# FY11 AVIATION SAFETY REPORT

The purpose of the Annual Aviation Safety Report is to inform and raise the awareness of all Coast Guard aircrew regarding aviation mishaps. Safety awareness is essential to improving operational performance and preventing aviation mishaps. This report contains fiscal year 2011 mishap information as well as prior years and DOD data for comparison. We hope everyone will use this report to evaluate our aviation mishap experience and become more involved in mishap prevention.

**NOTE:** Unless otherwise indicated, only flight mishaps are used for the annual statistics, instead of total mishaps (flight, flight-related and ground). This is the traditional way of reporting annual numbers within the aviation industry. The other categories of mishaps are just as important, and are reviewed separately.

At times, when referring to FY10 Total Mishap or FY10 Total Flight Mishap cost the cost figures will be listed minus the Class A mishap costs ($124,860,366). Excluding the cost of the five FY10 Class A mishaps allows for more meaningful discussions and comparisons. The graphs on page 6, illustrate the impact of the Class A costs on the overall mishap costs.

This is not to downplay these five mishaps, but the FY10 Class A cost was not only the highest annual Class A cost CG aviation has ever experienced, it was more than the previous 13 Class A Flight mishaps combined. Of course, that number was spread out over 16 years and 13 aircraft. The FY10 Class A mishap cost was also higher than the previous eight highest Class A Flight Mishap cost combined ($121,683,215).

This will be my final Annual Aviation Safety Report. I wrote the first for FY94 and every year since, I devote many hours and days to culling through the mishap reports to put together this short but effect summary of our mishap prevention efforts. Efforts, I can proudly say are shared and respected by every member of the CG aviation community. Just like the aviation safety program, this report has gone thru many changes and improvements since I started this job in 1989. It's been a good flight and I've enjoyed every minute and every day and take away some great memories.

Stay safe. **CZ**

## FROM THE CHIEF OF AVIATION SAFETY

At the time this report is being finalized (February 2012) Coast Guard aviation has achieved more than 19 months of Class "A" mishap free operation. After taking a moment to acknowledge this success I'd like to focus on one of the means of ensuring Coast Guard aviation continues to record positive safety milestones.

A Class A mishap rate of zero cannot be reduced. However, one step critical to maintaining a zero Class A mishap is to ensure that every mishap, regardless of the severity of the outcome, is promptly reported and thoroughly analyzed. Well informed flight and maintenance crews are the last defense against a major mishap. Timely mishap reporting and in-depth mishap analysis provide our crews one tool they need to prevent potential mishaps.

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At this point you may be thinking "how can a mishap report be both timely and in-depth?" The simple answer is that it is very unlikely that one report will meet both goals; that is why our reporting system includes features to accomplish both. Unfortunately, these features are sometimes overlooked or under used.

Unit generated mishap reports, normally associated with Class C and D mishaps, have not traditionally included in-depth analysis. These reports are aimed at identifying what happened, and are expected to be able to quickly answer "why" questions as well because all the participants are able to take part in the analysis. There are far fewer mysteries when a (mostly) intact aircraft and crew are available to the investigators. However, unit reports are becoming increasingly complex as commands leverage engineering and human factors expertise to improve their reports. As the investigations become more complex there is often pressure to delay the report, defeating one of the greatest strengths of the unit mishap report, timeliness. The under used answer to the timeliness problem is the preliminary mishap report. A preliminary mishap report quickly raises the awareness of the aviation community by reporting the "what" aspects of the mishap and enlists the help of the entire community in determining the "why." Preliminary mishap reports ensure the entire community is alerted to a possible widespread hazard without stopping the process of an in-depth analysis.

One of the chief complaints about the Coast Guard's mishap investigation process is that it simply takes too long for information about Class A and B mishaps to get disseminated to the fleet. Commandant directed Mishap Analysis Boards (MAB) can begin releasing information, via the Tri-P, very quickly after beginning the investigation. These early messages provide information on what happened while the board continues the task of determining why. As the MAB continues its work, additional messages may be released. These messages can contain additional information about the circumstances of the event or publish interim recommendations to address hazards that could result in a similar mishap.

Ensuring these progress messages are released serves the same purpose as a preliminary mishap report, providing vital information to the fleet with minimum delay. Complex "why" questions, that often involve examination of Coast Guard policy, are answered later when final mishap documents are released.

When properly executed both unit and Commandant safety investigations provide timely information for prevention of future mishaps. It is up to all of us as both producers and consumers of these reports to ensure we are doing our part to support an informed safety culture.

**CDR Joel Rebholz**
Chief Aviation Safety Division (CG-1131).

**MISHAP CLASS COST BREAKDOWN**

**FY10-Present**

| | |
|---|---|
| Class A | $2,000,000 or greater or death |
| Class B | $500,000 to $1,999,999 or serious injury |
| Class C | $50,000 to $499,999 or minor injury |
| Class D | Less than $25,000 |
| Class E | Engine damage only, regardless of cost |

**FY02-FY08**

| | |
|---|---|
| Class A | $1,000,000 or greater or death |
| Class B | $200,000 to $999,999 or serious injury |
| Class C | $20,000 to $199,999 or minor injury |
| Class D | Less than $20,000 |
| Class E | Engine damage only, regardless of cost |

**FY89-FY01**

| | |
|---|---|
| Class A | $1,000,000 or greater or death |
| Class B | $200,000 to $999,999 or serious injury |
| Class C | $10,000 to $199,999 or minor injury |
| Class D | Less than $10,000 |

**MISHAP CATEGORIES**

**Flight Mishaps**--Mishaps involving damage to Coast Guard aircraft and intent for flight existed at the time of the mishap. There may be other property damage, death, injury, or occupational illness involved.

**Flight-Related Mishaps**--Mishaps where intent for flight existed at the time of the mishap and there is **NO** Coast Guard aircraft damage, but there is death, injury, occupational illness, or other property damage.

**Ground Mishaps**--Mishaps involving Coast Guard aircraft or aviation equipment where **NO** intent for flight existed and the mishap resulted in aircraft damage, death, injury, occupational illness, or other property damage (e.g., towing, maintenance, repairing, ground handling, etc.)

**Auxiliary Aviation Mishaps**--Injuries or property damage sustained by an Auxiliarist while under official orders.

**NOTE:** Dollar values of mishap costs are actual annual costs -- not adjusted for inflation.

NOTE: Mishap Cost thresholds increased 1 Oct 2009

**Table 1**

## ANNUAL RECAP

Coast Guard Aviation flew 113,363 hours and reported no Class A or B mishaps in FY11. This is good news. Three out of the last five years and six out of the last ten years reported no Class A mishap. Figure 1 (on page 3 ) illustrates how our

