United States Department of Agriculture

Forest Service

FY 2007

Aviation Safety Summary

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Boise, ID

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NOTE: Formulas used: Industry standard “per 100,000 hours flown”

Accident Rate = Number of accidents divided by the number of hours flown times 100,000.

Fatal Accident Rate = Number of fatal accidents divided by the number of hours flown times 100,000.

Fatality Rate = Number of fatalities divided by the number of hours flown times 100,000.

Departure Accident Rate = Number of accidents divided by the number of departures times 100,000

Executive Summary

In FY 2007 the U.S. Forest Service experienced higher than average loss due to aviation mishaps. This follows a five year trend that indicates increasing risk associated with higher accident rates.

USFS Aviation Risk Management program is based on the philosophy that all aircraft mishaps are preventable and that mishap prevention is an inherent function of management. The attainment of zero aviation accident/incident occurrence is our ultimate goal.

"Nothing we do is more important than the safety and health of every Forest Service employee!"
Abigail Kimbell, Chief, USDA Forest Service

Risk Management Program Objective:

- ✓ The objectives of Aviation Risk Management and Training Systems are in keeping with the most modern approaches to the safe management of complex systems. The techniques employed by the program members are based on critical thinking and the systematic oversight of existing accident prevention programs. Products include:
  - Safety Management Systems to achieve high standards of efficiency and effectiveness.
  - Aviation Accident Prevention, review and analysis of historical data.
  - Accident Investigation, error analysis, and corrective action plans.
  - Aviation safety training and education for pilots, crews, managers, support personnel and end-users.
  - Doctrinal approach in the direction and guidance of aviation risk management processes.

Interagency Cooperation to Reduce Aviation Mishaps

- ✓ Success in aviation safety is a result of coordinated efforts with cooperators and vendors who provide approximately 90% of all Forest Service aviation services.
  - The Forest Service is the leading federal agency working with the FAA on implementing Safety Management Systems that target a reduction in the number of accidents experienced by aircraft vendors that service our natural resource missions.

  - Interagency Aviation Program Risk Assessments have been completed for 2008 fire suppression operation of Airtankers, SEATS, Aerial Supervision, and Helicopters and for FS aviation operations in Infra-Red Surveillance, Forest Health Protection and the Rocky Mountain Research Station.

Training Systems That Achieve Safety Objectives:

- ✓ Training is managed through a system of resources including basic Interagency aviation courses, university level education, and NWCG sanctioned skills based training for all FS aviation users.

Mishap Trends:

- ✓ The Branch of Aviation Risk Management monitors safety data, hazard reports and mishaps in its effort to identify hazardous trends. We have completed development of an Aviation Accident Database, which will support accident trend analysis, and the identification of Human Factors issues. The database will be housed within the SHIPS program managed by the FS Office of Occupational Safety and Health. Beta testing is occurring with data entry planned for this spring.

  - USFS fleet aircraft have not had an accident in 5 years. There have not been any fatalities in fleet operations for 12 years.
  - Region 10 celebrated 10 years of accident free flying in 2007.
  - The large Airtanker program, although reduced in scope, has been accident free for 5 years. This is the longest span between accidents in 20 years.
  - Fixed wing contract operations have generally remained the same from the previous 5 year period, however the accident rate increased from 2.54 to 4.51.
  - Helicopter contract flight hours were elevated 2.3% above average while the current 5-year accident rate has increased by 9.8%.
  - The average Forest Service aviation accident rate has continued in decline over the past 20 years. Beginning with a 5 year average rate of **8.7**, the average rate bottomed in a mid-term low of 5.2 then began the current upward trend in the most recent 5 year span, averaging **5.7** accidents per 100,000 flight hours.
  - All of the accidents occurred supporting fire suppression activities, including four helicopter longline missions, 2 SEAT's, and one fixed-wing reconnaissance aircraft. Five of the 7 accidents in FY 2007 occurred within an 18-day period of high pace operations.
  - The current fatality rate is 1.16, which is below the 10-year average of 2.17.
  - The Forest Service had 620 SAFECOM reports; as a leading indicator of hazards this is 14% below the average of 714 reports.

Aviation Safety Accomplishments

Accomplishments achieved in aviation safety in FY 2007 include the following:

Safety Initiatives:

- Coordinated Interagency Aviation Safety Alerts with AMD (3)
- FS Safety Alerts (1)
- Coordinated Interagency Technical Bulletins (3)
- Initiated Interagency Lessons Learned Bulletins (4)
- Completed Monthly Safecom summaries (3)
- Airwards (1)
- Coordinated investigation teams on 7 accidents and 4 incidents with potential
- Continued to promote System Safety and Risk Assessment program with DOI agencies and AMD.
- Revised Single Engine Airtanker (SEAT) Risk Assessment
- Recommended an increase in maintenance safety standards in the SEAT contracts.
- Initiated Enterprise Team for Aviation Accident Investigators
- Revised flight following procedures in National Mobilization Guide
- Promoted USFS Aircraft Accident Database to DOI for Interagency database along with moving the database into SHIPS
- Investigate Cal Fire OV-10 accident and testify as expert witness
- Assisted R-10 with Aviation Safety and Communications review on the Chugach NF
- Initiated Aviation Program Risk Assessments for PNW Research Station on Forest Inventory Analysis (FIA) and backcountry strips.
- Completed program risk assessments on Large Airtankers, Aerial Supervision, Helicopters (rappel, IA, external load, etc)
- Scheduled program risk assessments for Infrared, Rope Assisted Deployment and Forest Health Protection for 2008.

Forest Service FY 2007 Program Risk Assessments		
Program	**# of High Outcome Hazards**	**Action Plan**
Airtanker	15 *	Yes
SEAT	43 *	Yes
Helicopter	47 *	Yes
Rappel	48 *	Yes
External Load	42 *	Yes
Aerial Supervision	67 *	Yes
Back-Country	Draft	N/A
RMRS	7	Yes

Policy/Procedure Recommendations

- Assisted in fire policy rewrite implementing Doctrine
- Began aviation policy rewrite implementing Doctrine
- Provided ARB Action Items to get incorporated into Pilot Inspector Guides
- Participated in developing SEAT performance data
- Assisted with contract modifications to include safety criteria.
- Provided ARB action items to get incorporated into training programs and aviation contracts.

Training Programs:

- Filled Aviation Training Specialist position
- Conducted Air Safety Investigator (ASI) course providing ICAP certificates for the 18 students that attended
- Coordinated Aviation Safety Management Certificate Program through UC Davis
- Funded and coordinated scholarship program (System Safety Leadership for Aviation Management) SSLAM for the UC Davis Aviation Certificate Program.
- Coordinated/funded project with DOI for Interagency Aviation Training (IAT) program
    - On-line computer based training/ contracted course development
    - ACE classroom training held at 2 locations
    - Contracted for professional IAT curriculum development.
    - Interagency Aviation Training (IAT) provided 74 “A courses” including 25 online courses with the remainder being classroom instruction of basic safety courses to over 4,000 FS employees to date.
- Coordinated/Funded project with BLM for helicopter pilot training, the training will be a prerequisite for Interagency Fire Pilot Carding.
- Coordinated USFS ACE instructor assignments.
- Developed and presented Controlled Flight into Terrain (CFIT) course for NAFA and SSLAM
- Presented A-200/300 at Helicopter Crewmember, Helicopter Manager and Helibase Manager Courses (5)
- Conducted eight A-221 Advanced Trainer Competency IAT Trainer courses qualifying 57 Instructors
- Conducted two A-220 Train the Trainer courses qualifying 13 Instructors
- The Forest Service is sponsoring an FAA Safety Management System course in March and coordinated DOI attendance for 40 students. This is a first time effort within the federal agencies.
- 3,257 IAT coures were taken at ACE’s or locally and 8,789 IAT courses were completed on-line by Forest Service employees.

Statistical Summary

The USFS flew 85,593 hours in FY 2007, which is slightly above the 10-year average. The accident rate for FY 2007 is 8.17, which is above the 10-year average of 5.64. We experienced 7 accidents and 3 "Incidents with Potential" (IWP). Unfortunately, we did not make it through the year without any fatalities. We had one fatality, which is lower than the 10-year average, and much less than the 6 we experienced in 2006, but still one too many.

The Forest Service utilizes aircraft mainly for fire suppression. The **primary** mission of USDA Forest Service Aviation is to support the ground firefighter through a variety of means, including, but not limited to:

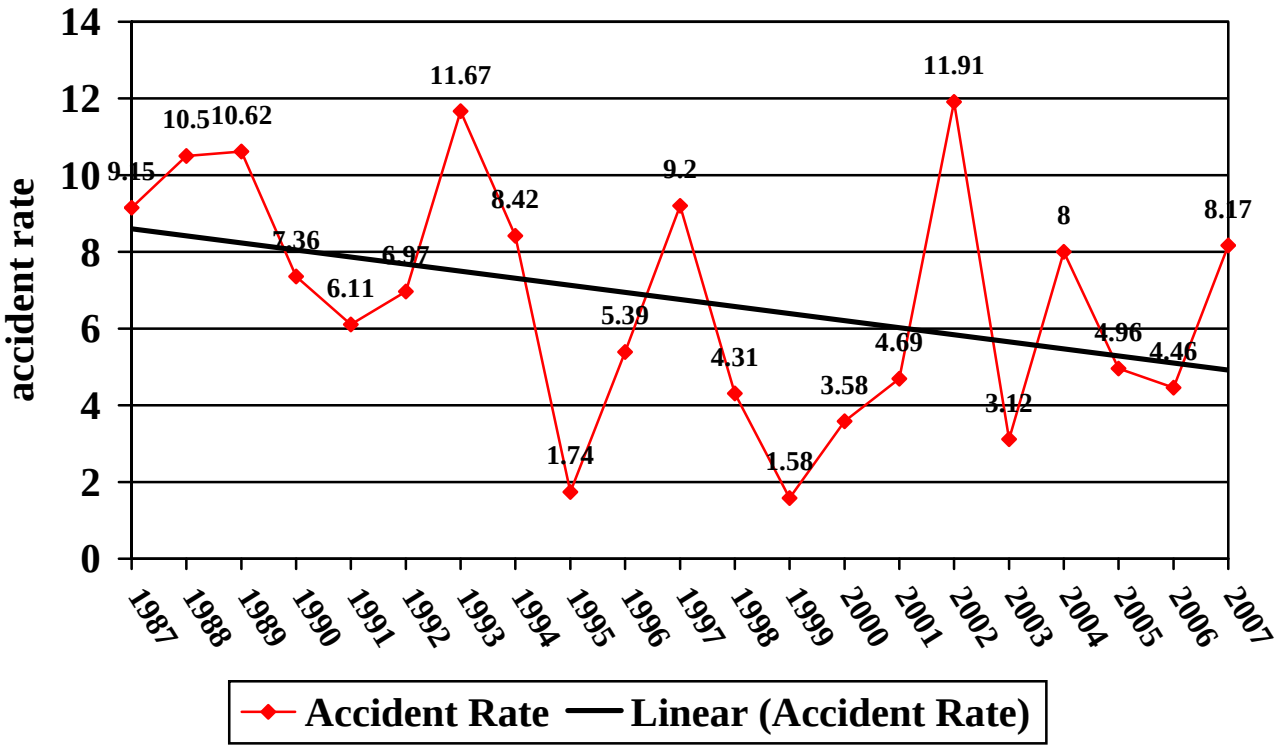
- ✓ Aerial delivery of firefighters by parachute, rappel line, or on site landing
- ✓ Air tactical command and control
- ✓ Firefighter transport
- ✓ Surveillance, reconnaissance, and intelligence gathering
- ✓ Infrared mapping
- ✓ Aerial delivery of fire retardant and water

Aircraft are also used for a wide variety of other missions, including administration, research, forest rehabilitation, forest health, law enforcement, aerial photography, and infrared surveillance.

Approximately 160 employees at the Washington Office and Regional levels administer the Forest Service aviation program. The national staff is located in Washington D.C. and at the National Aviation Safety Center in Boise, Idaho. The vast majority of aviation personnel are located at nine regional operations centers around the United States, providing day-to-day operational oversight and program guidance.

The Forest Service annually operates approximately 800 aircraft. These include government owned, cooperators, chartered, leased, and contractor operated aircraft. The Forest Service owns approximately 250 aircraft and operates 26 aircraft (23 fixed-wing and 3 helicopters.) Over 200 Forest Service owned aircraft are operated by numerous states under the Federal Excess Personal Property (FEPP) program, these aircraft are not included in these statistics or mishap data. Approximately 500 helicopters and fixed wing aircraft of various makes and models are chartered, leased or contracted annually. The aircraft are inspected and "carded" for government use by interagency inspectors, and are flown and maintained by the contractors.

