

United States Air Force FY03 Mishap Summary



February 2004

FY03 Safety Overview

Unfortunately, this mishap summary illustrates that FY03 was another “plateau year” in terms of mishap rates. Both ground and flight FY03 mishap rates were nearly identical to their respective 10-year averages.

In human terms, preventable ground mishaps resulted in the tragic loss of 82 airmen. Alcohol was involved in 18 of our fatal mishaps and 11 motor vehicle fatalities occurred where seat belts were not used. As in recent years, off-duty mishaps continue to be the largest “taker” of Air Force lives. 91 percent of our fatalities occurred in off-duty mishaps. We all have to jettison the notion that safety is a priority only when “on-duty.”

We suffered 41 Class A aviation mishaps in FY03, with 11 lives lost and 22 aircraft destroyed. Human factors were the primary cause behind 58 percent of our Class A aviation mishaps and ALL of our aviation fatalities. The grim reality is that human errors cost lives. Aviation ‘ground operations’ mishaps highlight a failure to follow technical order guidance. This is a growing and unacceptable trend.

Secretary Rumsfeld and General Jumper have each challenged the Air Force to reduce its mishap rate by 50% over the next two years. To achieve this goal, it is critical that we all refocus and improve our efforts to identify hazards and reduce unnecessary risks to the mission. We won’t make any progress if we keep the same attitudes and procedures. Real change has to begin with commanders and supervisors at the grassroots level. They are accountable for safety practices and must alter operations when mission risks become too great. We need to increase the commitment of scarce resources towards the important task of mitigating hazards.

Changes to our safety culture begin at the top and run throughout the Air Force down to the Airman hacking the mission. Four-star General and Airman Basic alike, we are all responsible for the safety culture around us.

It is tragic when we lose members of our Air Force family and it is unacceptable to reduce our mission capability by incurring avoidable mishaps. Only with your hard work and renewed efforts can we reduce the mishap rate throughout our Air Force.

KENNETH W. HESS
Major General, USAF
Chief of Safety

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Aviation Safety Summary



U.S. AIR FORCE



FY03 Aviation Safety Tally

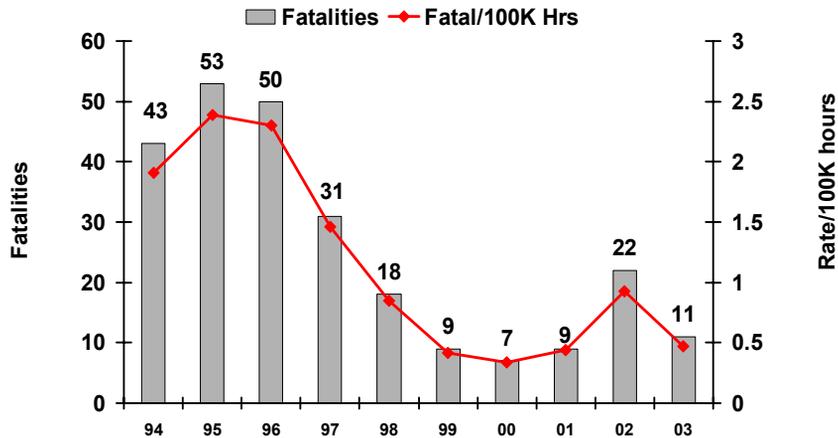
- ◆ **11 lives lost**
 - 1 every 33 days
- ◆ **22 aircraft destroyed**
 - 1 every 17 days
- ◆ **41 Class A mishaps**
 - 1 every 9 days
- ◆ **\$486M ... \$1.33M per day**

Integrity - Service - Excellence

- ◆ Mishap costs are unacceptably high
- ◆ 11 lives lost – one fatality every 33 days
- ◆ 22 aircraft lost – one every 17 days
- ◆ \$486 million dollars in losses – \$1.33 million dollars per day



Aviation-Related Fatalities Fatalities / Fatality Rate per 100,000 hours



10-Year Average Annual Fatalities / Fatal Rate: 25.3 / 1.15

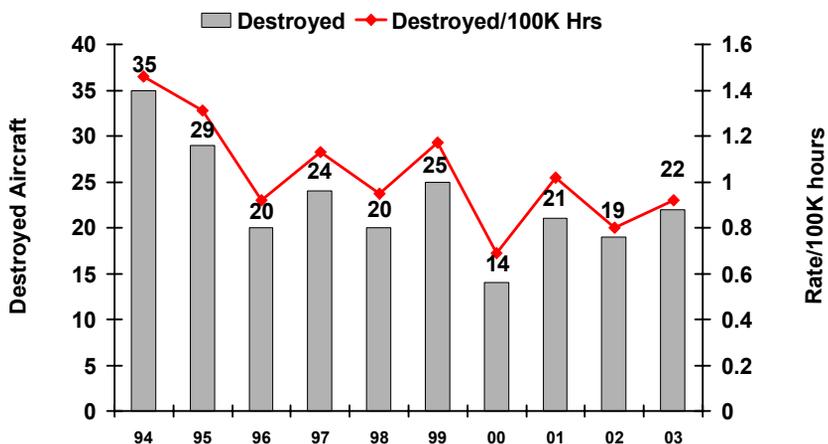
Integrity - Service - Excellence

- ◆ Aviation fatalities rates improved in FY 03, with a 50% reduction from FY 02. FY03 was more in line with last 5 years. All fatalities were from ops related mishaps. Human errors cost lives. We train very well to recover from mechanical failures but we have not yet trained out human error.