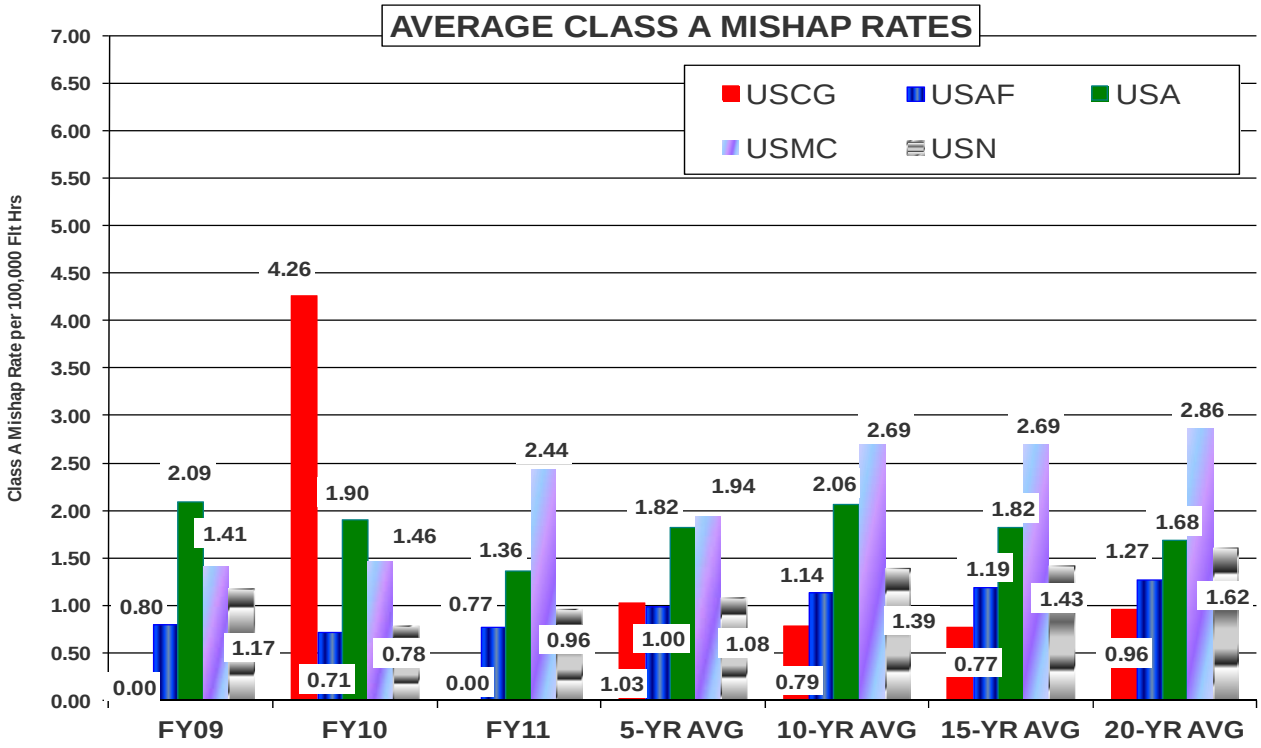



**Figure 1**

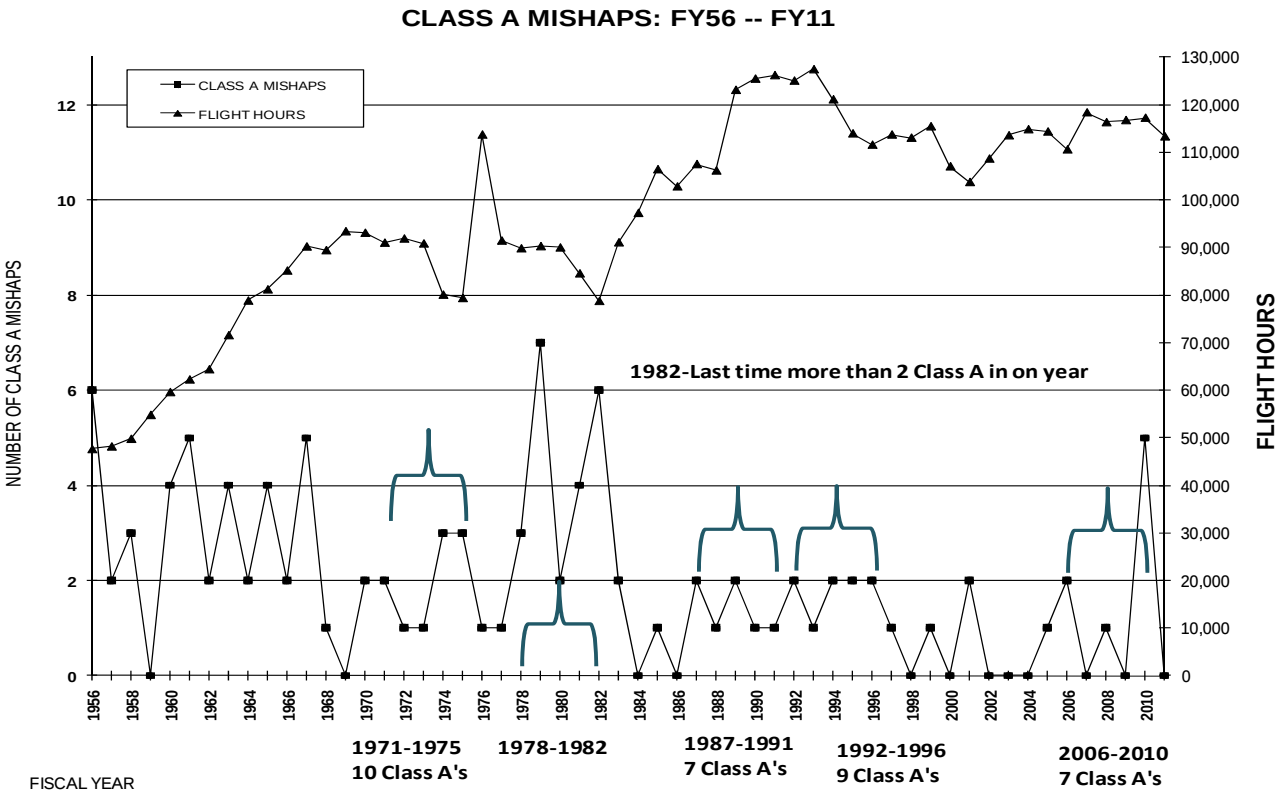



**Figure 2**

5- and 10- year averages are moving back toward less than one Flight Class A mishap a year average. Our 15- and 20- year Class A Flight mishap rates per 100,000 flight hours are 0.77 and 0.96 respectively (for perspective, last year these rates were 0.88 and 1.00). The Coast Guard Aviation 5- and 10-year rates are 1.03 and 0.79 (see Figure 1). Figure 2 on page 3 displays our Class A Flight mishap history along with total flight hours since 1956. This graph also shows that until 2010, we had not had more than two Flight Class A mishaps in one year since 1982. This graph is annotated to show previous five year periods where the number of Class A mishaps were high. Figure 3 below, displays the Coast Guard aviation Class A Flight mishap rates for the past fifteen years.

Over the last 25 years we have had a total of 29 Flight Class A mishaps. Eight of the last 15 years reported no Class A's. Last year's five Class A mishaps had an even stronger impacted on CG Aviation because of the numbers of lives we lost. The last time we lost ten aircrew in one year was FY82. The 6505 in FY08 was the first fatal mishap since FY97. Of the 38 Class A between FY82 and FY10, eleven were fatal mishaps with 44 lives lost. See the last two pages of this report to review the Coast Guard Class A and B mishaps since FY91.

Figure 1 on page 3, compares Coast Guard 5, 10, 25, and 20-year Class A Flight Mishap rates with the DOD Services. Figure 4 on page 5 provides a comparison of Coast Guard Aviation Class A Flight mishap rates to the DOD military services for the last ten years.

Flight Mishap costs reported for FY11 were $2,857,004. FY10 Flight Mishap costs were $8,604,654 without the five Class A mishaps. The number of Flight mishaps (189) reported this year was the lowest since FY01. The Total Flight mishap rate of 0.17 (per 100 flight hours) has not been that low since FY01. Total Aviation mishap costs (Flight, Flight-Related and Ground) for FY11 were $3,854,118. (FY10 costs were $8,540,848 without the five Class A mishaps).

CG Auxiliary Aviation reported no Class A or B mishaps in FY11. Auxiliary Aviation flight hours and mishaps are not used in figuring CG mishap rates in this report.

Of the 410 aviation mishaps reported this year, only 81 were Ground (about average) and 140 were Flight-Related. Flight-Related mishaps were up again this year, but, this appears to be a good thing. These reports represent events that were stopped before a more serious mishap occur. Of the 140 Flight-Related mishap reported, only eight had cost above $100 and 105 reported zero costs. The most costly Flight-Related mishap was only $225. Table 2 on page 5, displays the FY11 Aviation Mishap summary data.

As we say every year, we feel our conscientious and methodical reporting is what helps us achieve our low mishap rate. The lessons learned from reporting low/no cost incidents can greatly assist in averting high-cost incidents ("cost" being in terms of injuries, loss operation time and dollars). Reporting the low/no cost mishaps helps perpetuate what we believe is a very positive and