USFS Aircraft Accident Rates 1987 to 2007



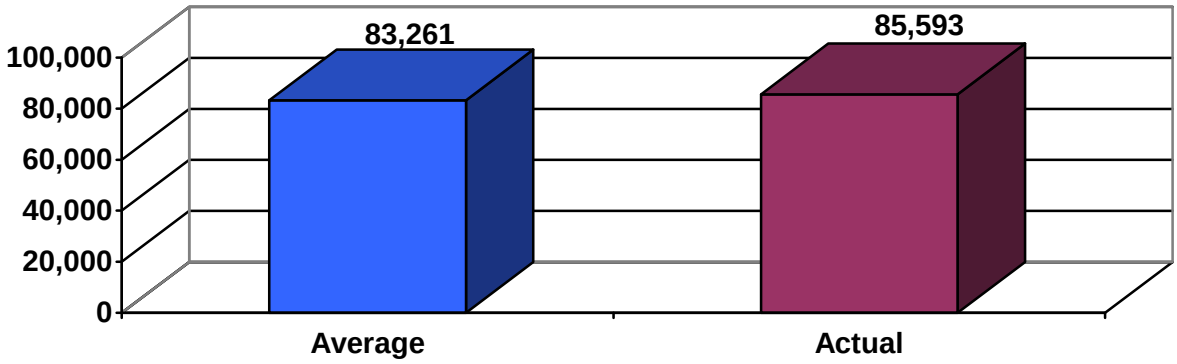
FY 2007 Accident Statistics

Aircraft Type	Hours	Number of Accidents	Accident Rate	Number of Fatal Accidents	Fatal Accident Rate	Number of Fatalities	Fatality Rate
Fixed-Wing	29,631	1	3.37	0	0	0	0
Helicopter	41,571	4	9.62	1	2.4	1	2.4
Large Airtanker (LGAT)	5,641	0	0	0	0	0	0
*Single Engine Airtanker (SEAT)	628	2	318.47	0	0	0	0
USFS Owned & Operated (USFS O&O)	8,122	0	0	0	0	0	0
Total	85,593	7	8.17	1	1.16	1	1.16

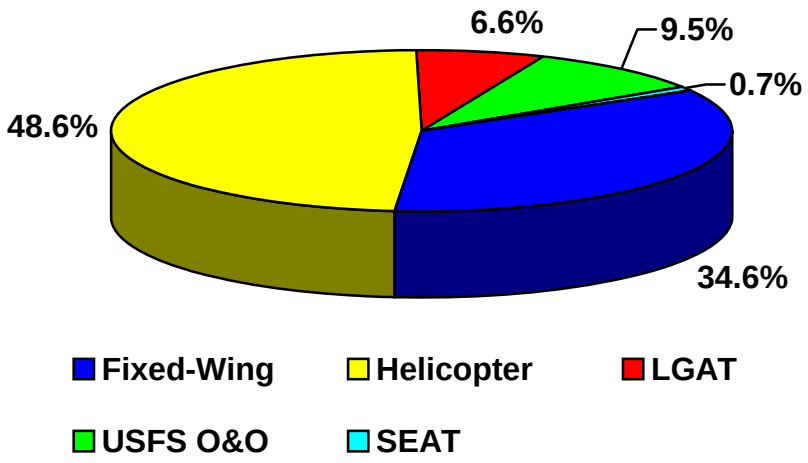
The actual hours flown in FY 2007 are slightly above the ten-year average of 83,229.

*SEAT – flight hours for SEAT aircraft on USFS lands were obtained from the DOI, Aviation Management Directorate

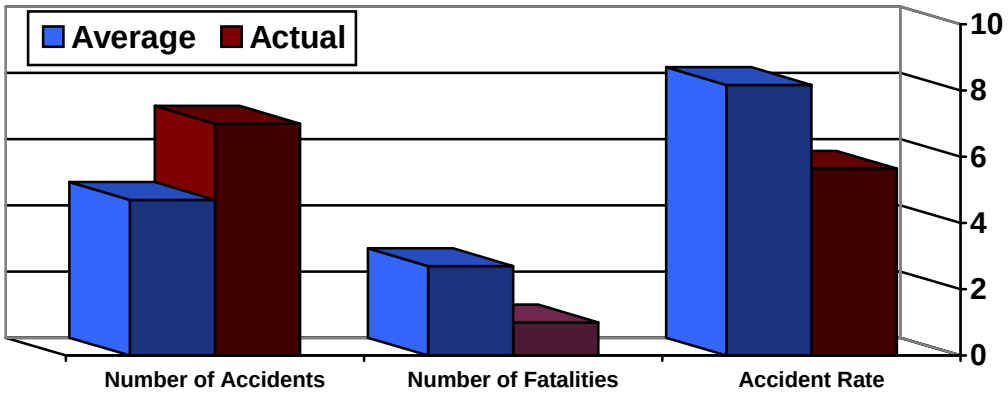
Average vs Actual Hours Flown for FY 2007



FY 2007 Flight Hour Percentages



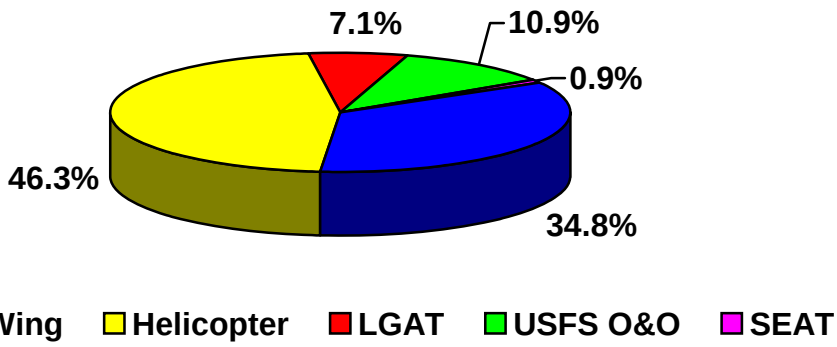
Average vs Actual for FY 2007



10-Year Accident Statistics

Comparison of Averages FY 1998-2007			
	10 Year Average	Actual	Comparison
Hours flown	83,261	85,593	+ 2,332
Number of Accidents	4.7	7	+ 2.3
Number of Fatalities	2.7	1	- 1.7
Accident Rate	5.64	8.17	+ 2.53

10 Year Average of Flight Hour Percentages 1998-2007



10-Year Flight Hour Statistics

Flight Hours:						
Fiscal Year	**Fixed Wing**	**Helicopter**	**LGAT**	**SEAT**	**USFS O&O**	**Total**
2007	29,631	41,571	5,641	628	8,122	85,593
2006	34,564	39,735	6,659	1,792	6,898	89,648
2005	22,521	28,362	3,682	674	5,185	60,424
2004	22,713	29,885	1,535	1,006	7,333	62,472
2003	32,704	50,662	5,082	765	7,607	96,055
2002	33,011	54,427	8,573	451	13,052	109,063
2001	26,580	39,497	7,832	282	11,241	85,150
2000	34,976	53,145	10,616	750	12,749	111,486
1999	21,873	25,174	6,069	284	10,019	63,135
1998	32,416	24,423	3,685	902	9,055	69,579
10-year totals	290,989	386,881	59,374	7,534	91,261	832,605
Averages	29,099	38,688	5,937	753	9,126	83,261

10-Year Accident Rates

Year	Total Number of Accidents	Total Accident Rate	Fixed-Wing Accident Rate	Helicopter Accident Rate	LGAT Accident Rate	SEAT Accident Rate	USFS O&O Accident Rate
2007	7	8.17	3.37	9.62	0.00	318.47	0.00
2006	4	4.46	2.89	7.55	0.00	0.00	0.00
2005	3	4.96	4.44	7.05	0.00	0.0	0.00
2004	5	8.0	8.8	6.69	0.00	99.4	0.00
2003	3	3.12	3.05	3.94	0.00	0.00	0.00
2002	13	11.91	3.02	14.69	23.32	0.00	15.32
2001	4	4.69	3.76	5.06	0.00	354.6	0.00
2000	4	3.58	2.85	3.76	0.00	0.00	7.84
1999	1	1.58	0.00	3.97	0.00	0.00	0.00
1998	3	4.31	3.08	4.09	27.14	0.00	0.00
10-year Average	4.7	5.64	3.43	6.97	5.05	53.09	3.28

10-Year Fatal Accident and Fatality Rates

Year	Fatal Accidents	Fatal Accident Rate	Number of Fatalities	Fatality Rate
2007	1	1.16	1	1.16
2006	2	2.23	6	6.69
2005	1	1.65	3	4.96
2004	2	3.2	4	6.4
2003	1	1.04	2	2.08
2002	3	2.75	5	4.58
2001	0	0.00	0	0.00
2000	1	0.89	2	1.79
1999	0	0.00	0	0.00
1998	2	2.87	4	5.75
10-year Average	1.3	1.56	2.7	3.24

Accident Rate = Number of accidents divided by the number of hours flown times 100,000.

Fatal Accident Rate = Number of fatal accidents divided by the number of hours flown times 100,000.

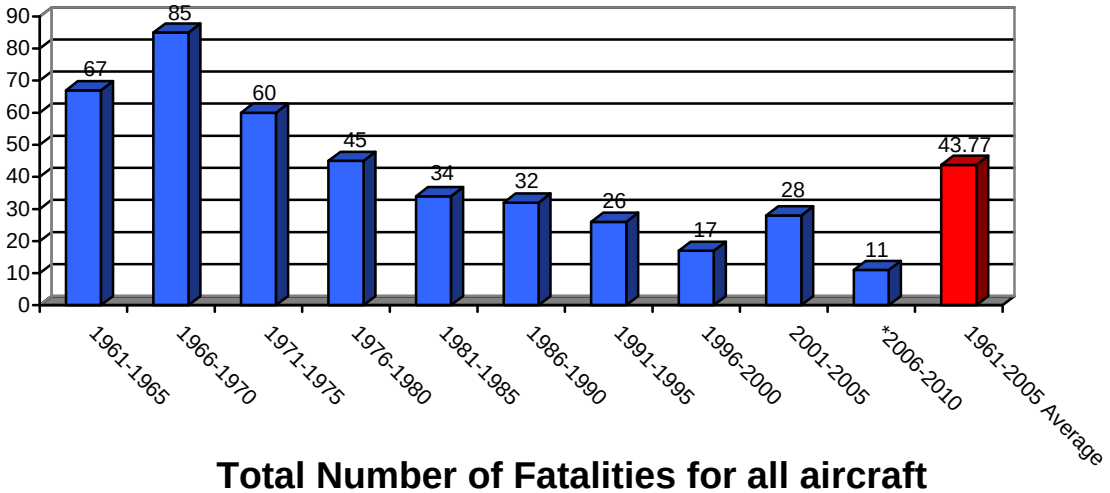
Fatality Rate = Number of fatalities divided by the number of hours flown times 100,000.

Forest Service Aircraft
Accident Statistics in 5-Year Increments

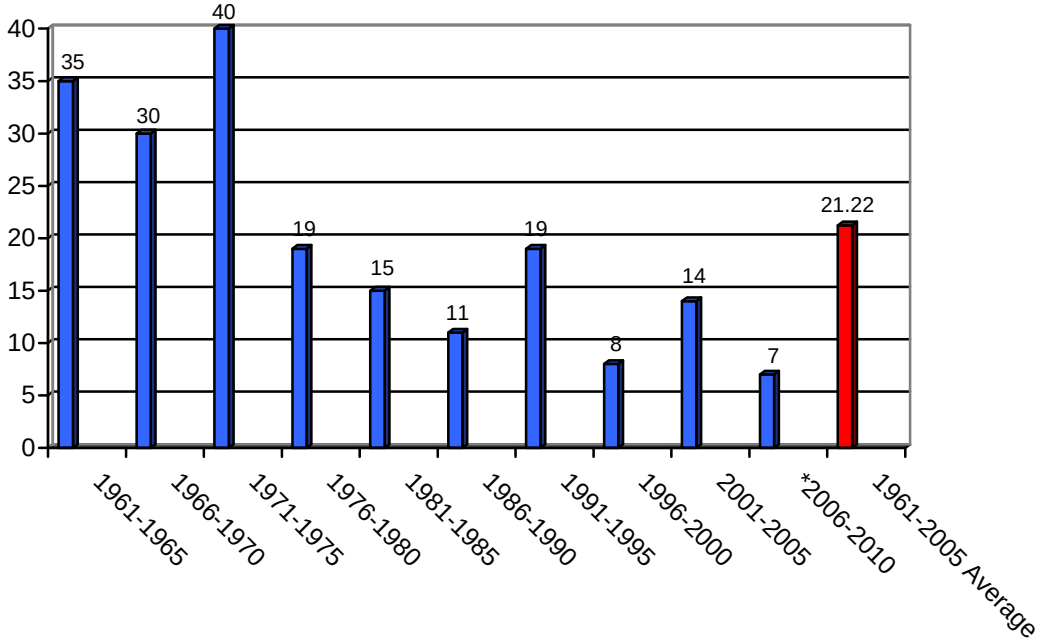
Observations

The total number of accidents in 5-year increments shows a steady decline, until the 2001-2005 period. The total number of fatalities in 5-year increments shows a major decline in the 80's from the 70's; however, a couple of spikes in the early nineties and the 2001-2005 year period.