➤ HH-60	6 Fatal	CFIT
➤ F-16	1 Fatal	CFIT
➤ A-10X2	1 Fatal	Mid Air
➤ F-16X2	1 Fatal	Mid Air
➤ T-38	1 Fatal	Landing (TT &L)
➤ B-52	1 Fatal	USMC (Flight Related)



Destroyed Aircraft Destroyed Aircraft Rate per 100,000 hours



10-Year Average Annual Destroyed / Rate: 22.9 / 1.02

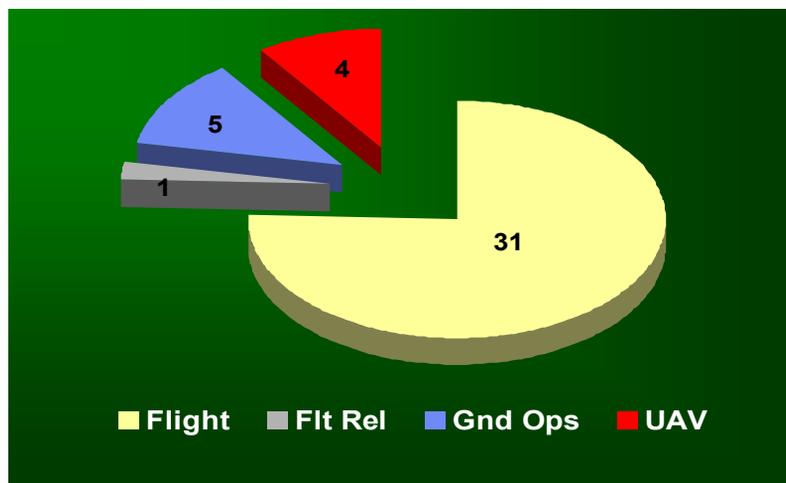
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◆ We experienced 22 destroyed aircraft in FY03. This is right in line with our 10 year average of 22. We lost 10 F-16s (half squadron). This year we saw a spike in Mid-Air collisions which often resulted in 2 destroyed aircraft per mishap.

- TG-10 Abrupt Maneuver
- F-16X2 Mid-Air
- F-16 CFIT
- A-10X2 Mid-Air
- T-37 Mid-Air
- U-2S Power Plant
- QF-4E System – Non Power Plant
- T-38 LOC-I
- F-15 Mid-Air
- T-38 TT & L (blown tire)
- MH-53 TT & L (Brownout Ldg)
- HH-60 CFIT
- F-16 (2) BASH
- F-15E System – Non Power Plant
- F-16 Power Plant
- F-16 Fuel Related
- F-16 CFIT
- F-16 CFIT
- F-16 Power Plant



Aviation Class A Mishaps FY03 by Category

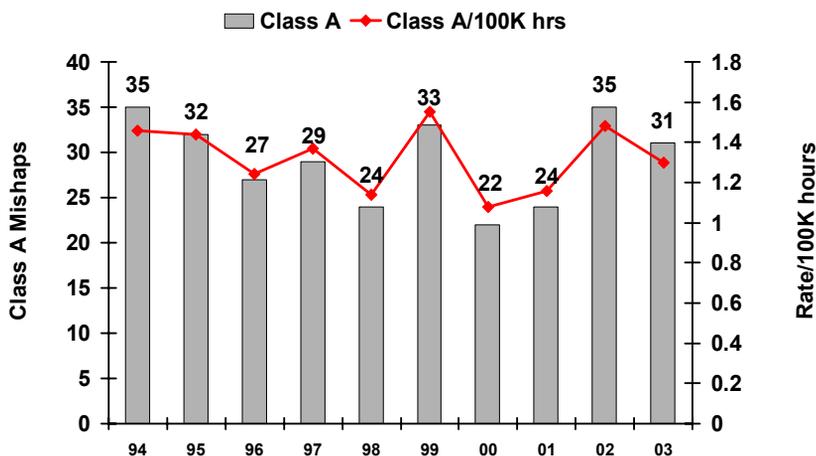


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- ◆ **AIRCRAFT, FLIGHT** = Any mishap in which there is Intent for Flight and reportable damage to a DoD aircraft (not including UAVs). See AFI 91-204 for the full definition.
- ◆ **AIRCRAFT, FLIGHT-RELATED** = Any mishap in which there is Intent for Flight and no reportable damage to a DoD aircraft itself, but the mishap involves fatality, reportable injury, or reportable property damage. See AFI 91-204 for the full definition.
- ◆ **AIRCRAFT, GROUND OPERATIONS** = Any mishap in which there is no Intent for Flight and results in damage to a DoD aircraft, a fatality, reportable injury, or reportable property damage. Damage to an aircraft when it is being handled as cargo is a Ground & Industrial mishap. See AFI 91-204 for the full definition.
- ◆ **UAV** = Any mishap resulting in damage to a DoD UAV, but not involving a DoD aircraft. Damage to a UAV when it is being handled as cargo is a Ground & Industrial mishap. See AFI 91-204 for the full definition.
- ◆ 58% of FY03 (18 of 31) flight mishaps were ops causal related, down from 68% in FY 02 yet still 5% greater than our 10 year average of 53 %.
 - 18/31 OPS
 - 9/31 Log/MX Log/ Mx (7/2) respectively
 - 4/31 Other 3 (BASH), 1 undetermined FOD