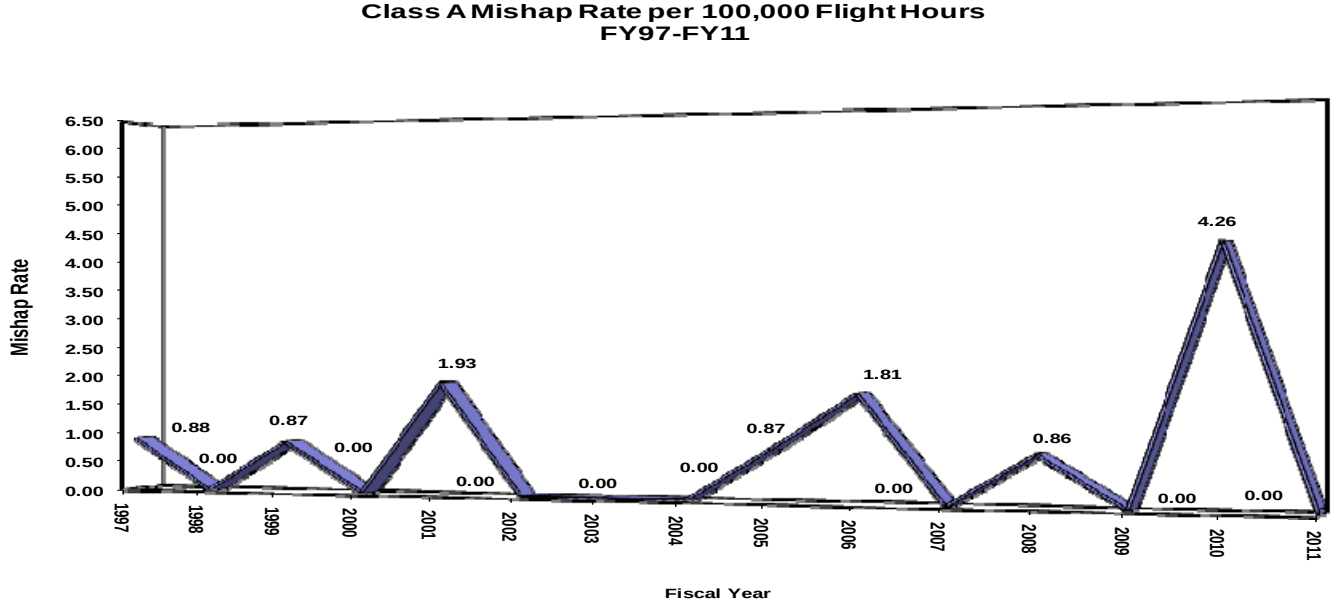



**Figure 3**

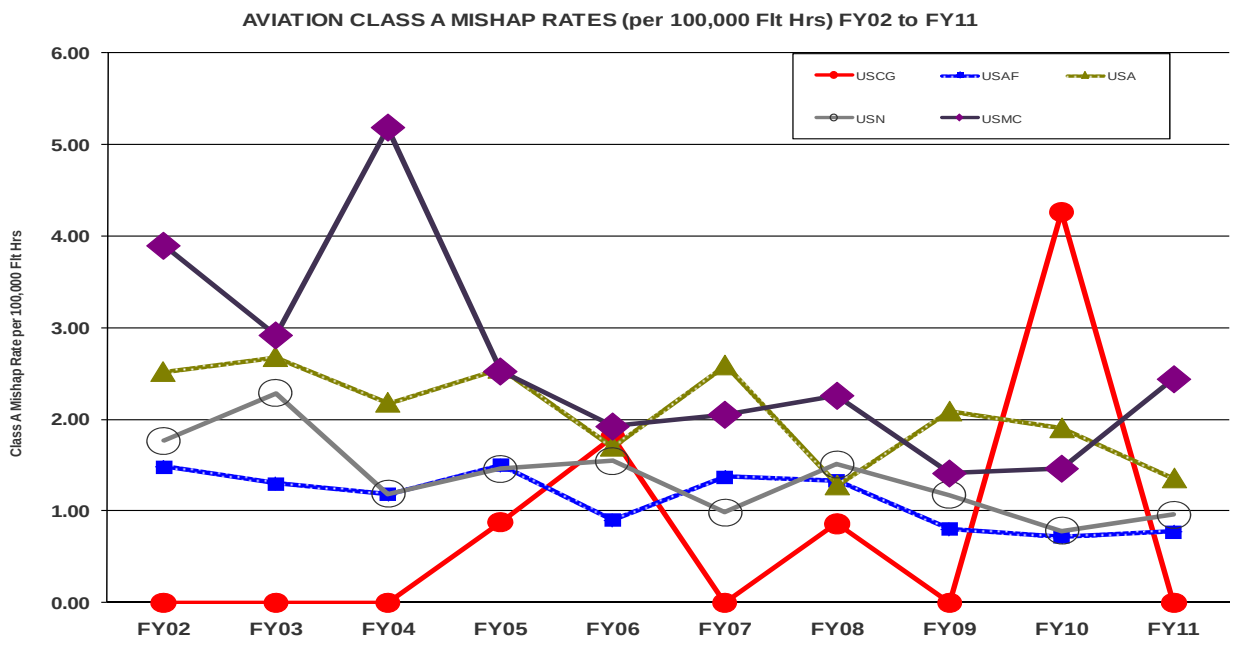



**Figure 4**

| FY10 GRAND TOTALS | | | |
|---|---|---|---|
| CLASS | # MISHAPS | COST | FATALS |
| A | 0 | 0 | 0 |
| B | 0 | 0 | |
| C | 25 | 1,608,561 | |
| D | 325 | 1,314,599 | |
| E | 60 | 930,959 | |
| TOTAL | 410 | 3,854,118 | 0 |

| | |
|---|---|
| TOTAL FLIGHT HOURS | 113,363 |
| CLASS A FLIGHT MISHAP RATE PER 100,OOO FLIGHT HRS | 0.00 |
| FLIGHT MISHAPS PER 100 FLIGHT HOURS | 0.17 |
| COST PER FLIGHT MISHAP | 15,116 |
| COST PER FLIGHT HOUR | 25 |

| FLIGHT MISHAPS | | | |
|---|---|---|---|
| CLASS | # MISHAPS | COST | INJURIES |
| A | 0 | 0 | 0 |
| B | 0 | 0 | 0 |
| C | 9 | 932,030 | 0 |
| D | 141 | 1,000,625 | 0 |
| E | 39 | 924,350 | 0 |
| TOTAL | 189 | 2,857,004 | 0 |

| GROUND MISHAPS | | |
|---|---|---|
| CLASS | # MISHAPS | COST |
| A | 0 | 0 |
| B | 0 | 0 |
| C | 13 | 676,531 |
| D | 63 | 312,479 |
| E | 5 | 6,059 |
| TOTAL | 81 | 995,070 |

| FLIGHT-RELATED MISHAPS | | |
|---|---|---|
| CLASS | # MISHAPS | COST |
| A | 0 | 0 |
| B | 0 | 0 |
| C | 3 | 0 |
| D | 121 | 1,494 |
| E | 16 | 550 |
| TOTAL | 140 | 2,044 |

**Table 2**

proactive safety culture within the Coast Guard. We believe that our success in self reporting often identifies safety hazards at the early stages. Thus setting us on a course to avoid the major mishaps that often result in lost lives and airframes.

Figures 5 and 6 (on page 6) display mishap cost data for the last ten years for Flight and Total Aviation Mishaps (Flight, Flight-Related and Ground). Figures 5 and 6 break out the Class A and Class E costs to help illustrate how, engine and Class A mishaps can impact the overall mishap costs. This also illustrate the relatively stable of the Class B, C and D mishap costs. Engine mishaps have historically accounted for close to half of the reported Coast Guard aviation mishaps costs. However, FY11 Class E costs accounted for only 32% of the Flight and 24% of the Total Aviation mishap costs.

Of the 189 Flight mishaps reported, 91% (172) were below the Class C threshold of $50,000 and accounted for only 44% ($1,264,265) of the Flight mishap costs. Almost two thirds (130) had cost less than $10,000. Similarly, looking at Total Mishap numbers (Flight, Flight-Related and Ground), 94% (386) of the 410 mishaps reported costs below the $50,000 threshold and again accounted for only 41% ($1,584,848) of the Total Aviation mishap costs. Eighty-one percent reported costs below $10,000. Table 3, on page 7, compares our mishap numbers for the last 5 years.