Total Number of Accidents for all aircraft (5-Year Increments)



Total Number of Fatalities for all aircraft (5-Year Increments)

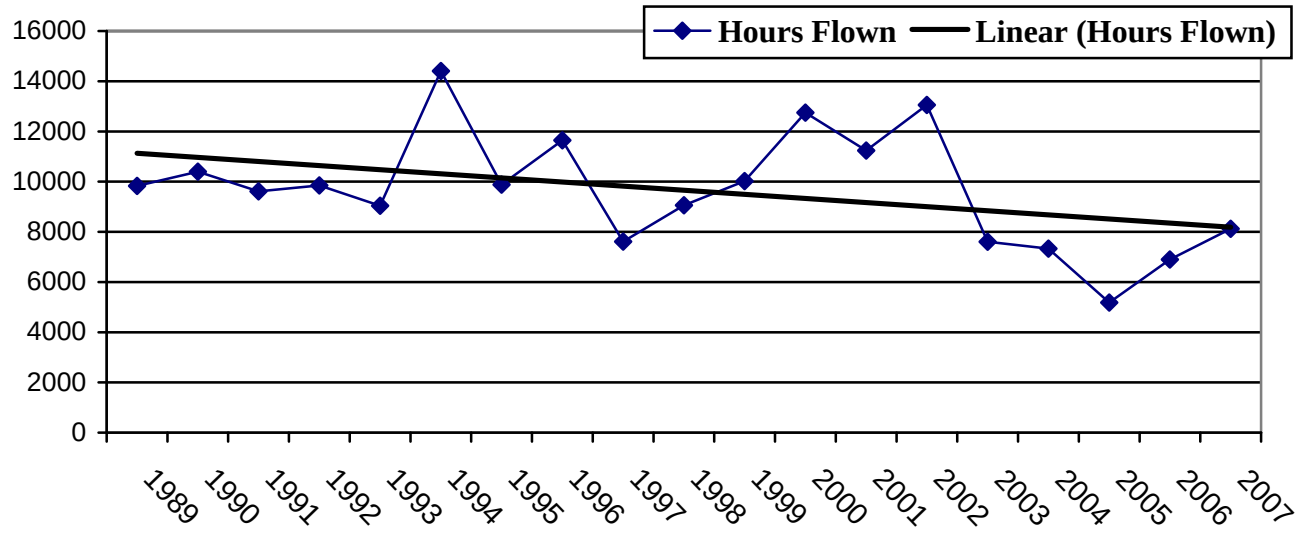


USFS Owned & Operated Aircraft

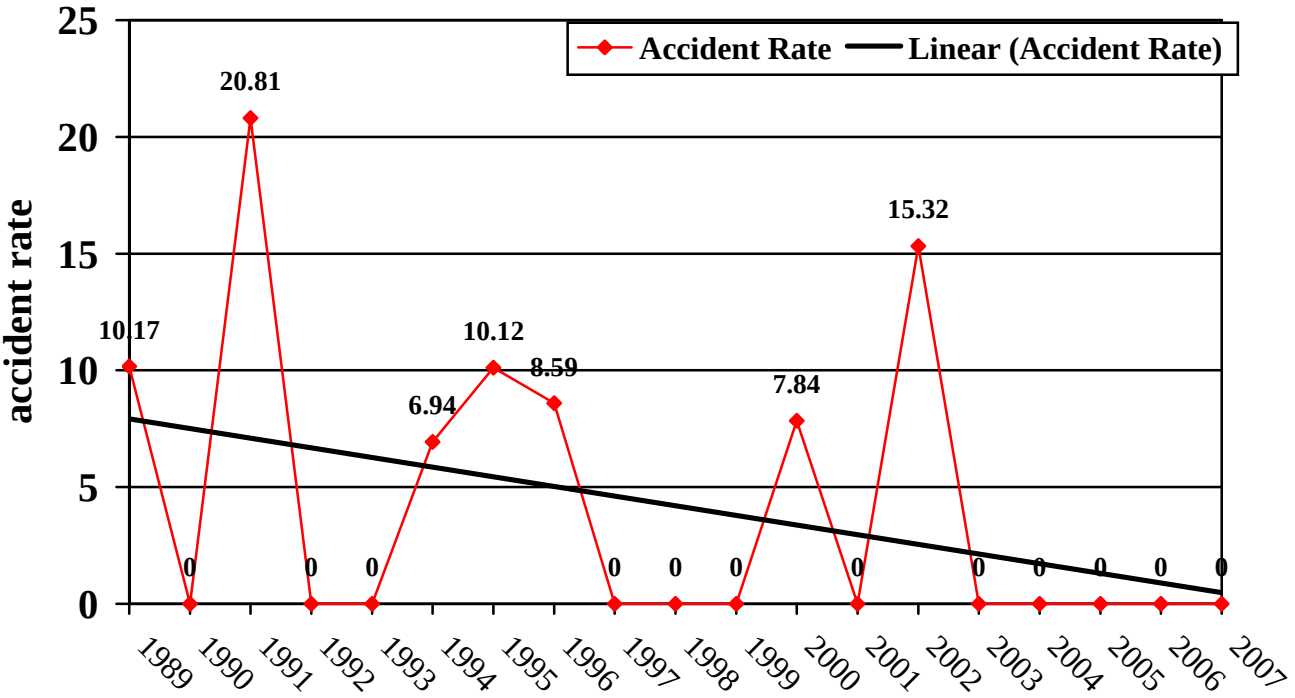
Forest Service owned aircraft accounted for 4,909 flight hours and the leased lead planes flew 3,213 hours. This was 9.5% of the total flight hours, which is below the average of 10.9 percent. This is the first year we put the leased aircraft in with the owned aircraft for statistics, but we determined it was a better fit than in with fixed wing aircraft. There have not been any accidents since FY 2002 and no fatal accidents for twelve years in USFS aircraft.

USFS Owned & Operated 10-Year Statistics							
Fiscal Year	**Hours Flown**	**Accidents**	**Accident Rate**	**Fatal Accidents**	**Fatal Accident Rate**	**Fatalities**	**Fatality Rate**
2007	8,122	0	0.00	0	0.00	0	0.00
2006	6,898	0	0.00	0	0.00	0	0.00
2005	5,185	0	0.00	0	0.00	0	0.00
2004	7,333	0	0.00	0	0.00	0	0.00
2003	7,607	0	0.00	0	0.00	0	0.00
2002	13,052	2	15.32	0	0.00	0	0.00
2001	11,241	0	0.00	0	0.00	0	0.00
2000	12,749	1	7.84	0	0.00	0	0.00
1999	10,019	0	0.00	0	0.00	0	0.00
1998	9,055	0	0.00	0	0.00	0	0.00
Total	91,261	3		0		0	
Average	9,126	0.3	3.28	0	0.00	0	0.00

USFS Owned & Operated Hours Flown



USFS Owned & Operated Aircraft Accident Rates

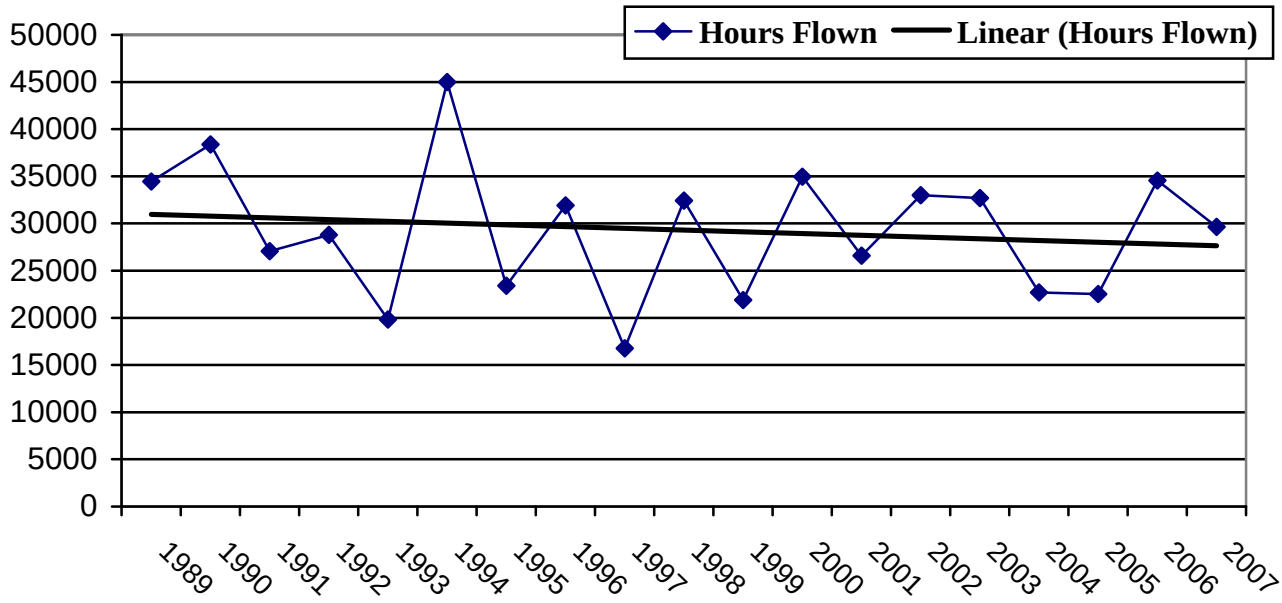


Fixed-Wing (Contract)

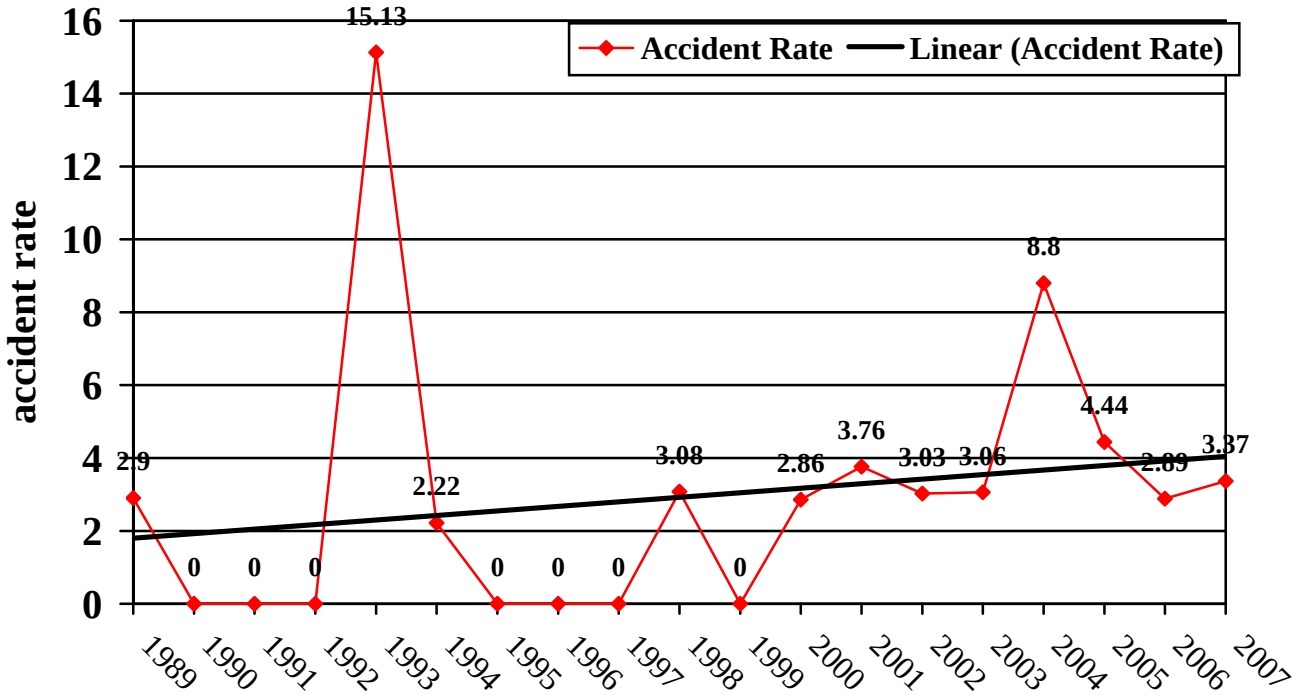
Fixed-Wing aircraft accounted for 34.6% of the total hours flown in FY 2007; the 10-year average is 34.8 percent. There were 29,631 hours flown in FY 2007, which is slightly above the 10-year average of 29,099.

Fixed-Wing 10-Year Statistics							
Fiscal Year	**Hours Flown**	**Accidents**	**Accident Rate**	**Fatal Accidents**	**Fatal Accident Rate**	**Fatalities**	**Fatality Rate**
2007	29,631	1	3.37	0	0.00	0	0.00
2006	34,564	1	2.89	0	0.00	0	0.00
2005	22,521	1	4.44	0	0.00	0	0.00
2004	22,713	2	8.80	1	4.40	3	13.2
2003	32,704	1	3.06	0	0.00	0	0.00
2002	33,011	1	3.03	0	0.00	0	0.00
2001	26,580	1	3.76	0	0.00	0	0.00
2000	34,976	1	2.86	1	2.86	2	5.72
1999	21,873	0	0.00	0	0.00	0	0.00
1998	32,416	1	3.08	0	0.00	0	0.00
Total	290,989	10		2		5	
Average	29,099	1.0	3.43	0.2	0.68	0.5	1.71

Fixed-Wing Hours Flown



Fixed-Wing (Contract) Aircraft Accident Rates



Airtankers

While Airtankers fly the fewest hours for the USFS, they remain a key component in our initial attack capabilities.

Large Airtankers accounted for 6.6% of the total hours flown in FY 2007; which is slightly below the 10-year average of 7.1 percent. There have not been any large airtanker accidents for 5-years; this is the longest span between accidents in over 20 years.

The SEATS only accounted for 0.7% of the total flight hours flown in FY 2007. With the low number of flight hours on the SEATS, one accident drives the accident rate up to a phenomenal figure.