Aviation Flight Class A Mishaps Class A / Class A Rate per 100,000 hours



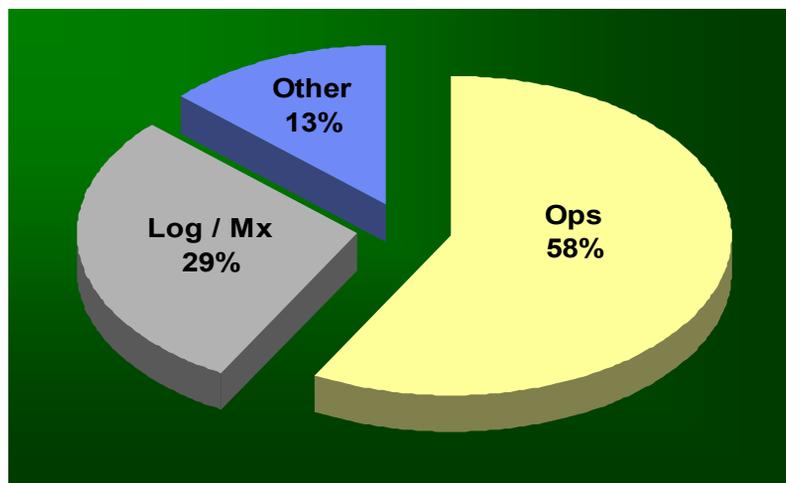
10-Yr Avg Annual Flight Class A Mishaps / Class A Rate: 29.2 / 1.33

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- ◆ There were a total of 31 Class A Flight Mishaps with the following drivers:
 - 6 Power Plant
 - 5 CFIT
 - 5 Taxi, Takeoff, and Landing
 - 5 Mid Air Collisions (Spike)
 - 4 System Failures – Non Power Plant
 - 3 BASH (Spike)
- ◆ Decrease of 4 from FY02



Aviation Flight Class A Mishaps FY03 by Cause



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- ◆ **O = OPERATIONS** Events primarily attributed to deficiencies involving flying operations, to include air traffic control, operational guidance, flight crew training and flying supervision.
- ◆ **L = LOGISTICS & MAINTENANCE** Events primarily attributed to deficiencies involving the design, manufacture, overhaul, repair, maintenance or servicing of aircraft to include supervision and training of maintenance personnel.
- ◆ **E = MISCELLANEOUS** Events primarily attributed to wildlife strikes; unavoidable effects of weather; airfield management, services and environment; or where insufficient information exists to otherwise attribute.
- ◆ 58% of FY03 (18 of 31) mishaps were ops causal related, down from 68% in FY 02 yet still 5% greater than our 10 year avg of 53 %.
 - 18/31 OPS
 - 9/31 Log/MX (7/2 respectively)
 - 4/31 Other (BASH/FOD; 3/1 respectively)



Aviation Flight Class A Mishaps Percentage by Cause

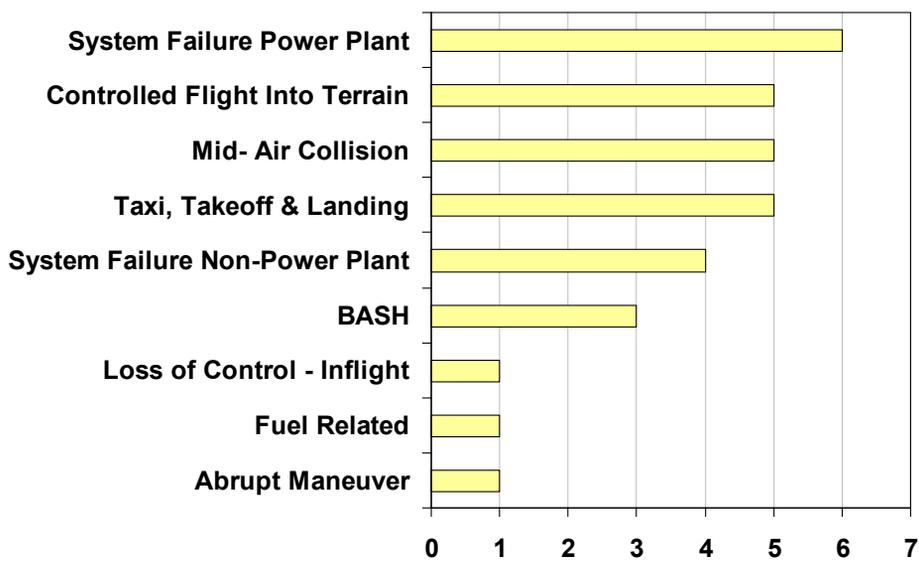
Type of Mishap	Average FY93 - FY02	FY03
Operations	53	58
Logistics / Maintenance	42	29
Other	5	13
Total	100%	100%

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- ◆ Ops 5% increase from 10 year average – human factors present in all FY 03 CFITs, Mid-Air, and Takeoff/Taxi/ Landing mishaps
- ◆ Log/Mx 10% decrease – 7 Logistics – 2 MX
 - Mx – Failure to follow T.O. guidance resulted in 2 Class A mishaps with 1 destroyed aircraft
- ◆ Other increase due to BASH increase to 3 Class A’s resulting in 2 destroyed A/C
 - All 3 were in the Takeoff/Landing/Low-Approach phase of flight
 - ✧ Airfield Drainage problems
 - ✧ Wildlife management studies – not identifying all risks to flight safety e.g. doing bird analysis at 0600 will fail to identify soaring raptors that rely on thermals at mid-day



Aviation Flight Class A Mishaps FY03 by Type



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- ◆ These are the types of Aviation Flight Mishaps we had in FY03.
 - CFIT and LOC-I were less than the 10 year avg
 - Mid Air's and TT & L were greater than our 10 year avg
 - BASH is 3 times the 10 year avg of 1 Class A per year



Aviation Flight Class A Mishaps Percentage by Type

Type of Mishap	Average FY93 - FY02	FY03
Power Plant	24.6	19.5
CFIT	21.2	16.1
Mid-Air Collision	8.9	16.1
Taxi, Takeoff & Landing	8.6	16.1
System	12.3	12.9
BASH	4.0	9.7
LOC Inflight	11.6	3.2
Fuel Related	0.0	3.2
Abrupt Maneuver	0.0	3.2
Other	8.8	0.0
Total	100%	100%

