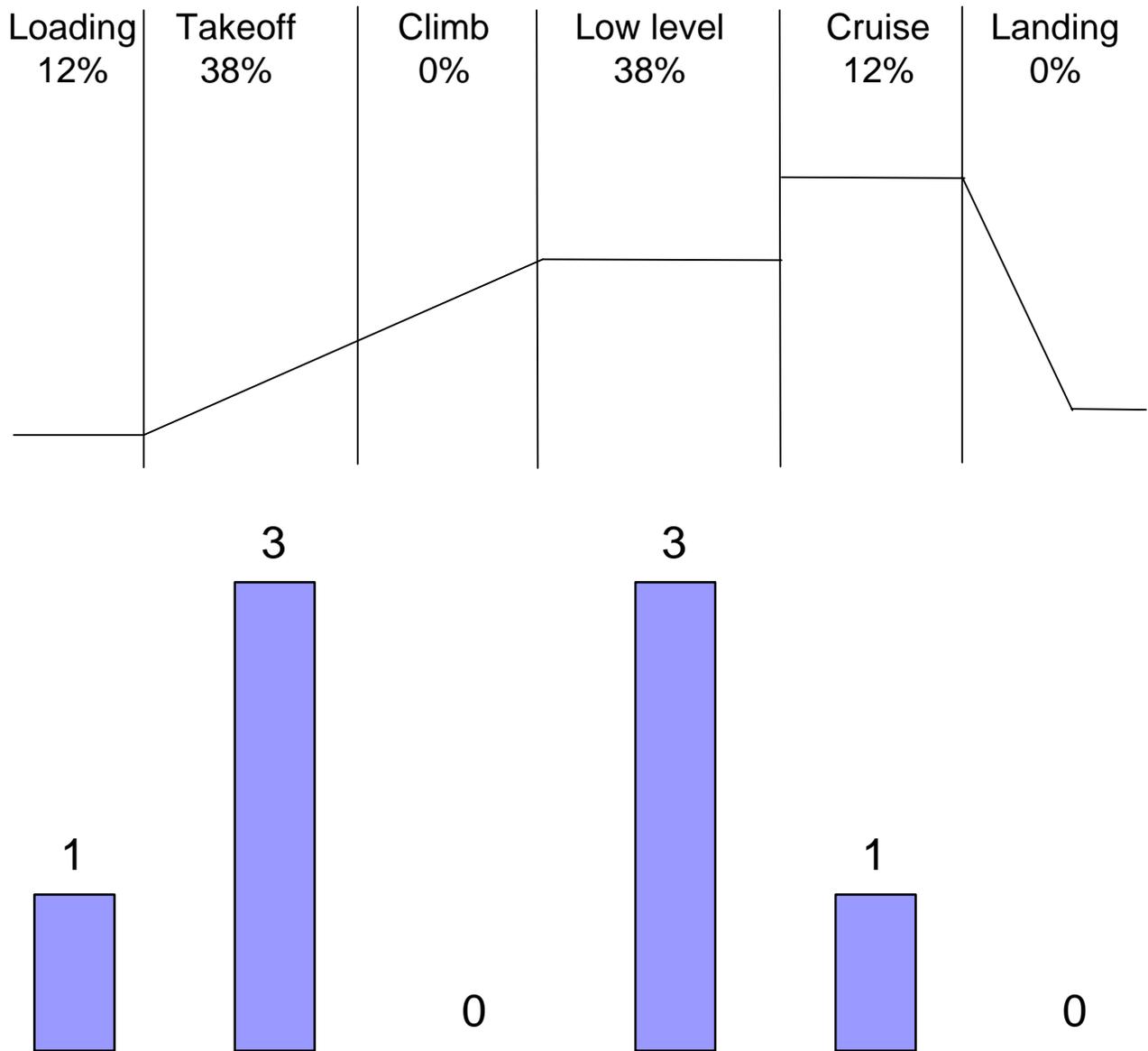


Airplane = 8.65  
Helicopter = 4.86

# Airplane Phase of Flight Comparisons FY 97 - FY 01



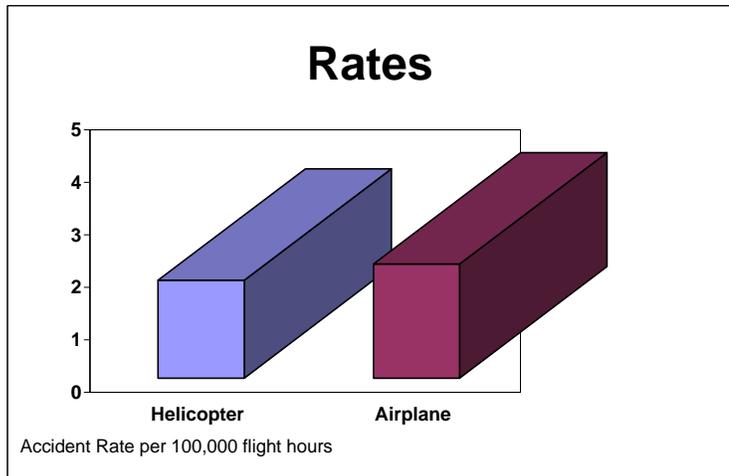