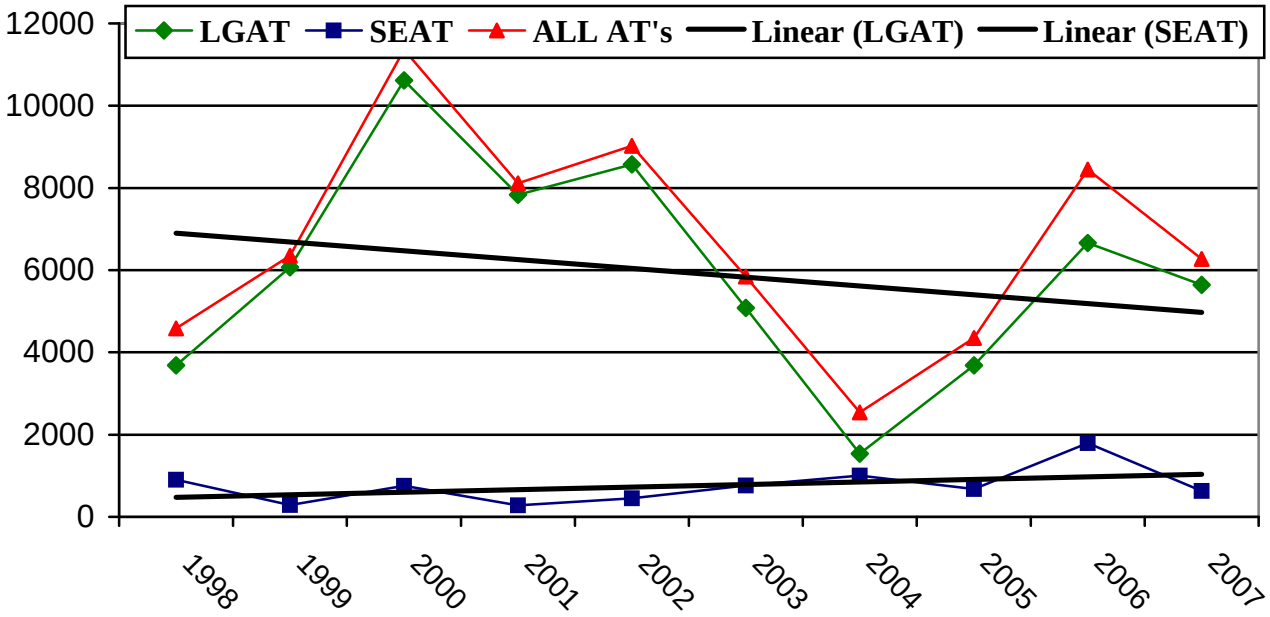
Airtanker 10-Year Statistics

Fiscal Year	Hours Flown	Accidents	Accident Rate	Fatal Accidents	Fatal Accident Rate	Fatalities	Fatality Rate
2007	6,269	2	31.9	0	0.00	0	0.00
2006	8,451	0	0.00	0	0.00	0	0.00
2005	4,356	0	0.00	0	0.00	0	0.00
2004	2,541	1	39.35	0	0.00	0	0.00
2003	5,847	0	0.00	0	0.00	0	0.00
2002	9,024	2	22.16	2	22.16	5	58.32
2001	8,114	1	12.32	0	0.00	0	0.00
2000	11,366	0	0.00	0	0.00	0	0.00
1999	6,353	0	0.00	0	0.00	0	0.00
1998	4,587	1	21.8	1	21.8	2	54.27
Total	66,908	7		3		7	
Average	6,691	0.30	10.46	0.30	4.48	0.70	10.46

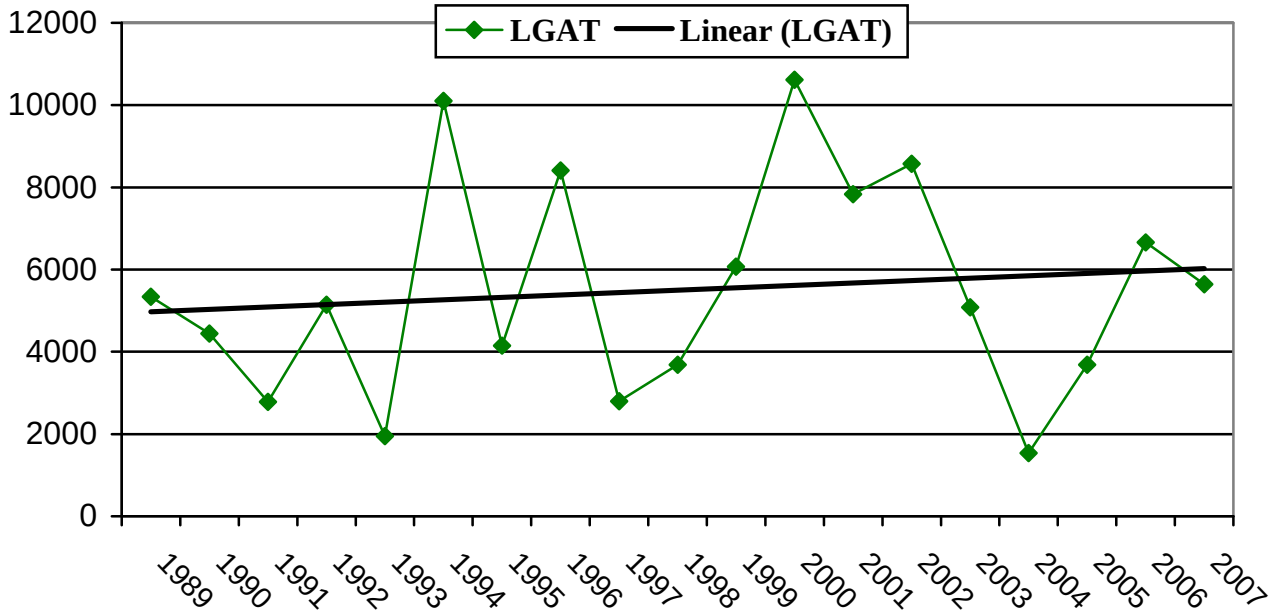
Large Airtanker 10-Year Statistics							
Fiscal Year	**Hours Flown**	**Accidents**	**Accident Rate**	**Fatal Accidents**	**Fatal Accident Rate**	**Fatalities**	**Fatality Rate**
2007	5,641	0	0.00	0	0.00	0	0.00
2006	6,659	0	0.00	0	0.00	0	0.00
2005	3,682	0	0.00	0	0.00	0	0.00
2004	1,535	0	0.00	0	0.00	0	0.00
2003	5,082	0	0.00	0	0.00	0	0.00
2002	8,573	2	23.33	2	23.33	5	58.32
2001	7,832	0	0.00	0	0.00	0	0.00
2000	10,616	0	0.00	0	0.00	0	0.00
1999	6,069	0	0.00	0	0.00	0	0.00
1998	3,685	1	27.14	1	27.14	2	54.27
Total	59,374	3		3		7	
Average	5,937	0.30	5.05	0.30	5.05	0.70	11.78

Single Engine Airtanker 10-Year Statistics							
Fiscal Year	**Hours Flown**	**Accidents**	**Accident Rate**	**Fatal Accidents**	**Fatal Accident Rate**	**Fatalities**	**Fatality Rate**
2007	628	2	318.47	0	0.00	0	0.00
2006	1,792	0	0.0	0	0.00	0	0.00
2005	674	0	0.0	0	0.00	0	0.00
2004	1,006	1	99.4	0	0.00	0	0.00
2003	765	0	0.0	0	0.00	0	0.00
2002	451	0	0.0	0	0.00	0	0.00
2001	282	1	354.6	0	0.00	0	0.00
2000	750	0	0.0	0	0.00	0	0.00
1999	284	0	0.0	0	0.00	0	0.00
1998	902	0	0.0	0	0.00	0	0.00
Total	7,534	4		0		0	
Average	753	0.4	53.09	0	0.0	0	0.0