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- ◆ Comparing the types of FY 03 mishaps to the previous 10 years reveals that Power plant mishaps are still the # 1 occurrence of Class A mishaps.
- ◆ We saw Mid Air and TT & L double the 10-year average.. Mid-Airs were caused largely by task misprioritization and channelized attention. The TT &L mishaps were all landing mishaps. Two of the Takeoff/Taxi/Landing mishaps were attributed to poor planning by the crew.
- ◆ BASH increased 2 ½ fold. All BASH Class A mishaps occurred during Takeoff, Landing, or Low Approach.
 - KC-135E – Engine and airframe damage hitting a Wild Turkey on landing at dawn.
 - F-16 – Hit Spot-Billed duck on takeoff at Dusk
 - F-16 – Hit Turkey Vulture on SFO low-approach



Aviation Flight Mishap Comparisons ***FY03 / FY02***

- ◆ **11 less total fatalities (11 vs. 22)**
- ◆ **Increased Destroyed Aircraft (22 vs. 19)**
- ◆ **4 less Class A mishaps (31 vs. 35)**
 - **Class A mishap rate (1.30 vs. 1.52)**
- ◆ **10% decrease in ops mishaps**
 - **58% (18 of 31) vs 68% (24 / 35)**

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- ◆ Fatalities driven largely by the type of aircraft involved
- ◆ 3 more destroyed aircraft in FY03 than FY02
- ◆ Class A rate and cause due to operations decreased slightly in FY03



Flight Lessons Re-Learned

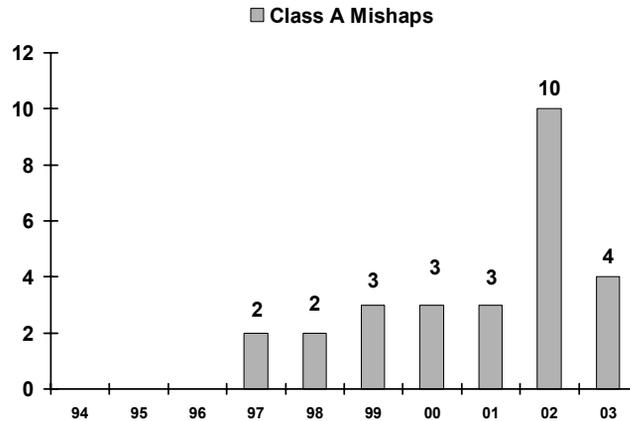
- ◆ **5 mid-air collision mishaps**
 - **Culture of assumption, judgment, misplaced priorities**
 - ◆ **High correlation of fatalities to operations mishaps**
 - **All 11 fatalities occurred in ops mishaps**
 - **Bad decisions kill people!**
 - ◆ **Poor leadership decisions**
 - **Accepting wrong risk ... Risk vs. Benefit**
-

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- ◆ Spike in mid-air collisions occurred last year—FY03 was double the 10 year average
- ◆ Human errors are the driver for all the fatalities
- ◆ Important to plan for and mitigate 'less than optimum pilot performance'



Aviation UAV Class A Mishaps



10-Year Average Annual Flight Class A Mishaps: 2.7

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- ◆ There were a total of 4 Class A UAV Mishaps with the following drivers:
 - QF-4 – Loss of Carrier
 - RQ-1 – FOD left in oil crankcase during MX-oil leak/in flt fire
 - RQ-1 - Lost LOS link, destroyed UAV
 - Aerostat – Hull Ruptured during high winds
 - NOTE: More in line with historical averages. FY02, lot of mishaps driven by UAV's made operational to meet contingency needs before fully tested.
- ◆ Decrease of 60% from FY02
 - FY02 5 X RQ-1, 2 X RQ-4, 2 X QF-4, 1 Aerostat



Aviation UAV

FY03 Class A Mishaps

- ◆ **QF-4**
- ◆ **RQ-1 x 2**
- ◆ **Aerostat**
 - **Problems**
 - ◇ **Poor system design**
 - ◇ **Lost Line Of Sight (LOS) link, Loss of Carrier**
 - ◇ **Poor crew coordination**
 - ◇ **FOD in engine**

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- ◆ We must devote comparable resources and energies to mitigating UAV hazards as we do aircraft hazards



Aviation Ground Ops FY03 Class A Mishaps

- ◆ **C-20 ... Engine run fire**
- ◆ **C-17 ... Fire during Reverse taxi**
- ◆ **F-15 ... Engine damaged on test stand**
- ◆ **F-16 ... Brake failure during taxi**
- ◆ **KC-135 ... Nose landing gear collapsed**
 - **Frequent problem**
 - ✧ **Failure to follow Tech Order Guidance**

Integrity - Service - Excellence

- ◆ Failure to follow T.O. guidance highlighted in many of last year's mishaps—a growing and unacceptable trend



Aviation Flight-Related FY03 Class A Mishaps

- ◆ **B-52 ... killed 1 US Marine
destroyed 2 USMC CH-53E**

Integrity - Service - Excellence

- ◆ A Flight-Related mishap is any mishap in which there is Intent for Flight and no reportable damage to the aircraft itself, but the mishap involves fatality, reportable injury, or reportable property damage.
- ◆ B-52 mishap involved friendly fire during training



Way Ahead

- ◆ **SECDEF ... 50% mishap reduction**
 - ◆ **Priorities for aviation safety**
 - **CFIT**
 - **Powerplant**
 - **Mid-Air Collisions**
 - **Loss of Control – Inflight**
 - **Systems – Non-Powerplant**
 - **BASH**
 - **Object Damage**
-

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- ◆ Secretary Rumsfeld has challenged USAF to reduced mishaps by 50%
- ◆ 10-year safety analysis revealed seven priorities to achieve these goals
- ◆ Achievement of Secretary Rumsfeld's goal will require significant investments in mitigating technologies