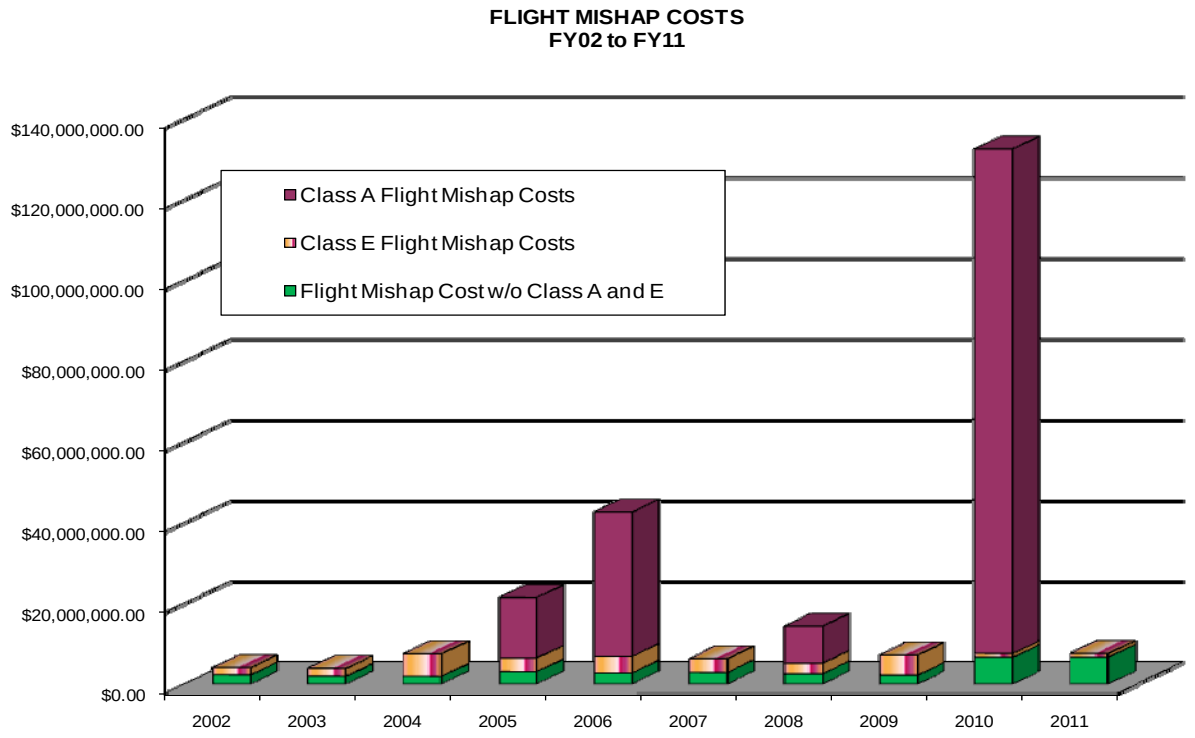



**Figure 5**

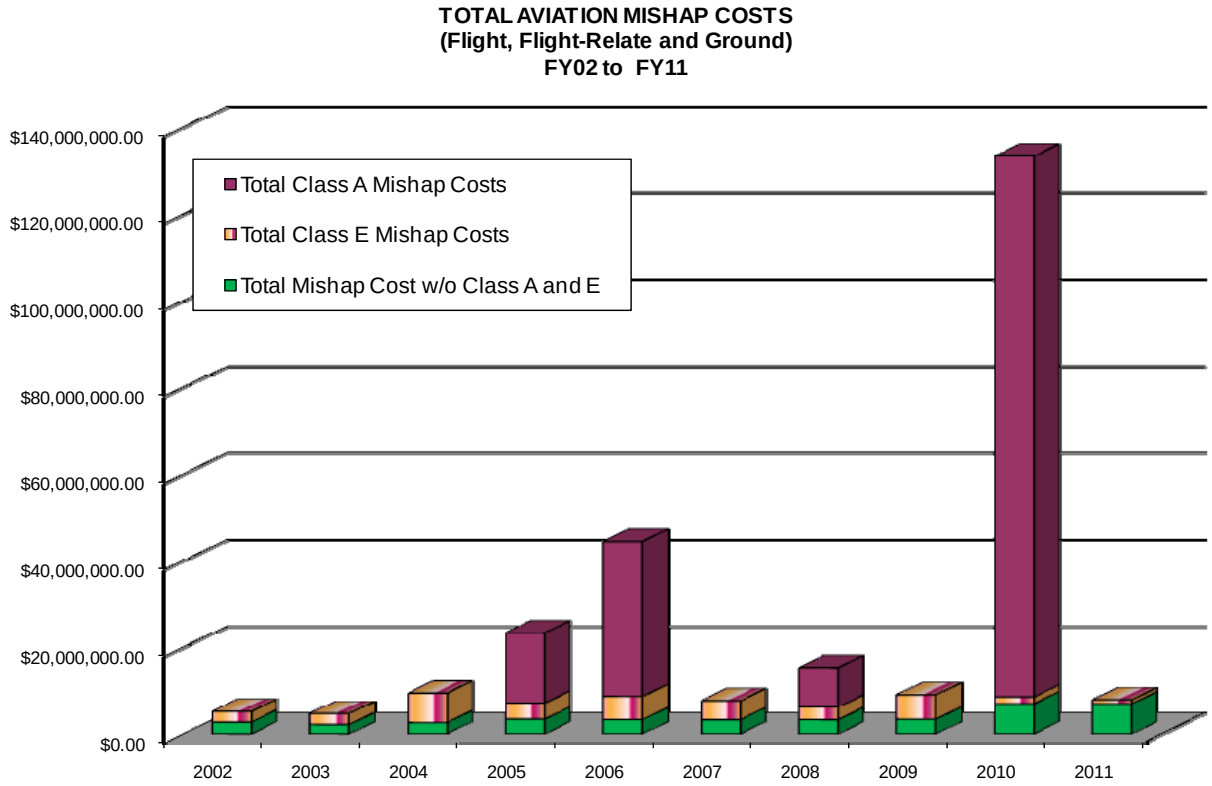



**Figure 6**

| AVIATION FLIGHT MISHAP SUMMARY (A, B, C, D and E Mishaps) | | | | | | | AVIATION FLIGHT MISHAP SUMMARY (A, B and C Mishaps) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABCDE | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR | ABC | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR |
| FY07 | 361 | $6,198,936 | 118,417 | 0.30 | $17,172 | $52 | FY07 | 31 | $20,399,400 | 118,417 | 0.03 | $658,045 | $172 |
| FY08 | 349 | $14,296,632 | 116,361 | 0.30 | $40,965 | $123 | FY08 | 32 | $11,178,350 | 116,361 | 0.03 | $349,323 | $96 |
| FY09 | 267 | $7,188,053 | 116,791 | 0.23 | $26,922 | $62 | FY09 | 22 | $1,673,753 | 116,791 | 0.02 | $76,080 | $14 |
| FY10 | 237 | $132,650,725 | 117,271 | 0.20 | $559,708 | $1,131 | FY10 | 27 | $130,587,993 | 117,271 | 0.02 | $4,836,592 | $1,114 |
| FY11 | 189 | $2,857,004 | 113,363 | 0.17 | $15,116 | $25 | FY11 | 9 | $932,030 | 113,363 | 0.01 | $103,559 | $8 |

**Table 3**

## FLIGHT DATA RECORDERS/FLIGHT DATA MONITORING

Every aircraft in the Coast Guard inventory continues to fly with some form of a crashworthy voice and/or flight data recorder. ALC has the ability to create animations in house for all airframes from the data extracted. A majority of airframes also contain a non-crashworthy data storage unit (DSU) or flight data acquisition unit (FDAU) that enables the quick acquisition of flight data to facilitate maintenance or safety investigations without having to perform the traditional method of shipping the entire flight recorder to ALC for analysis. The data storage units do not record voice data.

This efficient method of gathering flight data has facilitated the increased use of flight data to dictate maintenance actions and provide further clarity to unit safety investigations when it otherwise would not be available or returned in a reasonable time to make it effective. Atlantic City and HITRON continue to provide weekly uploads of their flight data for analysis and trending. This information is returned to the units within a few days to assist with maintenance actions and unit awareness of exceedence trends.

H-65: The H-65 fleet is outfitted with a GE K3 VADR. The K3 VADR is capable of recording 25 hours of flight data and 4 hours of voice. For the 65C, over 150 data points are recorded at a rate of 4 times per second. The 65D, captures over 250 parameters at a rate of 16 times a second. These additional parameters on the 65D include an array of outputs from the newly installed Embedded GPS/INS (EGI), including velocities, accelerations and rates. The 65 fleet is also completely outfitted with a separate data storage unit (DSU), located on the forward avionics tower.

MH-60J: The H-60J continues to use the legacy GE C VADR, capable of roughly 30 minutes of audio and 4 hours of flight data. Only 42 flight parameters are recorded by the C VADR.

MH60T: The H-60 Tango models are rolling off the PDM line with the newer K3 VADR and DSU system. The new K3 VADR captures 265 parameters.

HU-25: Currently the Falcon uses an L-3 Communications Combination Voice and Data Recorder (CVDR). Under the legacy configuration it is capable of recording 50 flight parameters for up to 25 hours and 2 hours of voice data. The addition of a Flight Data Acquisition Unit (FDAU) to the Falcon increased the captured parameters to roughly 150 onto the CVDR. FDAU's have been installed on the 2104, 2105, 2110, 2113, 2114, 2127, and the 2135.