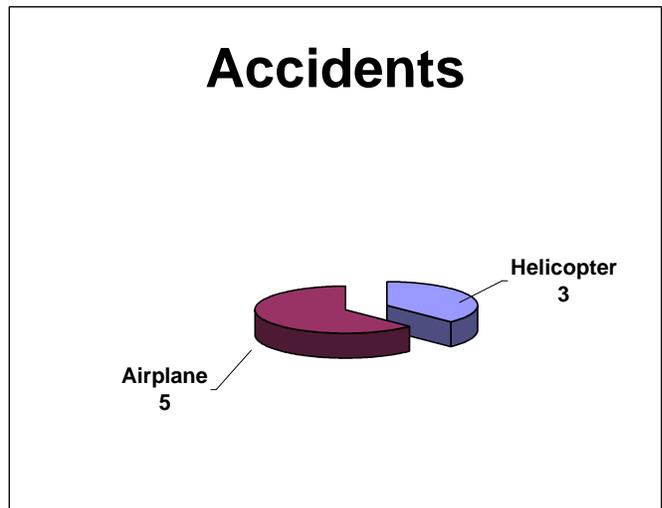
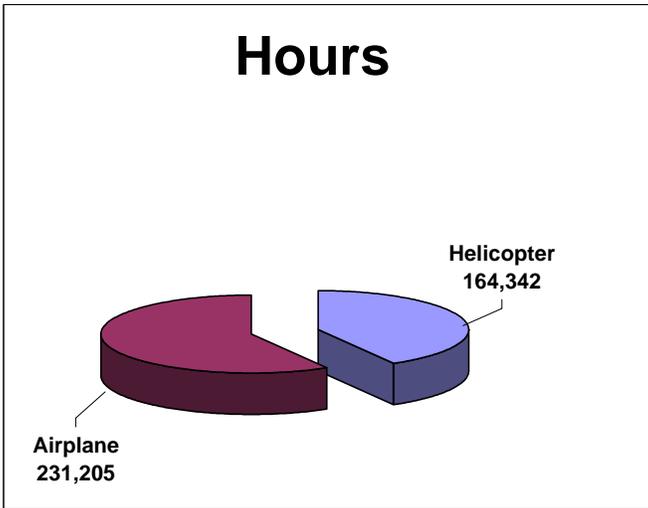
# Helicopter Phase of Flight Comparisons FY 97 - FY 01