Ground Safety Summary



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FY03 Ground Safety Summary

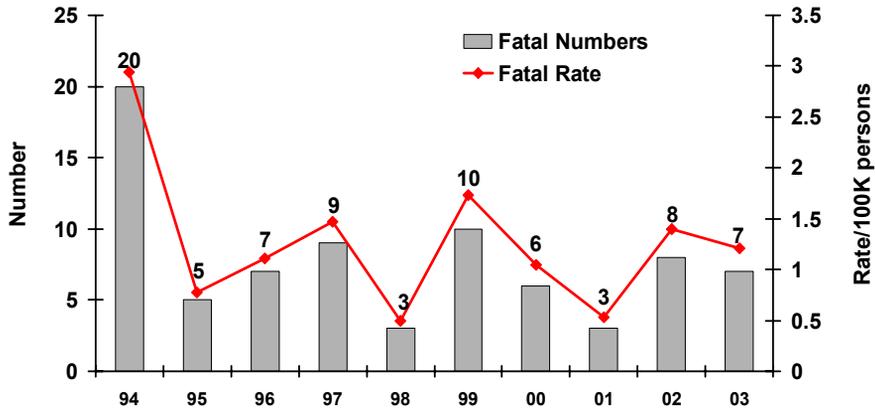
- ◆ **7 on-duty fatalities**
 - **1 every 52 days**
- ◆ **75 off-duty fatalities**
 - **1 every 5 days**

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- ◆ A review of our FY 2003 fatal mishaps revealed we experienced a decrease in both on-duty (one) and off-duty (eight) mishaps.
- ◆ Despite these decreases, it was our second worst year since 1995, second only to last year.
- ◆ In total, eighty-two people lost their lives in ground mishaps; eighty-two people who won't return to their families, friends, or coworkers.
- ◆ As in recent years, off-duty mishaps continue to be the largest "taker" of Air Force lives.



On-Duty Ground Fatalities



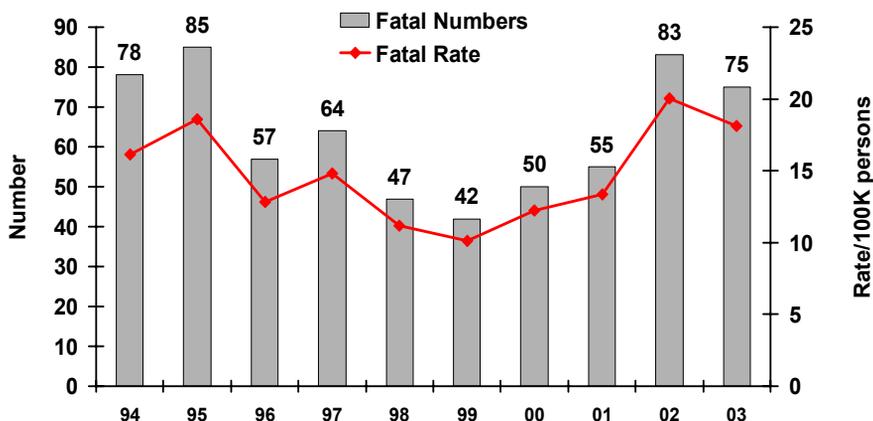
Ground Fatalities / Fatal Rate FY Comparison: **FY03** 7 / 1.21
FY02 8 / 1.40
(FY94 - FY03) 10-yr Avg 7.8 / 1.29

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- ◆ Seven (nine percent) of our fatalities occurred in on-duty mishaps while seventy-five (ninety-one percent) occurred in off-duty mishaps.



Off-Duty Ground Fatalities



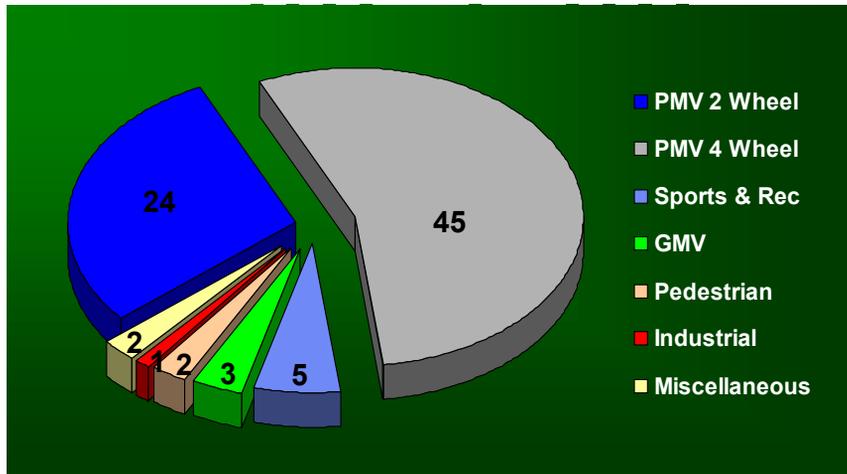
Ground Fatalities / Fatal Rate FY Comparison: **FY03 75 / 18.13**
FY02 83 / 20.06
(FY94 - FY03) 10-yr Avg 63.5 / 14.76

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- ◆ PMV mishaps dominated our off duty losses
 - 43 Air Force members lost their lives in off-duty PMV4 mishaps
 - 23 Air Force members lost their lives in off-duty PMV2 mishaps
 - 2 Air Force members lost their lives in pedestrian mishaps
- ◆ Sports and recreation mishaps accounted for five fatalities
 - 3 were water related
 - 2 involved ATVs
- ◆ The remaining two fatalities were miscellaneous mishaps
 - 1 electrocution when mast of boat struck power line
 - 1 private aircraft crash