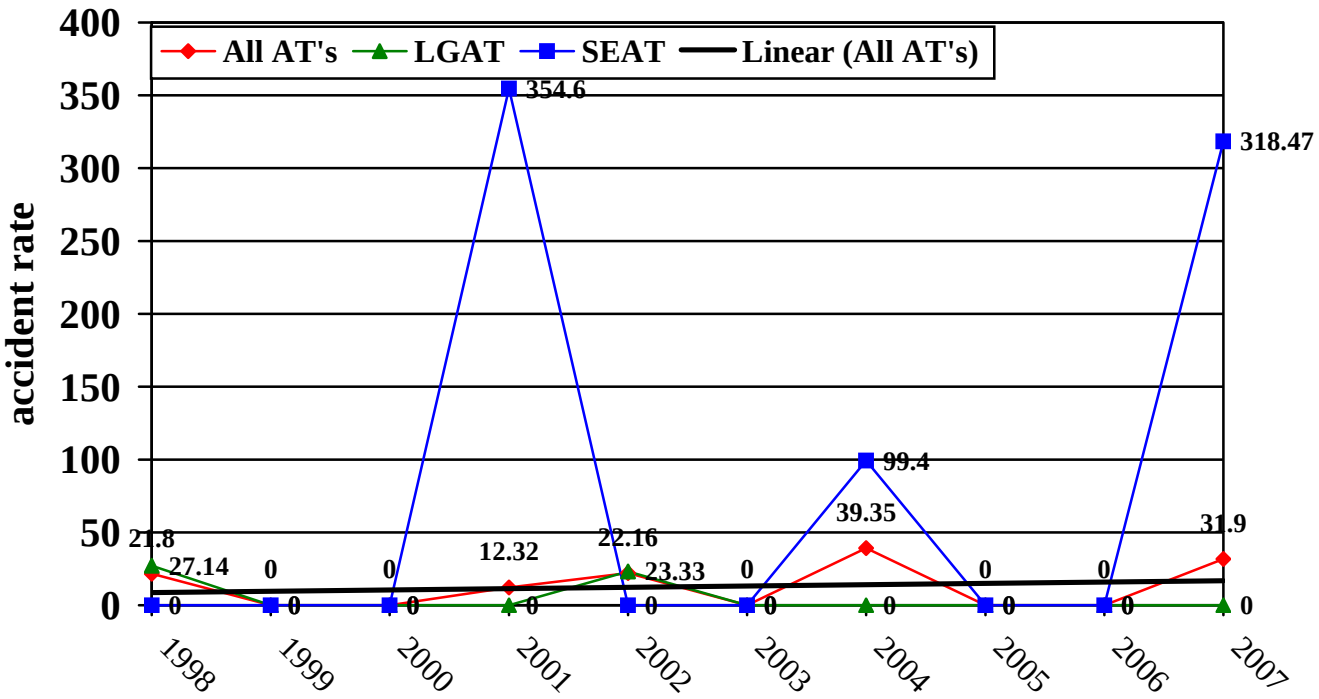
Airtankers Hours Flown past 10-years

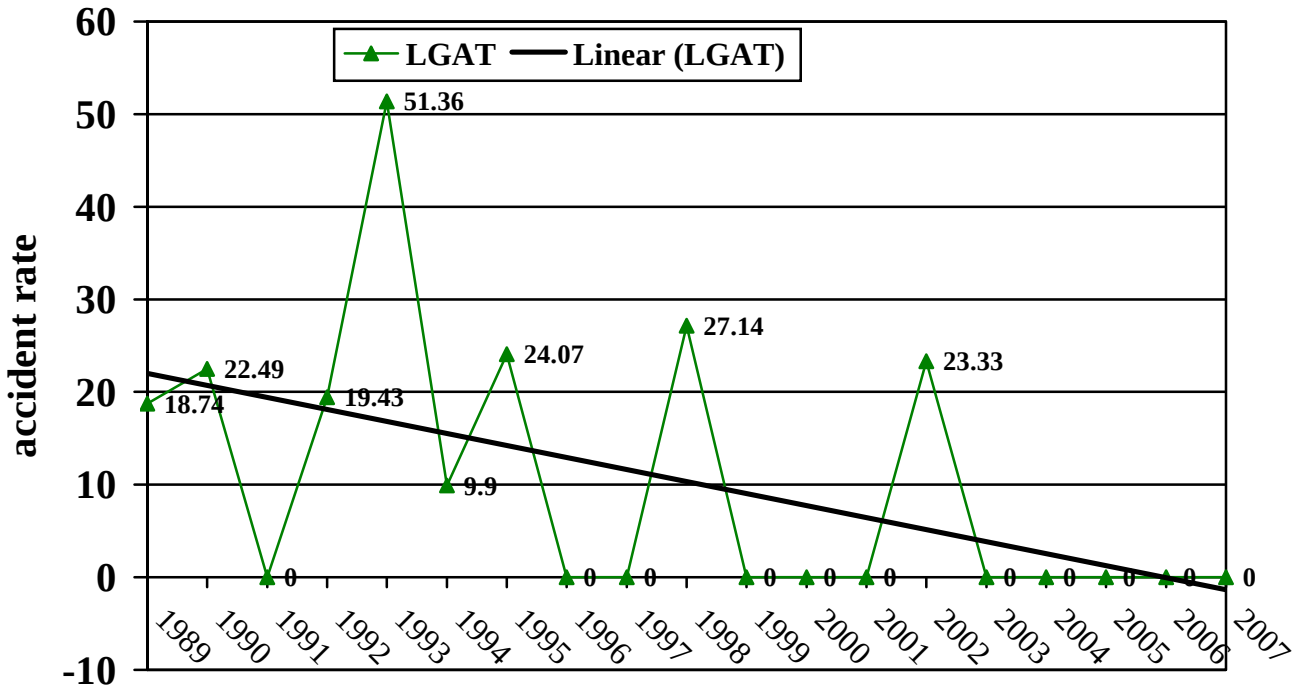


Large Airtankers Hours Flown past 20-years



Airtanker Accident Rates 10-years



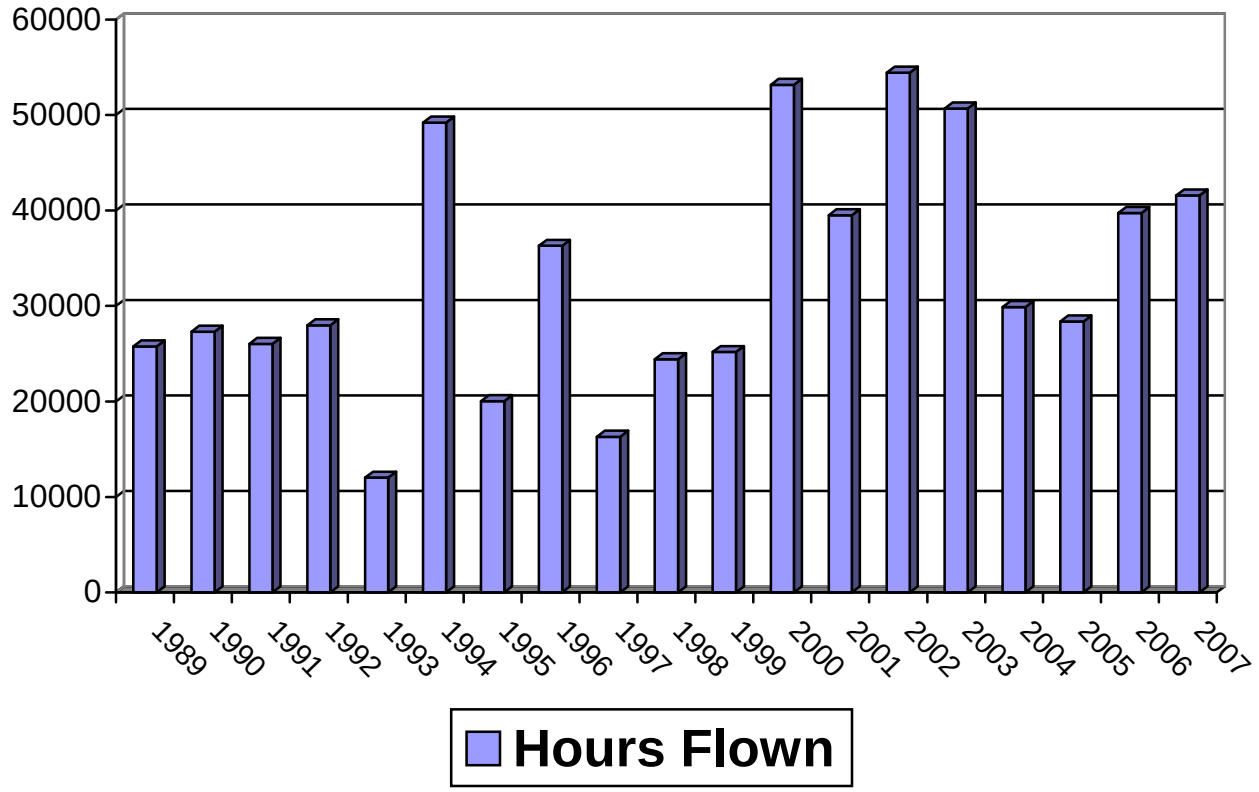


Helicopters

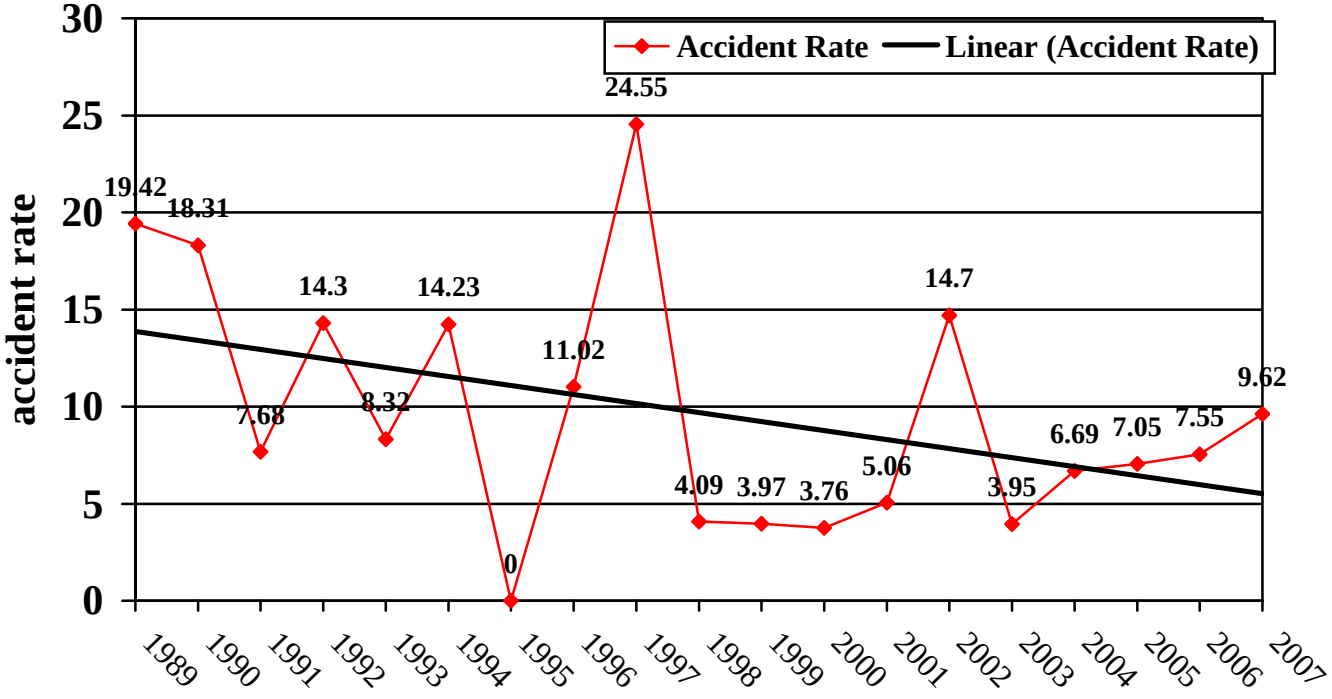
Helicopters accounted for 48.6% of the flight hours in FY 2007, which is above the 10-year average of 46.3 percent. There were four helicopter accidents and unfortunately one fatal accident.

Helicopter 10-Year Statistics							
Fiscal Year	**Hours Flown**	**Accidents**	**Accident Rate**	**Fatal Accidents**	**Fatal Accident Rate**	**Fatalities**	**Fatality Rate**
2007	41,571	4	9.62	1	2.40	1	2.40
2006	39,735	3	7.55	2	5.03	6	15.01
2005	28,362	2	7.05	1	3.52	3	10.57
2004	29,885	2	6.69	1	3.34	1	3.34
2003	50,662	2	3.95	1	1.97	2	3.95
2002	54,427	8	14.70	1	1.84	1	1.84
2001	39,497	2	5.06	0	0.00	0	0.00
2000	53,145	2	3.76	0	0.00	0	0.00
1999	25,174	1	3.97	0	0.00	0	0.00
1998	24,423	1	4.09	1	4.09	2	8.19
Total	386,881	27		8		16	
Average	36,161	2.7	6.97	0.8	2.06	1.6	4.13

Helicopters Hours Flown



Helicopter Accident Rates



SAFECOM Summary

The SAFECOM system satisfies Federal Aviation Regulations requirements for incident reporting, but more importantly, it provides management and front line supervisors with near real time trend information. Armed with data on emerging safety and effectiveness challenges, operators and management can take appropriate actions before a mishap occurs.

There were a total of 1,115 SAFECOM's submitted to the Interagency SAFECOM internet database. These include Forest Service, all DOI bureaus, States, Military and other. There were 620 Forest Service, 412 DOI, 77 State and 6 Military/Other/Unknown SAFECOM's.

The following charts trend the Forest Service SAFECOM data submitted to the Interagency SAFECOM Internet database at http://www.safecom.gov/. The average number of Forest Service SAFECOM's submitted is 687 per year. In FY 2006 the number of Forest Service SAFECOM's submitted, 754 was above the 10 year average of 687

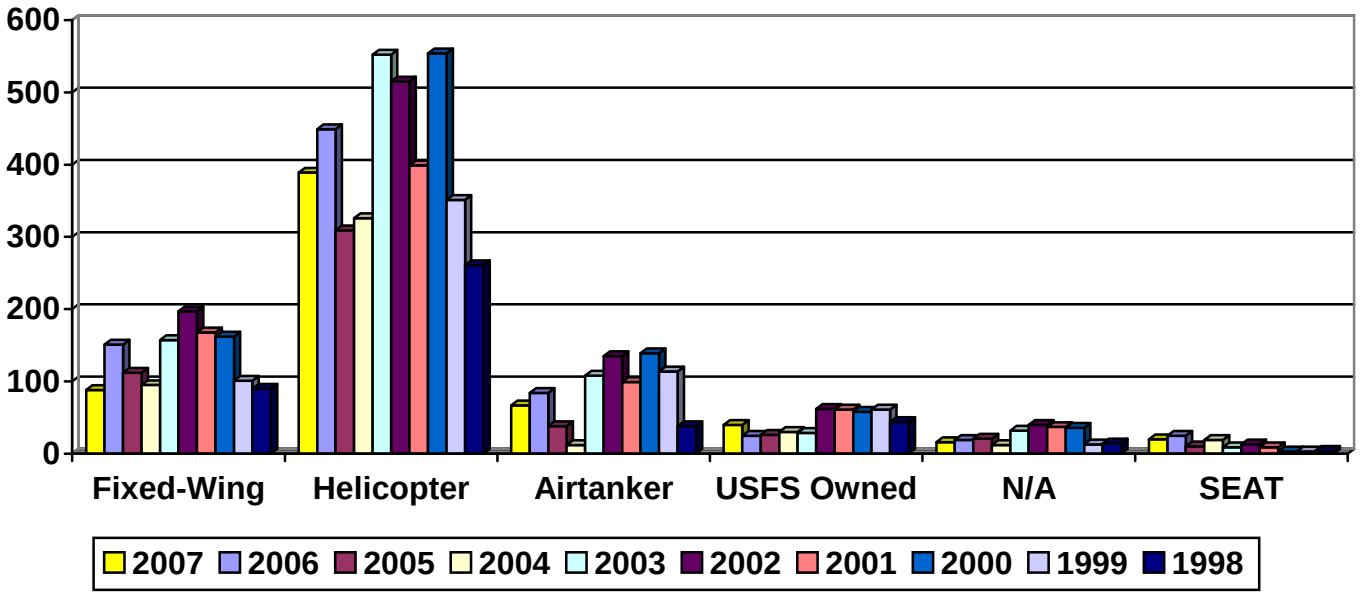
The most reported SAFECOM's were engine, electrical, chip light, communications, policy deviation, precautionary landing and dropped load. In an analysis of the past five years these continue to be the most reported, with the exception of the number of precautionary landings reported this year

Yearly Forest Service SAFECOM Totals	
YEAR	Number of SAFECOM's
2007	620
2006	754
2005	516
2004	494
2003	887
2002	962
2001	773
2000	949
1999	640
1998	546
Total	7,141
10 YR Average	714

FY 2007 SAFECOM's by Aircraft Type

Aircraft Type	Number
Fixed Wing	88
Helicopter	389
Airtanker	67
N/A	16
SEAT	20
USFS Owned/Operated	40
Total	620

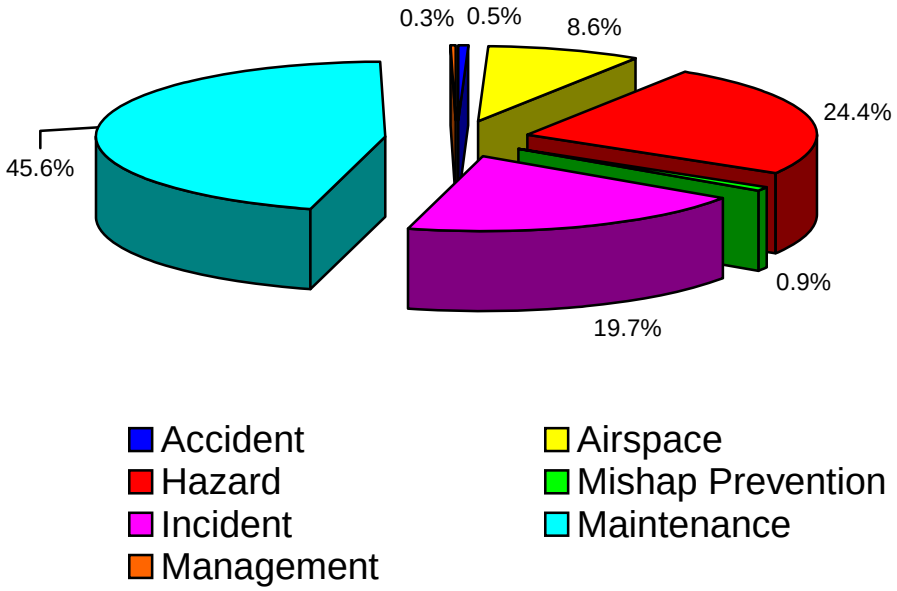
SAFECOM's by Aircraft Type for 10 Years



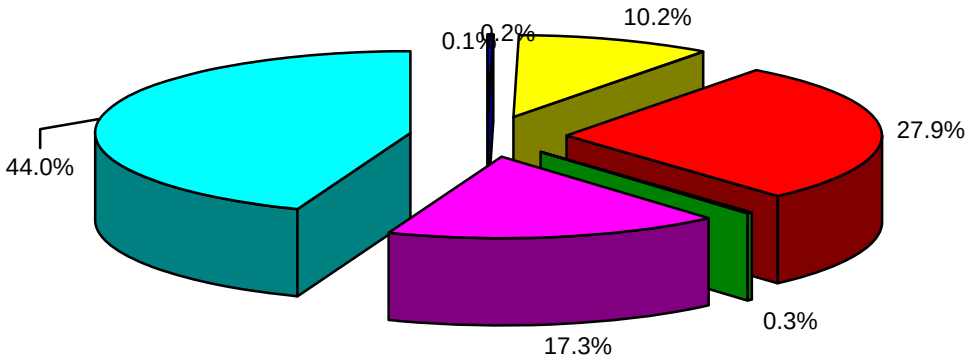
Forest Service SAFECOM's by Category

The numbers of SAFECOM's by category will be more than the total number of SAFECOM's reported as each SAFECOM can have more than one category assigned to it.