C-130H: All HC-130H currently have an L-3 Communications Combination Voice/Data Recorder (CVDR). As on the HU-25, this recorder captures 25 hours of flight data and 2 hours of voice data. The same FDAU that is installed on the HU-25 is being installed in the HC-130H. This FDAU is enabling over 200 parameters to be recorded into the CVDR. As part of the FDAU installation, all HC-130H models will have an Engine Indicating Display System (EIDS) installed. The EIDS will replace the "steam" gauges of the C-130H cockpit with 2 flat panel glass displays. The FDAU/EIDS has been installed on the 1503, 1504, 1700, 1701, 1702, 1703, 1704, 1706, 1707, 1708, 1709, 1711, 1714, 1716, 1717, 1718, 1719, and the 1790. All HC-130Hs will receive the install during a drop-in maintenance period scheduled by the C-130 Product Line.

C-130J: All HC-130J's came equipped with separate L-3 Communications flight data and voice recorders. The Flight Data Recorder (FDR) captures just over 200 parameters and the Cockpit Voice Recorder captures 2 hours of audio data from 4 separate inputs. All C-130J model aircraft also have a DSU.

HC-144: The Ocean Sentry also came off the shelf with separate Honeywell flight and voice recorders. The Flight Data Recorder (FDR) is

capable of capturing over 625 parameters at rates as high as 8 times per second. The Cockpit Voice Recorder is capturing 2 hours of audio data from 4 separate inputs. The FDR receives data from a FDAU. This FDAU is currently undergoing a modification that will add a PCMCIA card adaptor that will enable quick removal of the flight data.

If you have any questions, please contact LCDR Clint Schlegel (ALC FSO), Mr. Tony Simpson (Flight Data Program Manager), or Ms. Brittany Bateman (Flight Data Analyst). If you are ever in E-City, feel free to stop by the lab, located in the Safety Office in Building 79, for a demonstration.

## AVIATION SAFETY ADVANCED EDUCATION

The theme of success continues for our Advanced Education program and its graduates. Once again, we competed favorably during the TAB allocation process and secured two billets for AY12. Congratulations to our most recent selectees LCDR Dan Lanigan and LCDR Chris Wright. Both have elected to attend the Masters of Science in Safety Science program in Daytona.

## AVIATION SAFETY TRAINING

CG-1131 offers aviation Class C training consisting of four core safety classes. The Southern California Safety Institute (SCSI) in San Pedro, CA facilitated the courses in FY11. These training courses have proven to be excellent forum for aviation officer and enlisted representatives from safety, engineering, operations and standardization backgrounds to come together with the common focus of increasing knowledge and understanding of aviation accident investigation and preparedness.

The C-school contract for FY12-16 has been awarded to SCSI. CG-1131 is actively working with SCSI to fine tune the courses curriculums and make them more Coast Guard centric. The FY12 solicitation message should be released by February 2012. The following is a short synopsis of the six courses in the new C-school contract. Of these six classes, only four will be execute during any one fiscal year.

### Aircraft Accident Investigation

This course provides an accident investigator with investigative skills and techniques specific to aircraft operations and accidents, to include preparation of accident notification, managing the investigation team, wreckage photography, hands on wreckage examination, gathering evidence, preparing the report, and the role of a USCG Mishap Analysis Board (MAB). At the end of this course, students will understand:

1. The duties of a CG unit Permanent Mishap Board (PMB) and how it differ from a MAB.
2. The procedures of a CG MAB/PMB as a whole and as an individual member, during the investigation.
3. Common hurdles an investigator will have to overcome before, during and after an aircraft accident.

### Gas Turbine Investigation

This course will discuss a general overview of jet engines and the integral part that they play in determining the cause or scope of an aircraft mishap. Case studies involving engine analysis from civilian or military accidents will be presented and the analysis results discussed. Students will be provided “hands on” training with actual accident engines and associated parts to further develop the accident investigation process. At the end of this course, the students will understand:

1. Difference between pre and post crash engine damage.
2. Associated engineering tests available to accident investigators and the location of various facilities of engine or component manufacturers.
3. When, how and where a CG MAB requests and processes engineering analysis.

### Human Factors in Accident Investigations

This course provides the CG accident investigator with training on identifying human errors in all aspects of aviation operations as they pertain to accident investigations. The course will cover problem solving, decision making, judgment training, situational awareness, procedural compliance, and the use of the Human Factors Analysis and Classification System (HFACS). (HFACS is required for documenting all Class A and B mishaps). In team or group format, the students will analyze a CG-1131 approved mishap and assign HFACS codes to mishap causal factors. At the end of this course, the students will be familiar with:

1. The HFACS analysis tool and how to use it when developing the Mishap Analysis Report (MAR).
2. The specific duties of the MAB when using the HFACS tool to developing the MAR.

3. The Headquarters Office responsible for the proper formulization, and use of HFACS codes.

### Safety Management Systems

This course provides students the fundamentals that are central to a "systems safety approach", including an overview of the FAA's Safety Management System (SMS) and how it can be used in the USCG. The student will be provided a review of the development of SMS and then transition to examining the steps in implementing or improving a systems approach to a military safety program. Instructors will present the steps to identify and control hazards and conduct open discussion of current risk management techniques, successes, and failures within the fleet. At the end of this course, the students will understand:

1. CG ORM and CRM programs and how they align and differ with civilian standards.
2. The FAA Safety Management Systems.

### AVENG Accident Investigation

This course provides unit level Flight Safety Officers, Engineering Officers and Maintenance Warrants an overview of aviation safety program management from a Coast Guard perspective as it relates to an aviation maintenance program, and a perspective of engineering investigation techniques in aviation accidents. The course covers safety program and management; risk management principles that apply to aviation maintenance; aircraft accidents and salvage operations. At the end of this course, the students will understand:

1. The CG Engineering Officer's salvage procedures and responsibilities.
2. The relationship between the unit engineer and the MAB engineering member during an accident investigation.
3. Various failures of aircraft component and challenges to a mishap investigation.
4. CG Maintenance Event Trend Analysis (META) initiative.
5. Ethics involved in aviation maintenance.
6. The role of aviation life support equipment in an accident and analysis of ALSE.
7. The importance of a CG unit salvage plan and who maintains it.

### Investigation Management

This is an aircraft accident investigation management course developed for CG MAB members, not just the FSO. The primarily focus is on the duties of the MAB President and the FSO in different mishap settings and situations. The instructor and students will participate in "best practices" discussions. The course will engage students own experiences by discussing their past and current investigation management backgrounds. At the end of this course, the students will understand:

1. The duties and responsibilities of a CG MAB President.
2. The duties and responsibilities of a CG FSO during a mishap investigation.
3. The contents and format of a CG Mishap Analysis Report (MAR).

## FLIGHT RELATED MISHAP REVIEW

Although not included as part of the annual aviation mishap rates, Flight-Related mishaps are important. Flight-Related mishaps are mishaps where there was intent for flight, but no aircraft damage. Included in this category are injuries (with no aircraft damage), near midair collisions, and other close calls or near mishaps. Flight-Related mishap reports include lessons learned and any incident having value to the fleet. These reports are valuable mishap prevention tools and a good source of mishap trends.

### Near Midair Collision

Fourteen near midair collisions (NMAC) were reported in FY11, up from previous years. NMAC's involved two H65, four H60, one HU25, five HC130 and two C144. NMAC involved ten fixed wing, three helos and one remote control aircraft. Eight of the NMAC occurred in the local pattern, two occurred during search and ten were during training flights. Ten were daylight flights, two at dusk and two at night. All but one occurred during VMC.

### Aviation Injury

There were 17 aviation injury and 21 laser mishaps reported in FY11. There were two days hospitalized, 12 loss work days and 116 days restricted duty. The 21 laser reports, involving crews of four HU25 two C130H, one H60, one C130J, one C144A and twelve H65. In addition to the laser events, incidents involved cuts, broken fingers, strains, sprains and concussions. Fuel was sprayed in the face and eyes of at least four crewman and fire retardant doused two. PPE prevented more extensive injury in at least nine cases and, if worn, might have reduced the severity of injury in two cases.