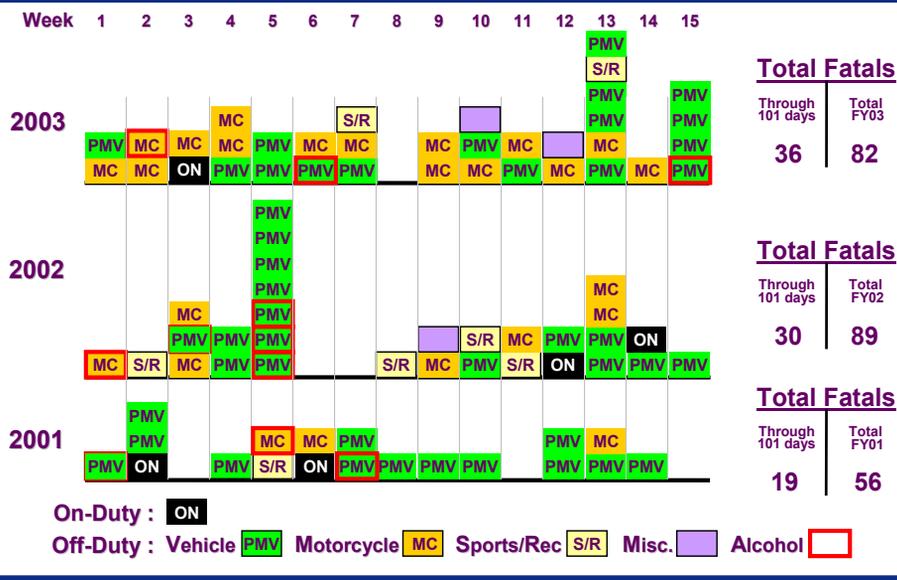
Ground Mishap Fatalities FY03 by Category



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101 Critical Days Fatality Summary

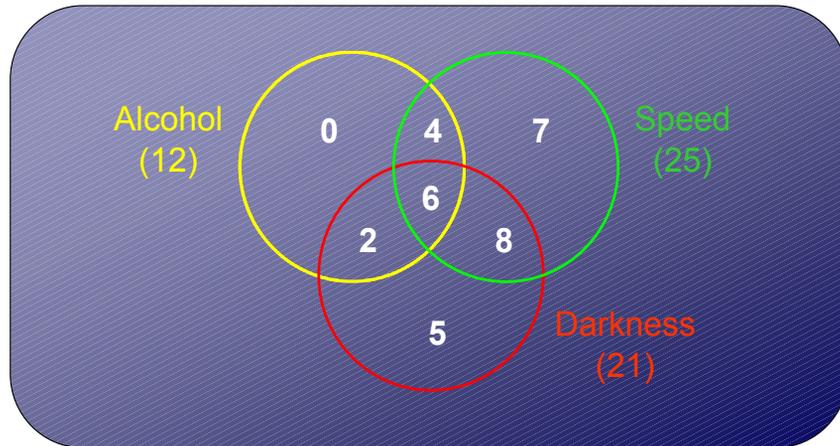


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- ◆ The summer typically brings increased opportunities for many off-duty outdoor activities and travel.
- ◆ These opportunities also may bring an increase in mishap potential and as such the 101 Critical Days of Summer campaign was developed to help mitigate the increased mishap potential.
- ◆ This year, it was a critical period in our fatality rates. Almost half, forty-four percent, of our fatalities occurred during the campaign this year compared to the thirty-three percent that occurred during both the '02 campaign and '01 campaign.
- ◆ The most notable increase occurred in motorcycle fatalities as our numbers more than doubled from the previous campaign.
- ◆ Again, as the days get warmer, activities may change or increase potentially resulting in a greater hazard exposure and mishap potential.



Fatal PMV 4 Wheel FY03 Mishap Factors



Alcohol, Speed, and Darkness

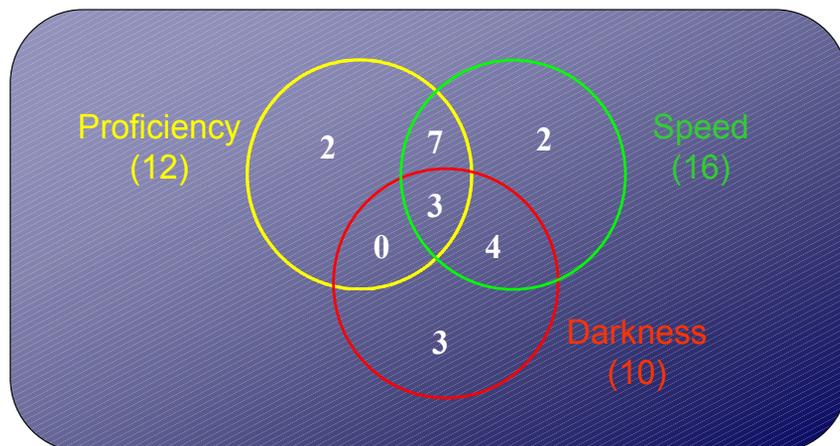
Total Fatalities Reviewed = 41

Integrity - Service - Excellence

- ◆ This chart reflects an operator's common risk factors for automobile traffic deaths.
- ◆ The common factors for automobile mishaps were SPEED and ALCOHOL.