2007 Percent of SafeCom's by Category

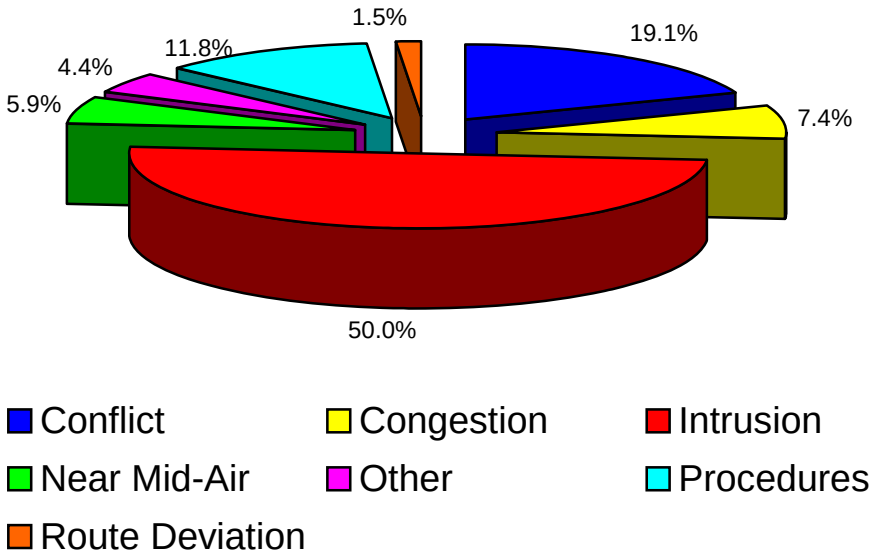


10-Year Average Percent of SafeCom's by Category

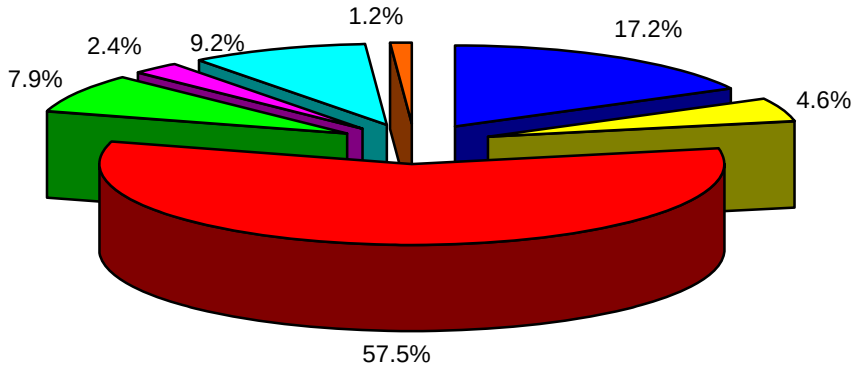


Forest Service Airspace
SAFECOM's by sub-category

2007 Percent of Airspace SafeCom's

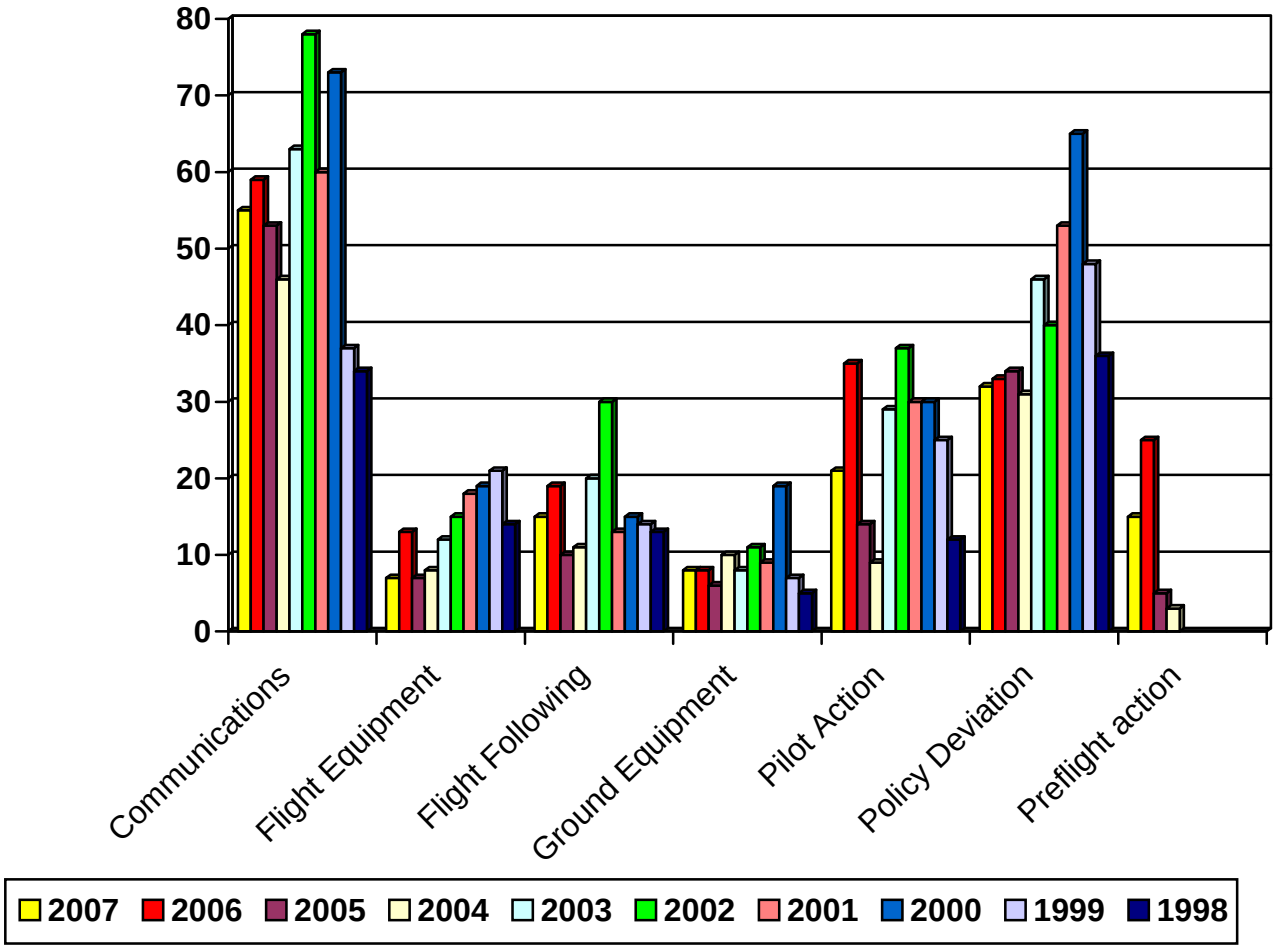


10-Year Average Percent of Airspace SafeCom's



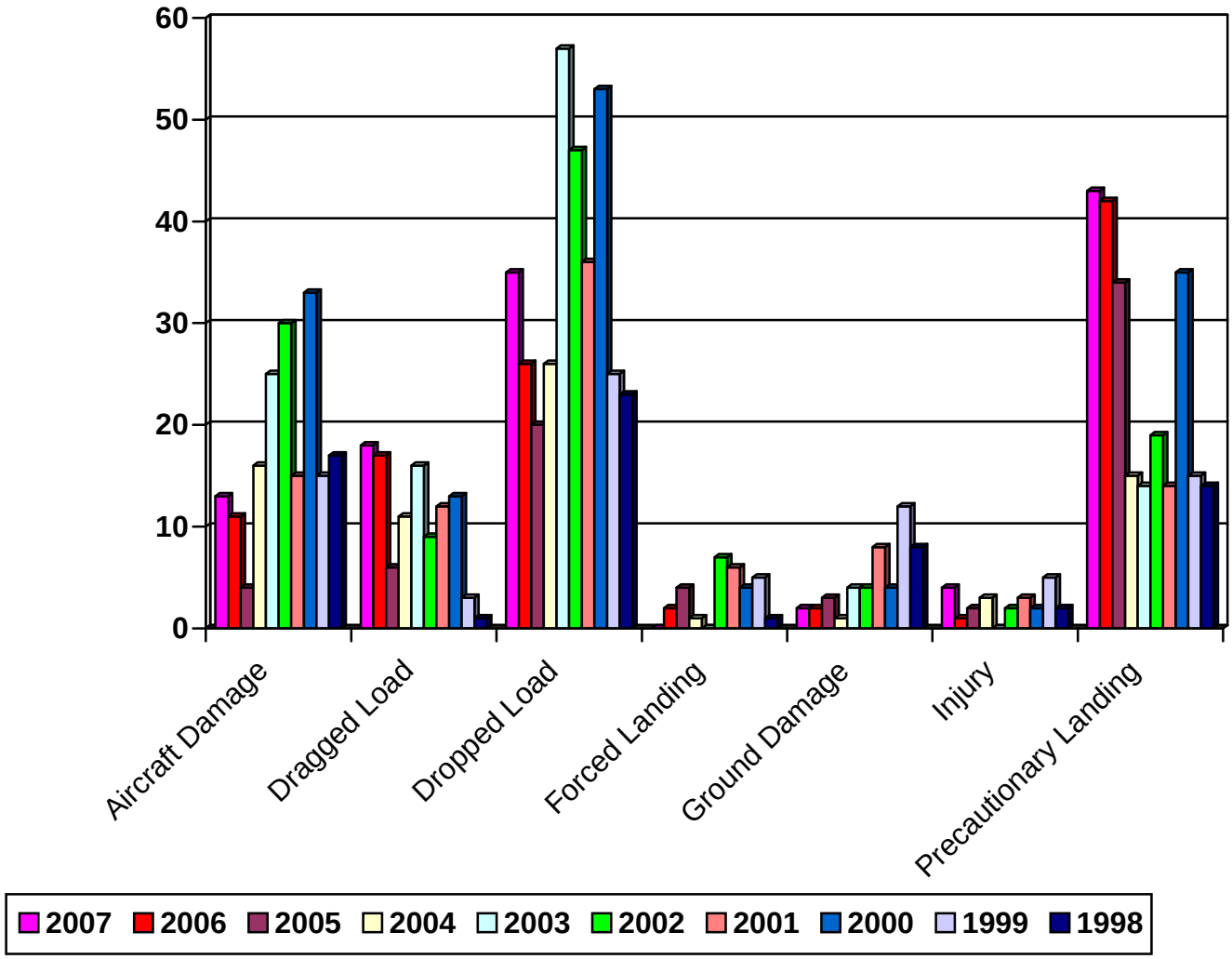
Forest Service Hazard
SAFECOM's by sub-category

Below are the top 7 Hazards reported in the last 10-years. Communications were broke out into multiple categories in 2003; the most reported were lack or miscommunication, ground radios and equipment, and written communications. Preflight Action was a new category added in 2004.