**Number of helicopter accidents per phase of flight**

# FATAL ACCIDENT COMPARISONS

## FY 97 - FY 01



Airplane = 2.2  
Helicopter = 1.8

## Section IV

### SAFECOM

#### Department of the Interior's Hazard Identification and Reporting System

Aviation Safety programs come in all shapes and sizes. However, all of these programs can benefit from an effective hazard identification and reporting system. In the case of federal agencies, a hazard identification and reporting program is mandated by 29 CFR 1960.28. To fulfill that requirement, the Department of the Interior (DOI) established a hazard reporting system referred to as the Aviation Safety Communique or Safecom system for short, for the identification of hazardous conditions in the natural resources aviation environment. Improvements in technology finally enabled the Safecom system to be adapted to its current form as a web-based system, which resulted in a simplified process for reporting and a marked increase in submissions to the database, DOI's Safecom database currently consists of two primary sections: the "protected side," which is used by key DOI Bureau and Office of Aircraft Services (OAS) managers for hazard identification and associated corrective action(s); and the "public side," which enables any user to electronically query the database and retrieve Safecom data for trend analysis or background information purposes. DOI's web-based Safecom system now contains all reports submitted via electronic format to OAS since October 1, 1994.

**Purpose.** The purpose of the Safecom system and the submission form is to allow users to report anything that has the potential to adversely affect aviation operations. Although maintenance problems, airspace conflicts, and flight following issues are some of the more commonly reported topics, the Safecom system is also available to report human factors issues such as a loss of situational awareness, exceeding crew rest, or breakdowns in crew resource management (CRM). Safecom reports are not used in any administrative or punitive action against either the subject of a report or a submitter. However, if situations being reported are subsequently verified by an independent reporting source, corrective measures may be taken.

Once Safecom reports are received by OAS's Aviation Safety Office, the information is either entered into the database manually (for reports received via mail) or prepared for posting to and subsequent retrieval from the public side of the system.

**Who can submit reports?** A commonly held perception is that the Safecom system is to be used only by government employees. However, we encourage the use of the system by anyone engaged in DOI aviation activities that either observes or identifies a hazard.

**How do you submit reports?** Safecom reports may be submitted in any manner that suits the sender, via the web at [www.oas.gov](http://www.oas.gov), by phone (1-888-4MISHAP), by fax (1-208-387-5830), or by mail.