Fatal PMV 2 Wheel FY03 Mishap Factors



Lack of Proficiency, Speed and Darkness

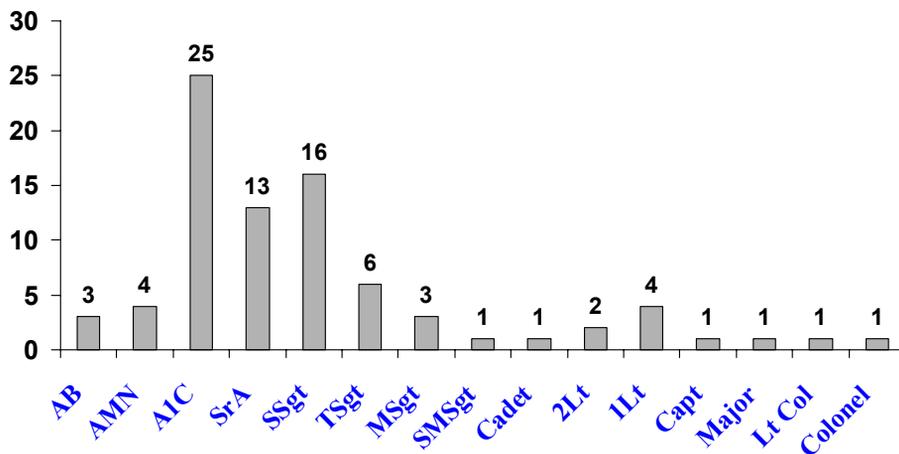
Total Fatalities Reviewed = 23

Integrity - Service - Excellence

- ◆ This chart reflects an operator's common risk factors for motorcycle traffic deaths.
- ◆ The common factors for automobile mishaps were SPEED and PROFICIENCY



FY03 Fatalities by Rank

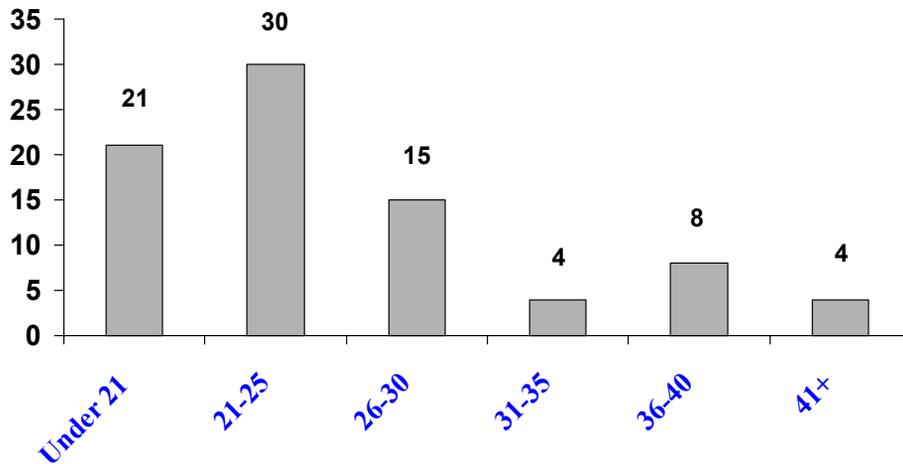


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- ◆ The grades of A1C-SSgt dominate our losses. Combined, they account for 67% of our fatalities. These ranks comprise 50% of our active duty personnel.
- ◆ Our Senior NCOs were 11% of the workforce and accounted for 5% of our fatalities.
- ◆ Lieutenants and Captains comprised 12% of our workforce and 9% of the fatalities.



FY03 Fatalities by Age

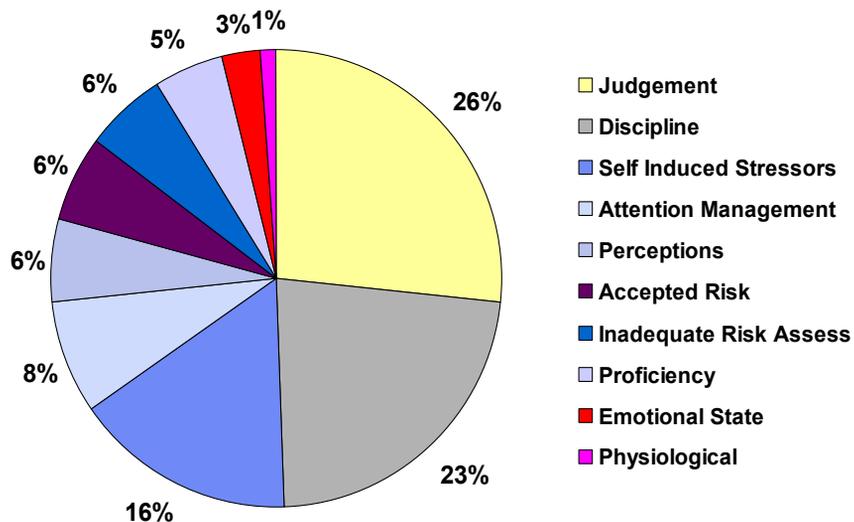


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- ◆ Those between the ages of 18-25 accounted for a combined 61% of our fatalities, while they were 42% of the population. Increased attention must be focused on reaching out to our younger members and helping them understand the need of analyzing their actions and modifying their behavior. Males represent 76% of the under 25 population and accounted for 81% of this group's mishaps.



Cause Reason



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- ◆ The most significant factor in our losses was our own people.
- ◆ Eighty-eight percent of the causal findings reviewed were accounted to our people.
- ◆ Of the reasons, judgment, discipline, and self-induced stressors clearly led the way.
- ◆ We are, in effect, killing ourselves by the lack of sound risk management decisions or disregarding clear and understood requirements.
- ◆ Regardless if we are riding in a car, operating a motorcycle, or participating in other high-risk activities, risk must be identified and mitigated even in our own behavior.
- ◆ Is there an easy answer to reverse our current trends? Doubtful. More than likely it will take a concerted effort from supervisors, commanders, peers, and individuals alike to reverse this trend.
 - Each mishap has a negative affect on mission capability. By using sound risk management principles, we ensure we can attain the highest level of mission accomplishment day-in and day-out.