Three quarters of the injury reports noted improper procedures, the wrong tool or improper/poorly designed equipment. Inattention,

complacency, awareness and motivation were factors in at least two thirds of the incidents and 30% listed lack of training or experience as a factor. Comms and passdown was mentioned in at least a quarter of the incident as was supervision and QA

## FOD / TFOA MISHAPS

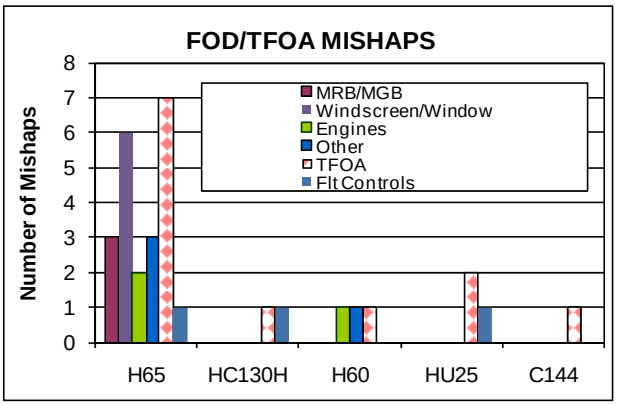



**Figure 7**

The nineteen Foreign Object Debris (FOD) and twelve Falling Off Aircraft (TFOA) reported this year resulted in $364,106 damage. Figure 7 and 8 show the breakdown of reported FOD/TFOA incidents. Twenty-two H65's, two C130H's, one C144 , three falcons and three H60's were involved in FOD or TFOA events. Damage involved three engines, three rotor systems, six windscreens and three fuel systems. Plugs/caps (3), parts /hardware (1), panels/guard (7) and contaminated fluids (3) caused the damage.

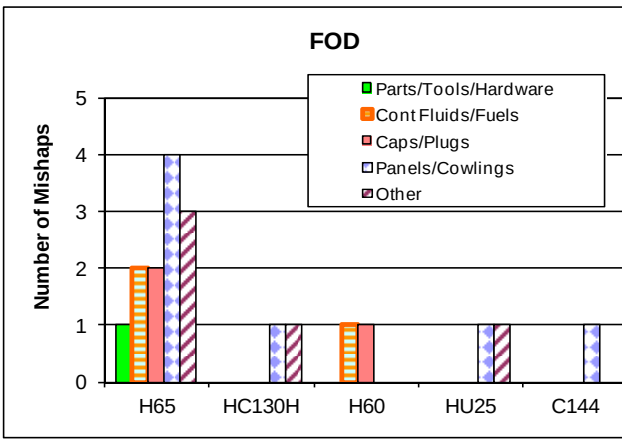



**Figure 8**

## BIRDSTRIKES

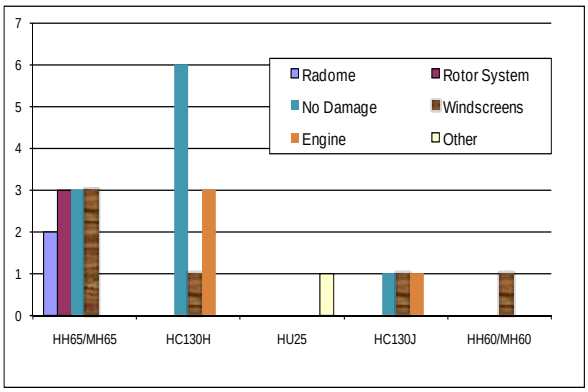



**Figure 9**

There were 26 birdstrikes reported in FY11 with associated damage costs of $104.332. Ten reports involved no or minimal airframe damage. Eleven reported birdstrikes involved the H65 and ten involved the C130H. Figures 9 and 10 show the breakdown of FY11 birdstrikes. Most (16) of the birdstrikes occurred during the day and ten at night or dusk. About a half of the birdstrikes occurred in the airport environment (landing, takeoff or in the pattern), while a quarter occurred during patrols, searches or over the water activity.

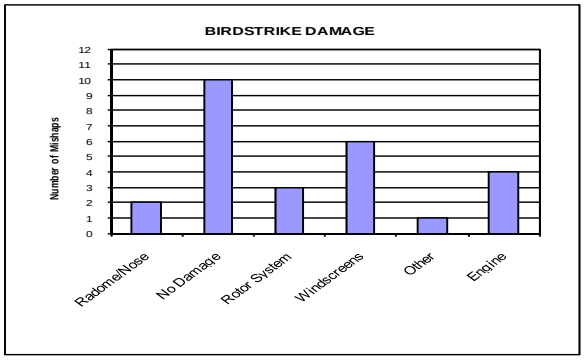



**Figure 10**

## ENGINE MISHAPS

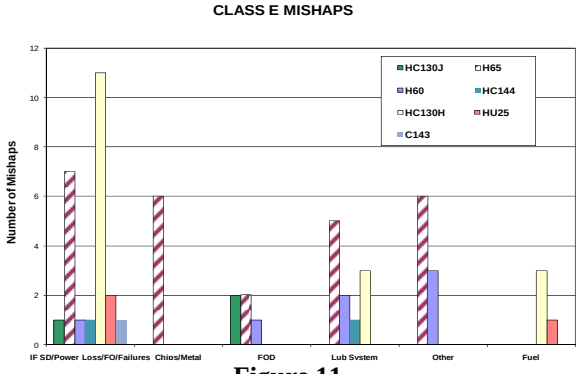



**Figure 11**

This year Class E mishaps made up only 32% ($930,959) of the Total Mishap costs. Engine mishaps have historically accounted for 50% or more of the mishaps cost each year (see Figures 5 and 6 on page 6). We feel this drop in cost is a reflection of the decrease of Falcons in our inventory and the steady decrease of reported H65 engine mishaps. Figure 11 shows a breakdown of the Class E mishaps. Half of the Class E mishaps reported costs under $1,000. The eight mishaps with cost over the Class C threshold ($50,000) accounted for 71% ($660,709) of the total Class E cost. There were only three Class E mishaps with cost over $100,000 ($337,197) representing 36% of the Total Class E mishap cost.

## WEATHER RELATED MISHAPS

Weather contributed to fifteen reported mishaps resulting in $98,568 in damage. These incidents included parts prematurely failing due to corrosion, electronic malfunctions due to moisture, and airframes damaged by wind, ice, turbulence, winds and lightning.

## SHIP-HELO MISHAP REVIEW

There were fifteen mishaps in FY11 involving ship-helo operations, with a reported costs of $54,173. Only six mishaps were unique to the ship-helo environment (e.g., aircraft damage due to ship movement, portable hangar, HIFR mishaps, flight deck issues and tiedowns). The remaining nine were not the result of the ship-helo interface (e.g., landing gear problems, FOD, engine problems, indicator problems, etc.). Ship-helo mishaps normally account for 5 to 10% of the total mishaps reported and less than 5% of the total costs. This year these mishaps accounted for only 4% of the mishaps and 4% of the total mishap costs.

## GROUND MISHAP REVIEW

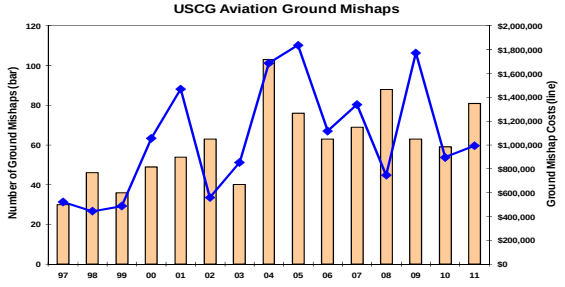



**Figure 12**

Eighty-one aviation ground mishaps were reported in FY11. The number of mishaps reported increased this year (See Figure 12). There were thirteen towing mishaps accounting for 35% ($352,070) of the total ground mishap costs ($995,070). Three of these involved contact with a fire extinguishers involving costs of $225,623. Ground handling (ground support equipment (GSE), towing, blade folding, fueling, washing or jacking accounted for 43% of mishaps (35), and 40% of the costs ($401,444). The six fuel spill incidents represented $4,294 of the ground costs.

All the ground mishaps listed some form of human factors as one of the cause factors. The wrong part, tool, equipment or procedures were factors for 28% (23) . Insufficient Q/A, review or supervision was cited in 18 (22%) of the mishaps. Sixteen (20%) of the ground mishaps listed awareness, complacency or inattention as a factor and ten (12%) listed norms, habit patterns or culture as a cause. Of the 81 ground mishaps reported this year, 17 reported costs above $10,000 and of those only 6 reported cost above $50,000, the Class C threshold. There were 40 reports (50%) with costs below $1,000, twenty-one reported zero costs.

## FLYING "GROUNDED" AIRCRAFT

This year we noticed an uptick in reports of aircraft flown in a maintenance "grounded" state. The six reports in FY11 were up from the 10 total reports over the previous 3 years ('08-'10). Are there more of these types of events occurring or is this an indication of a more reliable reporting system? The answer may be both, but we mention this issue because we believe these reports raise awareness to a relevant aviation hazard.

While the circumstances which led to each event differed, these instances have exposed gaps in the pre-flight system/processes we have in place to sign for aircraft. Compared to 10 years ago, the system is more capable, but it's also more complex. The "system" here isn't just ALMIS - it's the coordinated system of maintainers, QAs, maintenance supervisors, pilots, aircrew, ALMIS, Excel spreadsheets, back-up records, phone calls, releases confirmations, dry erase boards in maintenance control, etc. All of these have to be accurate (and consulted) to ensure an error doesn't slip through the crack.