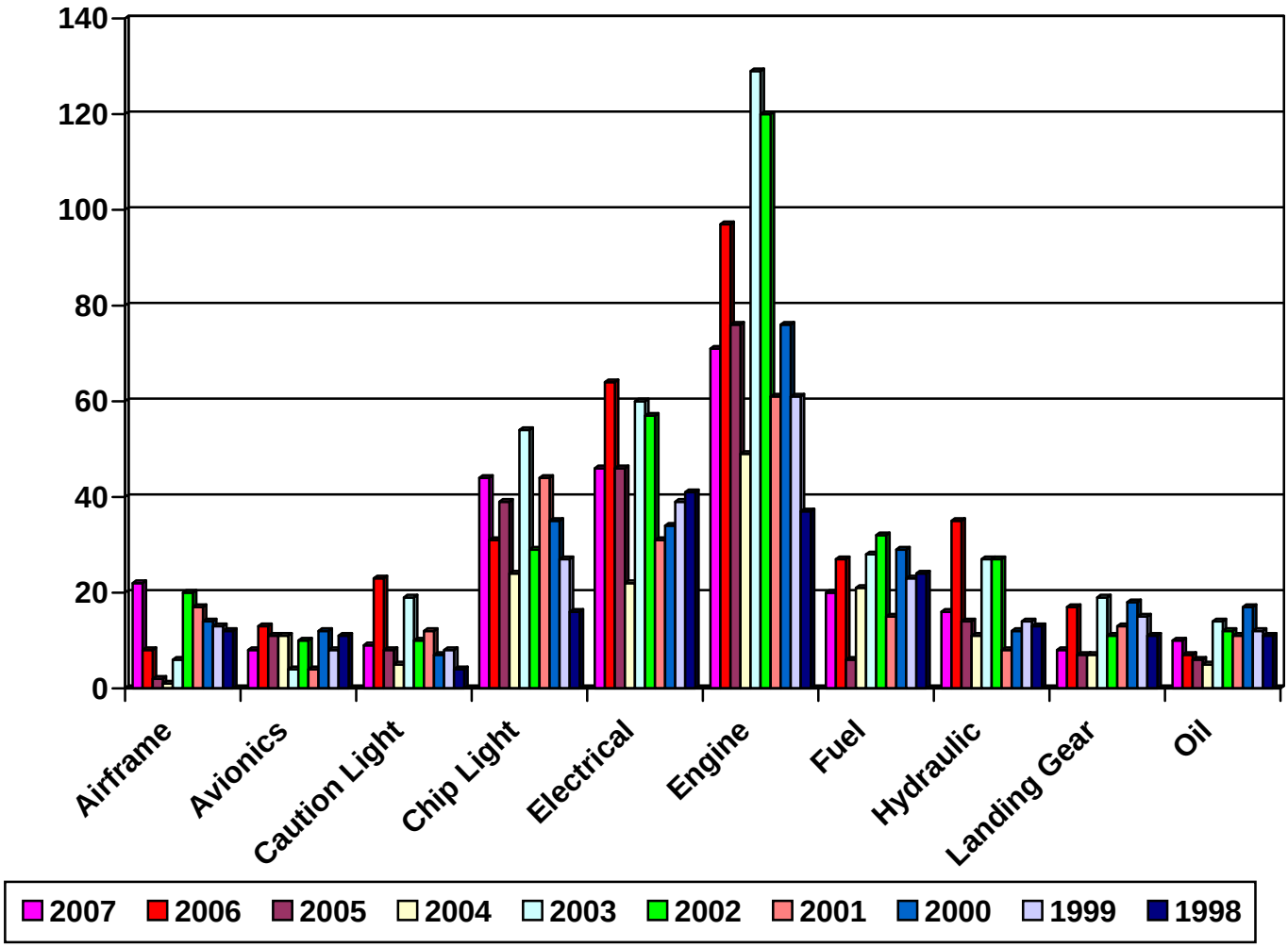
Forest Service Incident
SAFECOM's by sub-category

Below are the top 7 Incident SAFECOM's reported in the last 10-years. Dropped Loads were the highest number of SAFECOM's reported in this category until the last few years. The numbers of precautionary landings have been the most reported the past few years



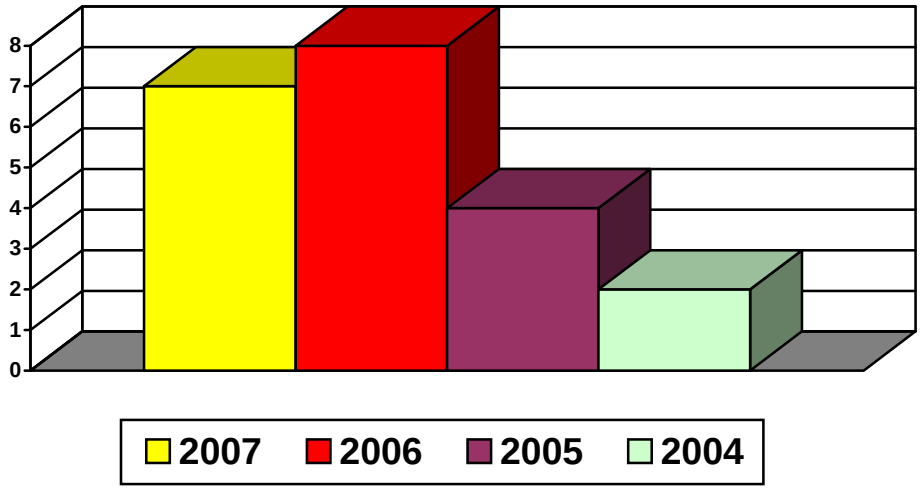
Forest Service FY 2006 Maintenance SAFECOM's by sub-category

Below are the top 10 Maintenance SAFECOM's reported in the last 10-years. Engine maintenance discrepancies were the most reported. In 2004 we added a sub-category under engine to capture more severe engine events (failures & shutdowns) which included 7 last year, 7 in 2006, 5 in 2005 and 1 in 2004. Mission Equipment was a new category also, last year there were 21, there were 22 in 2006, 7 in 2005 and 3 in 2004.



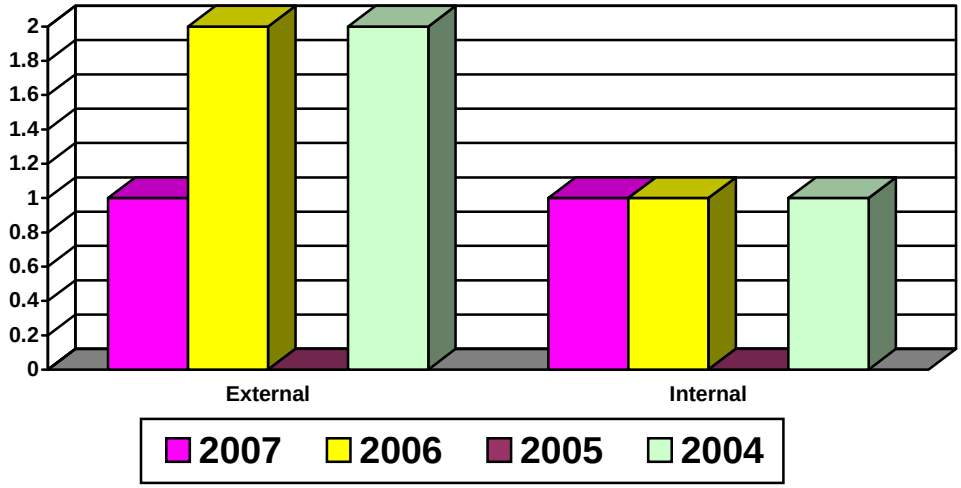
Forest Service Mishap Prevention

This was a new category added in 2004 to attempt to capture the good things that individuals are doing for mishap prevention. It has not been very successful, so we need to do a better job in promoting positive, non punitive reporting.

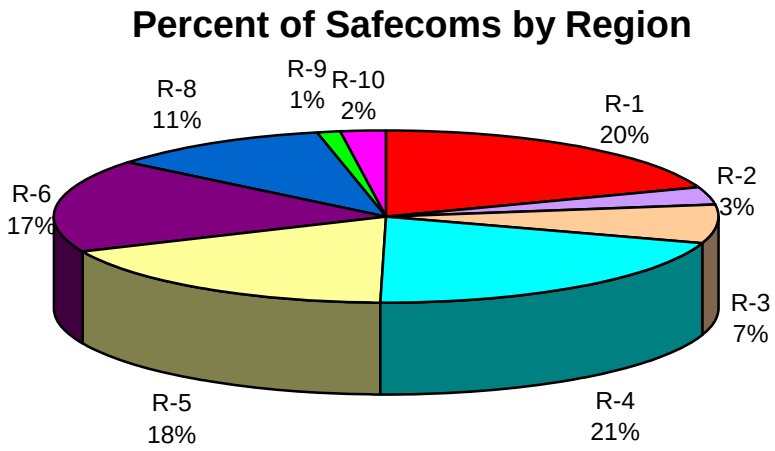


Forest Service Management SAFECOM's by sub-category

Management was a new category added in 2004 as well with the intent of capturing management issues internal to the agency and external.



FY 2007 SAFECOM's by Region



FY 2007 SAFECOM's by Aircraft Type and Region							
Region	Fixed-Wing	Helicopter	Airtanker	SEAT	USFS Owned	N/A	Total
Region 1	22	52	10	8	22	6	120
Region 2	1	14	3	0	2	1	21
Region 3	5	29	9	2	0	0	45
Region 4	21	78	17	2	6	2	126
Region 5	10	83	10	3	5	1	112
Region 6	15	71	8	5	4	5	108
Region 8	7	52	9	0	0	0	68
Region 9	1	4	2	0	0	0	7
Region 10	6	7	0	0	0	0	13
Total	88	390	68	20	39	15	620

FY 2007 SAFECOM's by Category and Region								
Region	Accident	Airspace	Hazard	Incident	Maint.	Mgmnt	Mishap Prevention	Total
1	0	16	37	23	59	1	1	138
2	0	0	6	5	10	0	0	21
3	0	2	8	10	32	0	0	52
4	2	17	29	33	67	1	3	152
5	2	13	34	31	49	0	1	130
6	0	5	24	30	61	0	2	122
8	0	11	11	19	28	0	0	69
9	0	0	1	1	6	0	0	8
10	0	0	5	4	4	0	0	13
Total	4	64	155	156	316	2	7	705

The numbers of SAFECOM's by category are more than the total number of SAFECOM's reported as each SAFECOM can have more than one category assigned to it.

Accident Summary

Accidents

Date	Region/Forest	Aircraft Type	Tail #	Incident
10/1/2006	R-5 Los Padres NF	Sikorsky 64E	N189AC	Day
7/7/2007	R-6 Malheur NF	Dromander M-18	N92043 T-464	Egley Complex
7/14/2007	R-4 Payette NF	Cessna 206	N9374Z	ABC Fires
7/16/2007	R-1 Lewis & Clark NF	Bell UH1H	N667HP	Ahorn
7/23/2007	R-5 Klamath NF	Bell 205A1	N205BR	Elk Complex
7/25/2007	R-4 Payette NF	Bell 214ST	N724HT	Loon
9/17/2007	R-5 San Bernardino NF	AirTractor 802	N91357 T-492	Butler 2

Incidents with Potential

Date	Region/Forest	Aircraft Type	Tail #	Incident
6/3/2007	R-5, San Bernardino NF	AirTractor 802	T-493	Shooting
7/29/2007	R-1, Helena NF	AirTractor 502A	T-423	Meriwether
8/18/2007	R-1, Bitterroot NF	Sikorsky 70A	N137BH	Rombo

The following are the NTSB Reports. Some of the reports are preliminary information, subject to change, and may contain errors. Any errors in these reports will be corrected when the final reports are completed.

NTSB Identification: **LAX07TA001**.
R-5. Los Padres NF
Aircraft: Erickson S64E, registration: N189AC
Injuries: 2 Minor.

On October 1, 2006, at 1100 Pacific daylight time, the snorkel of an Erickson S64E, N189AC, snagged on a dip tank and the helicopter rolled onto the ground during fire suppression activities about 7 nautical miles north-northeast of Ojai, California. The United States Department of Agriculture (USDA)/United States Forest Service (USFS) was operating the helicopter as a public-use firefighting flight mission under the provisions of 14 Code of Federal Regulations Part 91. Erickson Air-Crane, Inc., was the registered owner of the helicopter and employed the flight crew. The commercial certificated pilot-in-command (PIC) and second-in-command (SIC), sustained minor injuries; the helicopter sustained substantial damage. Visual meteorological conditions prevailed, and a USFS flight plan had been filed. The flight crew was in contact with USFS local air traffic coordination personnel. The helicopter departed from the Lockwood helibase for a retardant dropping mission at 1000.

Based on interviews with the flight crew and on-scene examinations, the USFS reported that the helicopter drafted approximately 200 gallons of remaining retardant from a tank. The PIC then repositioned the helicopter to a second tank that was holding fresh water. While maneuvering the helicopter into the second tank, the snorkel became lodged on a metal 3.5-inch by 3.25-inch tank support ring and the lifting eye attached to the ring. As the snorkel became lodged, the nose of the helicopter pitched down and the PIC pulled aft cyclic and additional collective. The nose of the helicopter responded in a left bank, nose-high attitude. The tail stinger contacted the ground and the helicopter spun to the left. Two of the tail rotor blades were severed approximately 12 inches from the root end. The helicopter continued spinning to the left and the tail rotor head contacted the retardant tank. The helicopter came to rest on its right side.

The dip tank exterior was encircled by two support rings, which went around the top perimeter of the tank. The support rings had 90-degree lips. Two lifting eyes, spaced 180 degrees apart, were welded to these support rings. The snorkel installation was through supplemental type certificate. The snorkel tip contained a screen to prevent foreign object ingestion. This screen had a 90-degree upper lip. Scrape marks were evident on the upper ring of the tank moving toward one of the lifting eyes. Investigators also noted damage to the snorkel tip and area of the lifting eye on the tank.

The PIC reported that the approach to the retardant tank was normal and the crew was on their fifth or sixth drop. The mission was to unload the retardant tank. The helicopter drafted 200 gallons of retardant and he elected to pick up out of the retardant tank in order to take on some fresh water. He moved from the retardant tank to the fresh water tank and noted that the helicopter was low. He added power to bring the snorkel up into the water tank and it caught on the side of the tank. The PIC believed that he had felt it come loose. He brought in power and the nose of the helicopter pitched down. At that time, the PIC stated that he, "...lost the tail..." and the helicopter began to spin. He called

for throttles off and he lowered the collective, unloaded the system, and transitioned the helicopter to the ground. When the helicopter contacted the ground, the right gear leg broke. The PIC stated that it was not gusty and there were no visibility restrictions.