Lessons Learned (1)

- ◆ **Alcohol involved in 18 fatal mishaps**
- ◆ **Factors in automobile accidents**
 - **Driving too fast for conditions**
 - **Alcohol**
 - **Fatigue**
 - **Darkness**

Integrity - Service - Excellence

- ◆ Alcohol involvement in fatal crashes was down to 18 in FY03 from 25 in FY02.
- ◆ Speed, alcohol, fatigue, and darkness continue to be significant factors in Air Force traffic fatalities.



Lessons Learned (2)

- ◆ **Young airmen ... group most at risk**
 - **Particularly males**
 - **Ages 18-25**
- ◆ **11 motor vehicle fatalities occurred where seat belts were not used**

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- ◆ There was not a significant difference in fatal losses between male and female crashes.
- ◆ A significant factor to note was all eleven not wearing their seat belts were male operators and passengers.



Lessons Learned (3) ***Off-Duty Motorcycle Fatalities***

- ◆ **23 deaths**
 - **Three more than last year**
- ◆ **Excessive speed for conditions & proficiency**
- ◆ **11 due to loss of control**
 - **Did not involve a collision with another vehicle**
- ◆ **3 involved alcohol**
- ◆ **6 not MSF trained**
- ◆ **6 did not wear helmet**



Weapons and Space Safety Summary



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FY03 Weapons Safety Summary

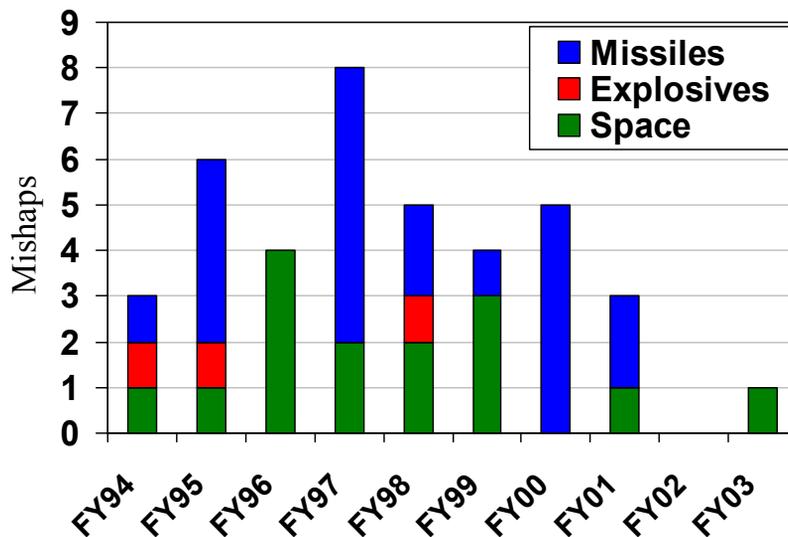
- ◆ **Space**
 - 1 Class A
- ◆ **Missiles**
 - Zero Class A ... 2 Class B
- ◆ **Explosives**
 - Zero Class A ... 1 Class B
- ◆ **Total cost \$3,153,000**
 - \$8,638 per day

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- ◆ Low number of events but high cost per mishap



Space, Missile and Explosives FY03 Class A Mishap Summary

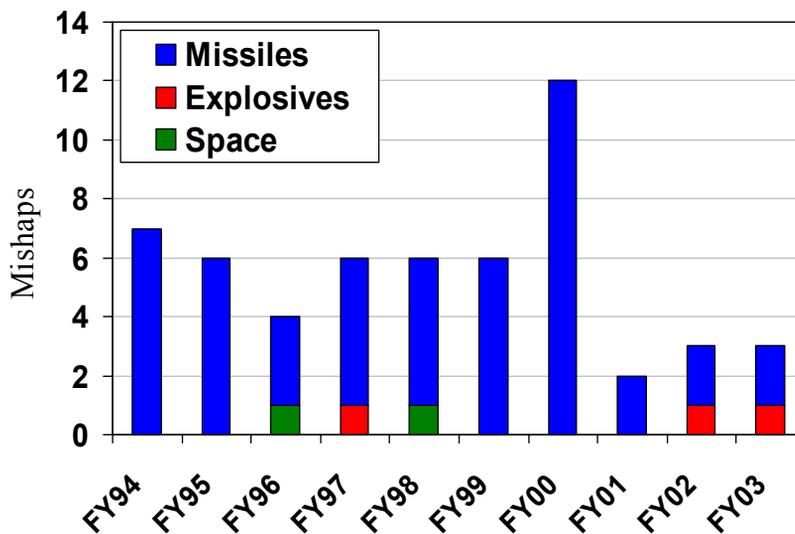


Integrity - Service - Excellence

- ◆ A review of the space, explosive, and missile mishaps for FY 03 reveals the continuance of a healthy safety trend. Technical data compliance, supervisor involvement, quality assurance, and personal accountability highlight an outstanding safety program that excels in mishap prevention.
- ◆ Space experienced one Class A mishap in FY 03. The recommendations of the board will improve contractor operations and maintenance, with a good chance of preventing future mishaps.
- ◆ Missiles held the line from FY 02 with zero Class A mishaps.
- ◆ Explosive safety had an outstanding year. There were zero Class A mishaps.



Space, Missile and Explosives FY03 Class B Mishap Summary



Integrity - Service - Excellence

- ◆ A review of the space, explosive, and missile Class B mishaps for FY 03 reveals they held the line from last year. Technical data compliance, supervisor involvement, quality assurance, and personal accountability highlight an outstanding safety program that excels in mishap prevention.
- ◆ There were two class B missile mishaps in 03. One involved a drone, which will be an aviation mishap in the new 91-204. The other was an AGM-130 fire.
- ◆ Explosive safety had an outstanding year. The one class B mishap involved damage to a sled track in the test environment from the premature explosion of a BLU-119.



Lessons Learned

- ◆ **Technical data compliance**
- ◆ **Supervisory follow up**