The challenge for leaders is to identify and close these gaps by making a concerted effort to analyze and streamline this documentation process. It's a tough nut to crack, but this sort of process improvement is key to the success of any organization with a high-quality reputation such as ours.

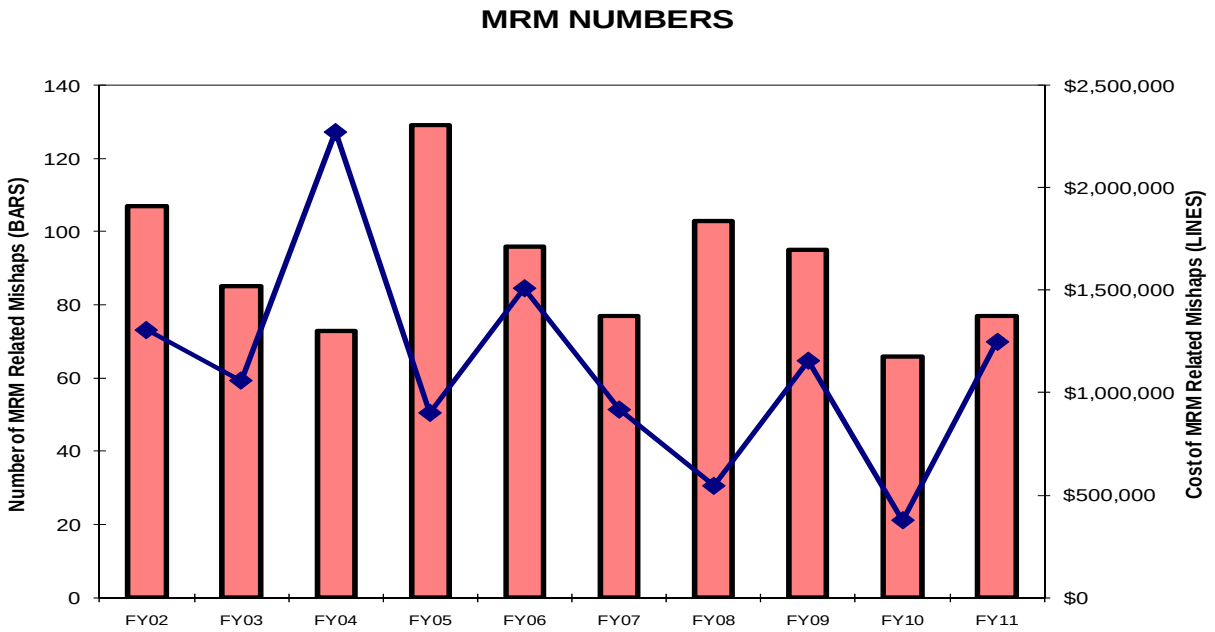



**Figure 13**

## MAINTENANCE HUMAN FACTOR EVENTS

Some type of maintenance human factor was listed as a cause in 107 mishaps, total reported for these mishaps was $1,305,902. Fifty-eight reported costs under $1,000 and 25 of those events had zero cost. Eight MRM reports listed damage over $50,000 and only four MRM events reported costs over $100,000 representing 46% of the total MRM costs ($597,915). MRM events included incomplete passdown, poor communications, inappropriate procedures, improperly followed procedures, a lack of supervisor review, or Q/A problems (see Figure 14 on the next page).

The wrong part, poor equipment/part design, cannibalization or lack of parts was listed as a cause in 58 (68%) of the mishaps. Eleven (13%) mishaps were the result of FOD or poor tool control. Culture, norms or habits was listed as a factor in sixteen (19%) of the mishaps. Fifty-seven (67%) of the mishaps involved, shortcuts, work arounds, incomplete, improperly followed inappropriate or unavailable procedures.

Inattention, complacency or awareness was a factor in forty-five (53%) of the incidents reported. Q/A review or supervision was cited as a cause factor in 61% (52) of the mishaps. Some form of inexperience, lack of training, or staffing issues were factors in 49% of the incidents. Workload, feeling rushed, or lack of resources was also mentioned in 20% (17) of the mishaps. Poor pass down, incomplete checklist, or poor communications were also listed in 36% of the mishaps. Ground handling, jacking or towing were listed in 33% (28) of the reported mishap.

## ORM

The Office of Safety and Environmental Health (CG-113) continues working to address the ASAAP findings noting serious deficiencies in the USCG's ORM program. The CG's ORM standing committee is working on the much needed changes to ORM policy and processes. The immediate focus is on developing two ORM tools that will greatly contribute to the pre-flight decision-making process at operational units. These two ORM-focused tools are in the final stages of developmental testing and transition to operational (field-level) test and evaluation is expected in Spring 2012.

The Hazard Inventory Tool (HIT), is a framework that can be used by any USCG community (surface or aviation). The application allows operators to improve their awareness and mitigate flight hazards by exhaustively exploring flight evolutions particular to their unit. The HIT "inventory" is built by groups of subject matter experts (SMEs) using a formal hazard analysis process. The SME groups can consist of a group of experienced pilots at an air station to a formal enterprise-level assessment conducted at the Area or Headquarters level. Using the HIT, the SME group would: (1) create a list of specific steps/tasks associated with an evolution; (2) create a list of hazards associated with each step or task in the evolution; (3) assess the risk of

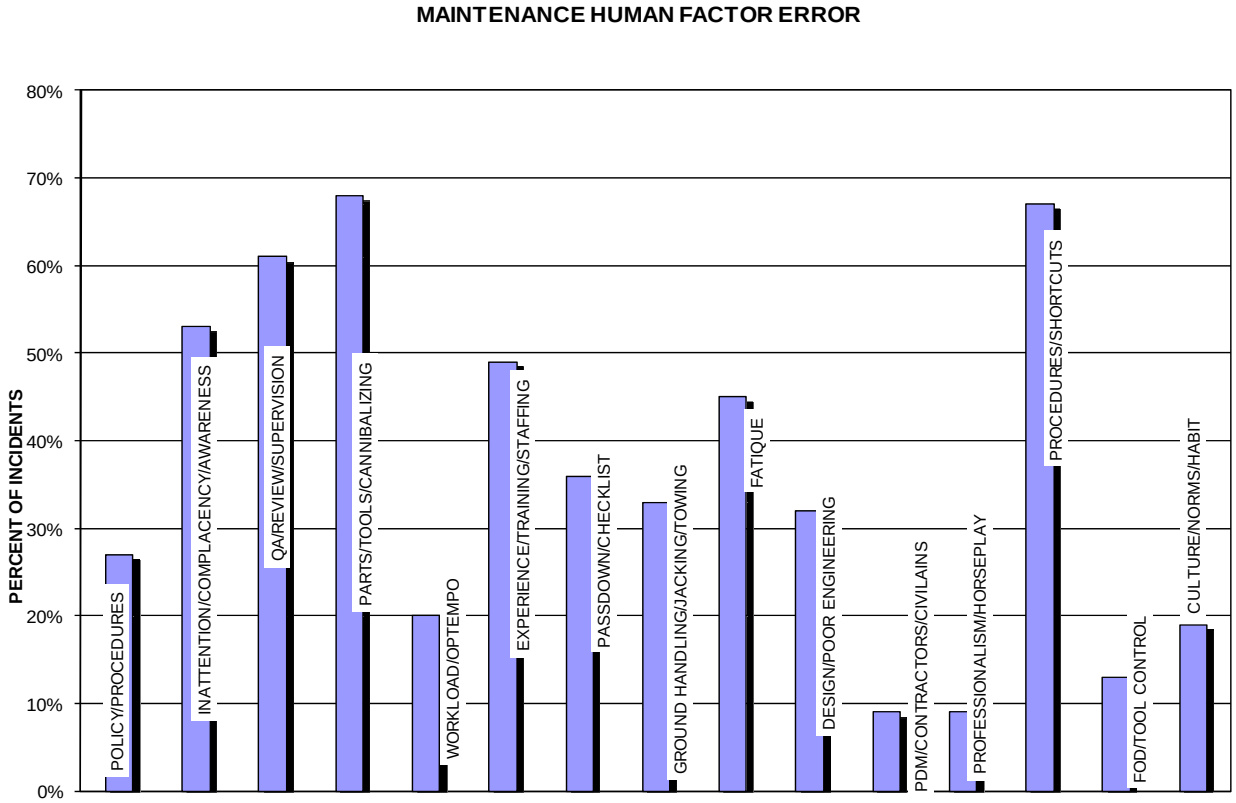



**Figure 14**

each hazard to the aircrew by determining the severity, probability, and exposure (SPE); (4) prioritize the risk posed by individual hazards based on SPE scores; and (5) assign risk mitigation strategies for each of the hazards.