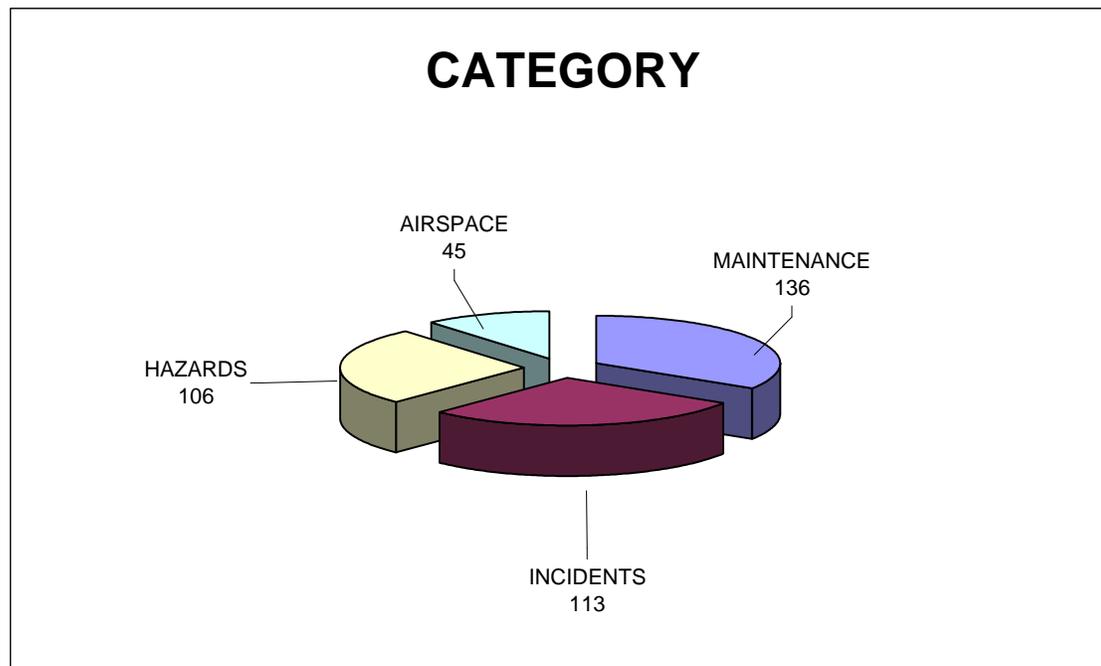
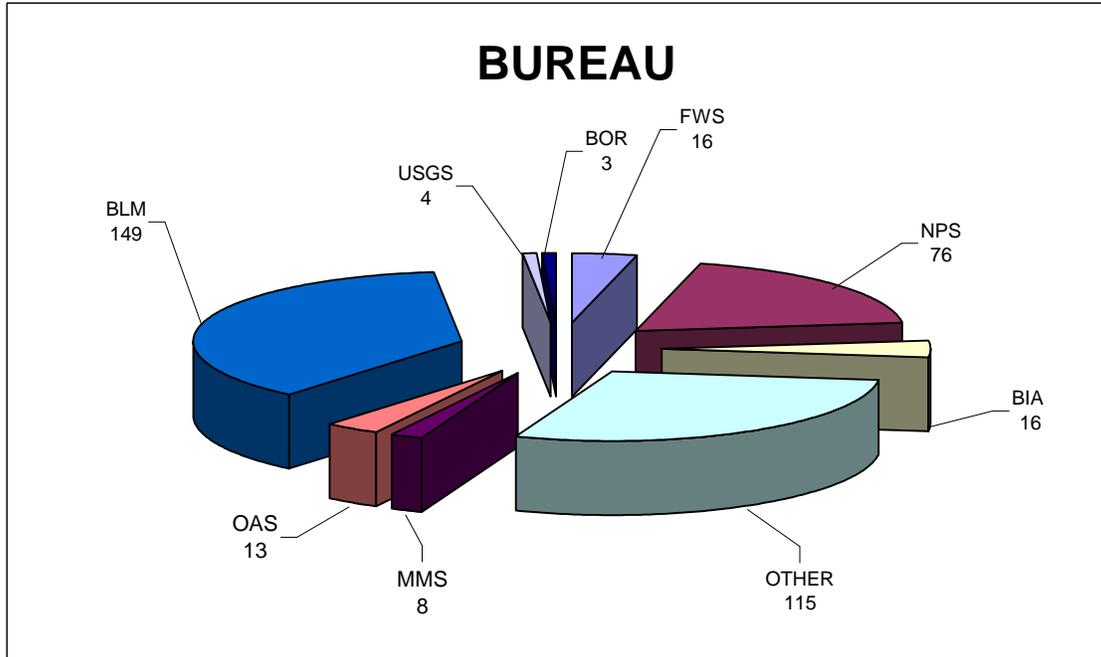
Keep in mind that the most important aspect of a Safecom submission is "what happened" (or what is happening) as opposed to "who is reporting" the event or "who was involved" in the event. To that end, our intentional focus on the "what" is consistent with the identification and correction of the potential hazard at the lowest possible level. That is, the submitter provides a narrative description of the "what" followed by an opportunity to provide comments describing corrective action(s) taken following the reported event. Anonymously filed reports are also acceptable and are treated with the same sense of urgency as Safecom reports that identify the submitter. In practice, greater than 95 percent of all DOI Safecom submitters identify themselves, which suggests a high degree of confidence in the system.

It is important to understand that **WE ARE DEPENDING ON YOU** to let us know what's going on in the field. The OAS Aviation Safety Office received a total of 400 SAFECOM reports in FY 01. The subtotals of the FY 01 reports were: 113 aircraft incidents, 45 airspace conflicts, 106 aviation hazards, and 136 aircraft maintenance deficiencies.