The SIC (who was qualified to serve as PIC in the accident helicopter) stated that there were two tanks at the dip site; one tank contained water and one tank contained retardant. On the last load, they were able to take on 200 gallons of retardant. They maneuvered to the water tank in order to add water to the retardant. They hover taxied to the water tank and when they arrived over the tank, the SIC felt a tug or jolt which he assumed to be the snorkel contacting the tank. He could not see the snorkel head at that time. Immediately following the tug, the nose pitched down and to the left. He came onto the controls with the PIC and believes that they both applied aft cyclic. The SIC indicated that he thought that power should have been reduced; however, when the PIC and SIC were pulling aft on the cyclic, he felt the PIC increase the collective. Then, the nose pitched up excessively and the SIC thought that the tail may impact the ground because of the low altitude of the helicopter. The right gear then contacted the ground and the main rotor blades impacted the ground as the helicopter rolled to the right. Furthermore, the SIC indicated that he had a previous occurrence involving a caught snorkel on a tank. In that occurrence, he reduced the power and moved away from the tank. The SIC did not recall the helicopter spinning or feel that there were any malfunctions with the tail rotor. The SIC had been working in external load operations for the past 10 years.

Review of the PIC's flight times as entered on the USFS FS 5700-20a application differed from those entered on Federal Aviation Administration (FAA) form OMB No. 2120-0021, Airman Certificate and/or Rating Application. On the FAA form for a type rating in the accident helicopter make/model dated October 24, 2005, the pilot reported 1,010.3 hours total helicopter time; 832.5 hours SIC time; and 177.8 hours PIC time. Comparisons of the pilot's logbook with the times submitted on the FAA form showed a total time of 1,010.3 hours.

On the pilot's USFS application dated October 14, 2006, he reported the following: 1,620 hours helicopter PIC; 200 hours PIC in make/model and series; and 700 hours PIC in helicopters over 12,500 pounds gross weight. A review of the PIC's logbook from the date of the FAA application, showed a cumulative time of 301.7 hours helicopter PIC.

On September 14, 2006, the PIC's total PIC flight time listed for helicopters and fixed-wing aircraft was listed as 1,534.4 hours as indicated in his personal flight logbook.

The PIC was interviewed via telephone by the National Transportation Safety Board investigator about the flight time differences between his USFS application, the FAA application, and personal flight time logbook. He indicated that when he completed the USFS form he was in the field and told to quickly complete the form. He said that he must have misunderstood what the form was asking regarding PIC times. The PIC indicated that his flight log showed his correct flight times. He further stated that he was familiar with the USFS requirements of 1,500 hours PIC time but he believed the

required time could be a combination of helicopter and fixed-wing time. The pilot stated that he had flown similar operations as SIC for 5 to 6 years.

Per the USFS contract, both the PIC and SIC would be long line (vertical reference) qualified. Neither of the pilots was currently carded for long line operations. In addition, USFS PIC time contract requirements include 1,500 hours PIC.

According to a USFS regional aviation safety manager, normal procedures following a caught snorkel are to slowly maneuver the helicopter until the snag becomes free. At the time of the accident, there were no widely distributed USFS published procedures on pilot actions following a snagged snorkel condition.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows: The pilot-in-command's improper remedial action, which resulted in a loss of helicopter control. Contributing factors were the retardant tank and snorkel designs.

NTSB Identification: **LAX07TA208**
R-6, Malheur NF
Aircraft: WSK PZL Mielec M-18A, registration: N92043
Injuries: 1 Minor.

On July 7, 2007, about 1916 Pacific daylight time, a Msk Pzl Mielec, M 18A (a.k.a. "Dromader"), N92043, experienced a total loss of engine power while maneuvering about 20 miles northwest of Burns, Oregon. The airplane was substantially damaged during the pilot's forced landing in a rough, vegetation-covered, open field. During the accident flight, the single engine air tanker (SEAT) was under the operational control of the U.S. Department of the Interior (DOI). Visual meteorological conditions prevailed at the time of the public-use fire suppression flight, and a company flight plan had been filed. The airline transport pilot sustained minor injuries. The DOI operated the airplane under a "call-when-needed" contract with New Frontier Aviation, Fort Benton, Montana. The purpose of the flight was for the pilot to disperse 500 gallons of fire retardant chemical on the Egley Complex Fire in the Malheur National Forest, near Burns. The airplane was operated with a restricted category Federal Aviation Administration (FAA) airworthiness certificate under the provisions of 14 CFR Part 91. The flight originated from Burns about 1903.

According to the pilot, the engine stopped operating while he was overflying the intended retardant drop zone at 1,500 feet above ground level. The pilot attempted to restart the engine, but he was not successful. Thereafter, he dumped the retardant load, made a distress radio call, and forced landed. The airplane came to rest in an upright attitude.

NTSB Identification: **SEA07TA203**
R-4, Payette NF
Aircraft: Cessna TU206G, registration: N9374Z
Injuries: 2 Uninjured.

On July 14, 2007, at approximately 0915 mountain daylight time, a Cessna TU206G, N9374Z, was substantially damaged during a forced landing attempt on Horse Mountain, near New Meadows, Idaho. The commercial pilot and his passenger were not injured. The airplane was being operated under contract to the United States Department of Agriculture, Forest Service (USFS) by Wilderness Aircraft II LLC of McCall, Idaho, as a public use flight. The purpose of the flight was to conduct airborne fire reconnaissance. Visual meteorological conditions prevailed. A company flight plan had been filed; the flight had originated from McCall, Idaho, at 0813.

The pilot said that the airplane's engine began losing oil pressure and RPM. He performed a forced landing, but encountered rough/uneven terrain during the landing roll. The aircraft's nose gear collapsed bending the bulkhead keels, nose wheel bracket, and the right wing tip rib.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows: The loss of engine power due to the loss of engine oil pressure following the oil pump's drive shaft failure for an undetermined reason. Contributing factors were the lack of suitable terrain for a forced landing and the rough/uneven terrain.

NTSB Identification: **SEA07TA202**
R-1, Lewis & Clark NF
Aircraft: Bell UH-1H, registration: N667HP
Injuries: 1 Minor.

On July 16, 2007, at 0910 mountain daylight time, a Bell UH-1H helicopter, N667HP, sustained substantial damage when it impacted terrain following a loss of control while departing a remote landing zone near Benchmark, Montana. The commercial pilot, the sole occupant, sustained minor injuries. The helicopter was registered to Leading Edge Aviation LLC of Clarkston, Washington, and under the operational control of the United States Forest Service (USFS). Visual meteorological conditions prevailed and a company flight plan was filed for the local public use flight. The purpose of the flight was to carry an external load in support of fighting the Ahorn fire on the Bob Marshal Wilderness Area within the Lewis and Clark National Forest.

According to information provided by USFS personnel, the pilot flew the helicopter from the Benchmark Helibase departing with a visibility of 5 miles under moderate smoky conditions. While en route to the landing zone, the visibility deteriorated and the pilot reported difficulty seeing the landing zone. The pilot successfully landed at the landing zone without incident and set down a load of supplies. The ground crew then attached a load of firefighting equipment that was to be returned to the Helibase. As the pilot transitioned to forward flight to depart from the landing zone, the visibility dropped, and he reportedly lost all visual reference. The helicopter settled into trees and impacted the ground, coming to rest on its right side. In the area of the landing zone at the time of the accident, the visibility was reported to be fluctuating between 1/4 to 1 mile due to smoke.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows: Dense smoke/haze which restricted the pilot's visibility and the pilot's failure to maintain aircraft control during the emergency descent resulting in impact with terrain.

NTSB Identification: **LAX07TA227**
R-5, Klamath NF
Aircraft: Bell 205 A1++, registration: N205BR
Injuries: 1 Fatal.

On July 23, 2007, about 1100 Pacific daylight time, a Bell 205 A1++, N205BR, impacted trees during a long line mission in support of the Norcoss Incident about 1/4 mile southeast of the Happy Camp Airport (36S), Happy Camp, California. The United States Forest Service (USFS) operated the helicopter under the provisions of 14 CFR Part 133 as a long line operation to drop off water blivets for ground crews in the area. The helicopter was destroyed after impacting the heavily forested area, and a post-impact fire consumed the cabin area. The certificated airline transport (ATP) helicopter pilot, the sole occupant, was fatally injured. Visual meteorological conditions prevailed for the local public-use firefighting flight, and a USFS flight plan had been activated.

Several firefighters from the Happy Camp Type II hand crew witnessed the arrival of the helicopter and the subsequent accident sequence. They reported that as the blivets were set down on the forest floor, the helicopter drifted to the right and the main rotor blades contacted a tree. The long line along with the blivets remained attached to the helicopter as it made a turn to the left, stopped momentarily, and then flew downhill. The firefighters reported that there were no abnormal engine sounds emanating from the engine during the event.

According to USFS investigators, the helicopter was outfitted with a 150-foot-long long line; the tree that the helicopter struck was about 165 feet tall. The main rotor struck the top 15 feet of the tree. There were no obvious mechanical malfunctions noted with the engine. The investigation is on going, with a planned reconstruction of the airframe and examination of the engine following recovery of the helicopter.

NTSB Identification: **SEA07TA214**
R-4, Payette NF
Aircraft: Bell 214ST, registration: N724HT
Injuries: 1 Serious, 1 Minor.

On July 25, 2007, at 1947 mountain daylight time, a Bell 214ST helicopter, N724HT, sustained substantial damage when it impacted terrain following a loss of control while conducting long-line operations in a remote area 22 miles northeast of McCall, Idaho. The airline transport pilot (ATP) sustained serious injuries and the passenger/crew chief, sustained minor injuries. The helicopter was registered to US Leaseco, Inc of Baltimore, Maryland, and under the operational control of the United States Forest Service (USFS). Visual meteorological conditions prevailed and a flight plan was filed for the local public use flight. The purpose of the flight was to conduct external load operations in support of the Loon fire.

In a written statement provided by USFS personnel, the pilot was making an approach to a lake in order to fill a 900-gallon Bambi bucket attached to a 150-foot long-line. As the approach continued, and just prior to the bucket entering the water, the pilot reported that "he was encountering the onset of settling with power." The pilot lowered the collective and initiated a 180-degree turn. During the turn, the bucket entered the water and the 150-foot long-line "pulled the helicopter" on "the right side of the aircraft" while the pilot was maneuvering about 20-40 feet above the water. Subsequently, the helicopter collided with terrain in a marshy area adjacent to the shoreline resulting in substantial damage.

The operator reported the estimated density altitude at the time of the accident was 10,221 feet.
Examination of the helicopter revealed no mechanical anomalies with the engine or airframe.

NTSB Identification: **LAX07TA277**
San Bernardino NF
Aircraft: Air Tractor AT-802A, registration: N91357
Injuries: 1 Uninjured.

On September 17, 2007, about 1310 Pacific daylight time, an Air Tractor AT-802A, N91357, collided with terrain during a forced landing following a loss of engine power near Big Bear City, California. The USDA Forest Service operated the airplane under the provisions of 14 CFR Part 91 as a public-use aerial application flight. The airplane sustained substantial damage. The commercial pilot, the sole occupant, was not injured. Visual meteorological conditions prevailed for the firefighting mission, and a company VFR flight plan had been filed.

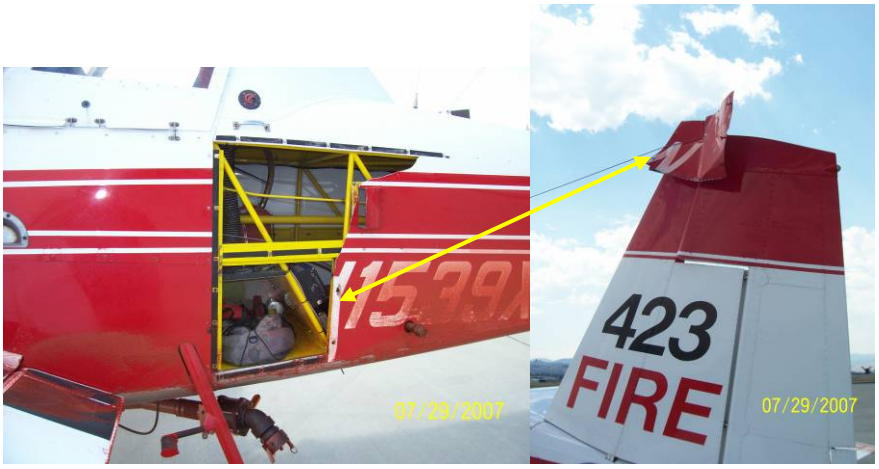
According to the pilot, he had just reloaded the airplane with fire retardant, taken off, and was on his way to the drop zone when he observed the engine chip indicator light had illuminated. He released the load, and made a forced landing in an open field. During the landing rollout, the airplane impacted a berm. When it came down again, it slid sideways, and the landing gear separated.

Recovery personnel reported metal debris in the exhaust stack.

Incidents With Potential

- 6/3/2007 Air Tractor 802, San Bernardino NF
  - Crossing ridgeline on retardant drop at 5-7 feet AGL

- 7/29/2007 Air Tractor 502A, Helena NF
  - Cargo door came off in flight and stuck between the rudder and cable.



- 8/19/2007 Sikorsky 70A, Bitterroot NF
  - Wire Strike