Graph 11	Bureau Summary
Graph 12	Category Summary
Graph 13	Incident Summary
Graph 14	Hazard Summary
Graph 15	Maintenance Summary
Graph 16	Airspace Summary
Graph 17	Seven-Year Trend Analysis

# SAFECOM SUMMARY

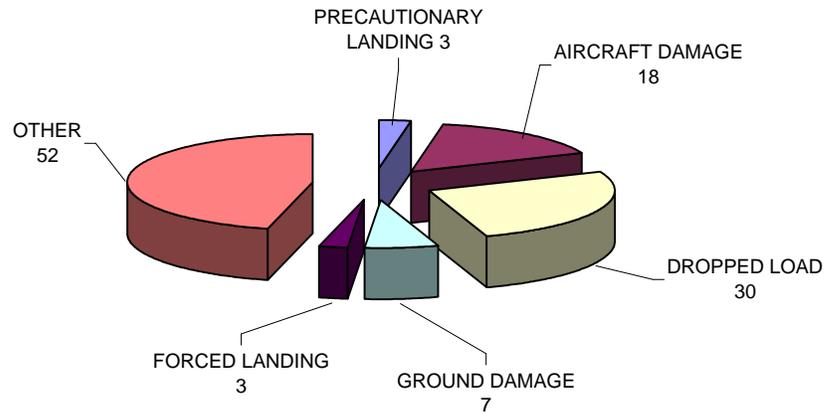
## FY 01



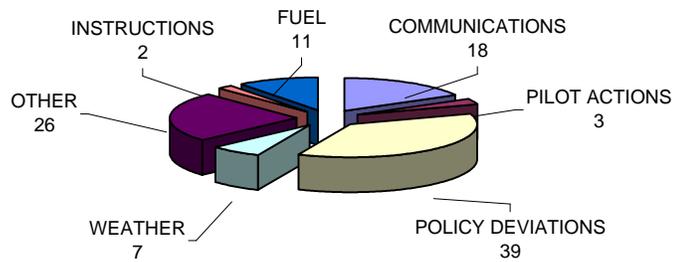
# SAFECOM SUMMARY

## FY 01

### INCIDENT



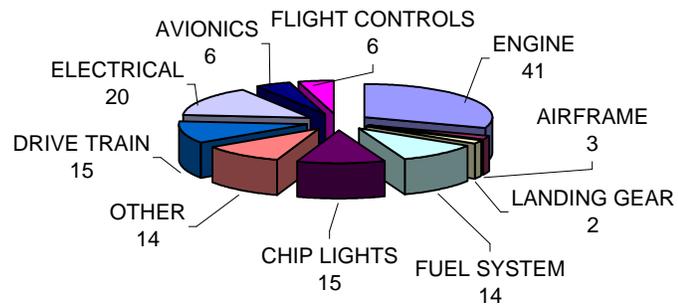
### HAZARD



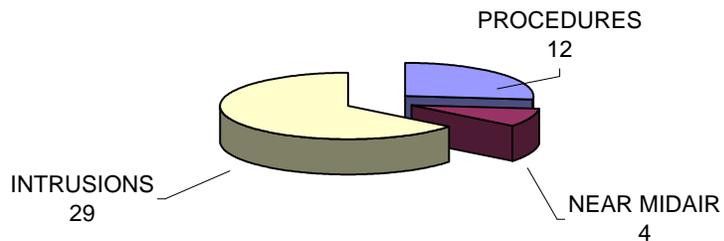
# SAFECOM SUMMARY

## FY 01

### MAINTENANCE

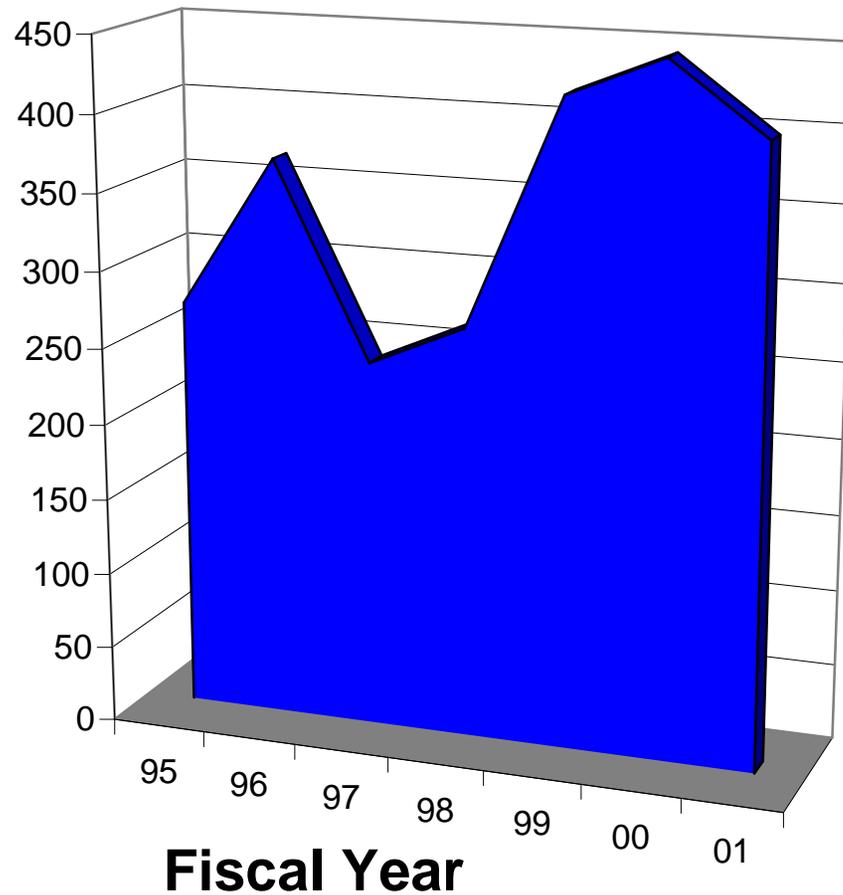


### AIRSPACE



# SEVEN-YEAR TREND ANALYSIS

**SafeComs  
Submitted**



	95	96	97	98	99	00	01
SafeComs	271	369	242	270	420	446	400

## GLOSSARY

**Aircraft accident.** An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

**Aircraft incident.** An occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations.

**Airspace conflict.** A near midair collision, intrusion, or violation of airspace rules.

**Aviation hazard.** Any condition, act, or set of circumstances that exposes an individual to unnecessary risk or harm during aviation operations.

**Fatal injury.** Any injury which results in death within 30 days of the accident.

**Forced landing.** A landing necessitated by failure of engines, systems, or components which makes continued flight impossible, and which may or may not result in damage.

**Incident with potential.** An incident that narrowly misses being an accident and in which the circumstances indicate significant potential for substantial damage or serious injury. Final classification will be determined by the OAS Aviation Safety Manager.

**Maintenance deficiency.** An equipment defect or failure which affects or could affect the safety of operations, or that causes an interruption to the services being performed.

**Non-chargeable accidents.** Accidents in which DOI was not exercising operational control over the aircraft at the time of the accident but in which DOI employees or DOI-procured aircraft were involved.

**Operator.** Any person who causes or authorizes the operation of an aircraft, such as the owner, leasee, or bailee of an aircraft.

**Precautionary landing.** A landing necessitated by apparent impending failure of engines, systems, or components which makes continued flight inadvisable.

**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) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

## Glossary

**Substantial damage.** Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wing tips are not considered "substantial damage" for the purpose of 49 CFR Part 830.