HIT assessments must be done with a trained facilitator. About 75 percent of fleet FSOs have received basic HIT training. FSOs are encouraged to practice conducting hazard analyses at their units and to reach out to CG-113 with questions or concerns. The long-term objective is for individual units to develop an internal database (i.e., "inventory") of HIT assessments which would be supported by an enterprise-level database.

The second ORM tool, Hazard Assessment Tool (HAT), addresses an overarching goal of ORM to maximize risk management activities during the planning phase in order to assist and add value to responders' and mission coordinators' decision-making activities. A priority in the development of the HAT was the need for a tool that eliminates operator bias and variability between AORs, airframes, and operational communities. CG-113 is establishing quantifiable representations of hazard/risk exposures to crews in a variety of CG missions. This was done using industry research (e.g., fatigue management studies) and extensive one-on-one data gathering sessions with aviation personnel of all ranks and rates.

HAT is a pre-flight planning tool that incorporates mission factors, crew performance factors (e.g., fatigue, aircrew proficiency), weather, asset capabilities, and a myriad of planning factors, to provide crews and flight planners with a baseline risk exposure score for missions. The output can be viewed in terms of current or projected risk, displayed in a 24-hour format, allowing decision-makers a quantifiable, educated mission outlook over the course of a duty period. In terms of output, HAT does not display a score and associated color like current ORM tools. Avoiding the green, amber, and red categories represents a conscious decision to discourage aircrews from the tendency to tweak the numbers to get a more agreeable score.

The majority of unit Flight Safety Officers have received initial training on the HAT program and will receive additional training at the 2012 Annual Flight Safety Officer Stan Course. HAT-trained FSOs are encouraged to practice using the tool. CG-113 is developing a different version of the HAT for each airframe to account

for crew and mission differences and some additional data collection is necessary before the tool is "ready for primetime." Eventually, the aviation HAT tool will be integrated with HAT tools specific to other operational segments, currently being developed.

As a final note, the ORM tools and worksheets currently in use at air stations are absolutely effective and their use on every flight is highly encouraged in accordance with unit policies.

Given the ASAAP mandate for CG-11 to "repair" ORM, we must apply a more scientifically rigorous approach to the ORM process. In the short term, understand the new tools are designed to provide potentially vital information not just to the PICs, but to a variety of unit decision-makers. CG-1131's top priority is to ensure that these unit decision makers receive training and are not left to fend for themselves as these new tools are rolled out.

| FY11 FLIGHT MISHAP PERCENTAGES | | | | |
|---|---|---|---|---|
| CLASS | MISHAPS | % of TOTAL MISHAPS | COST | % of TOTAL COST |
| A | 0 | 0% | $0 | 0% |
| B | 0 | 0% | $0 | 0% |
| C | 9 | 5% | $932,030 | 33% |
| D | 141 | 75% | $1,000,625 | 35% |
| E | 39 | 21% | $924,350 | 32% |
| TOTAL | 189 | | $2,857,004 | |

**Table 4**

| FY11 FLIGHT MISHAP PERCENTAGES | | | | | | |
|---|---|---|---|---|---|---|
| AIRCRAFT | MISHAPS | % of TOTAL MISHAPS | COST | % of TOTAL COST | FLIGHT HOURS | % of FLIGHT HOURS |
| HH60/MH60 | 17 | 9% | $436,524 | 15% | 22,906 | 20% |
| HH65/MH65 | 127 | 67% | $1,849,886 | 65% | 52,207 | 46% |
| C130H | 21 | 11% | $179,175 | 6% | 15,605 | 14% |
| C130J | 4 | 2% | $1,747 | 0% | 3,851 | 3% |
| HU25 | 16 | 8% | $291,348 | 10% | 7,389 | 7% |
| C37A/C143 | 0 | 0% | $0 | 0% | 1,151 | 1% |
| HC-144A | 4 | 2% | $98,324 | 3% | 10,255 | 9% |
| TOTAL | 189 | | $2,857,004 | | 113,363 | |

Table 5

## SUMMARY INFORMATION

Tables 4 and 5 on this page, display mishap summary information for FY11 associated with each airframes. Figures 15 and 16, on the next page, illustrate the percentage of total mishaps, flight hours and total mishap costs for each airframe for the past 10 years and in FY11. The HC130J and HC-144A have not been in the Coast Guard inventory long enough to accumulate the data need to be included in the following discussions.

## AIRFRAME REVIEW

Pages 16-19 contain mishap data for each major aircraft type. In reviewing these pages, it should be noted that with only twenty-one reportable Flight Class A's and Class B's in the last ten years, the ABC Flight mishap rate for all aircraft is made up mostly of Class C mishaps. The ABC Flight mishap rate for each airframe and CG aviation is fairly stable with a slight downward trend. This is the thirteenth year that the ABC mishap rate has been under 0.05.

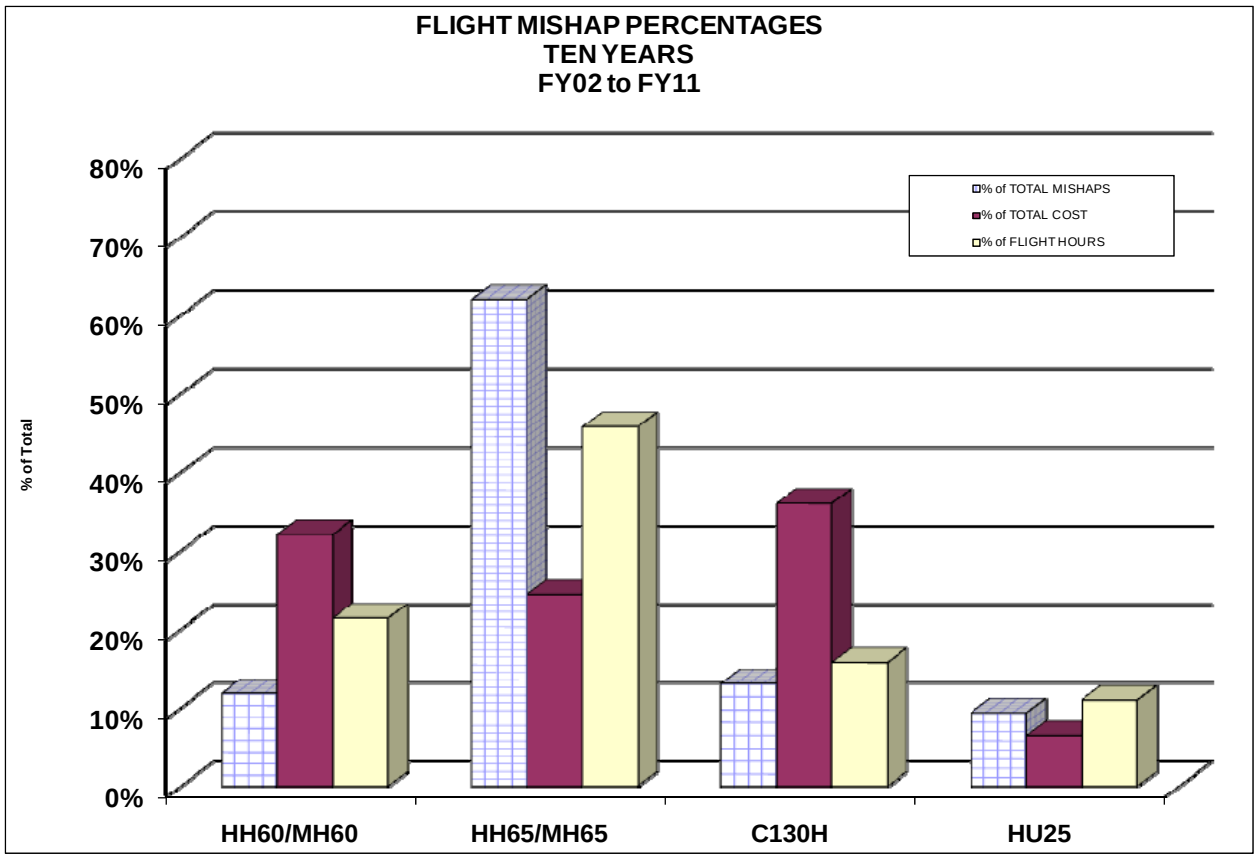



**Figure 15**

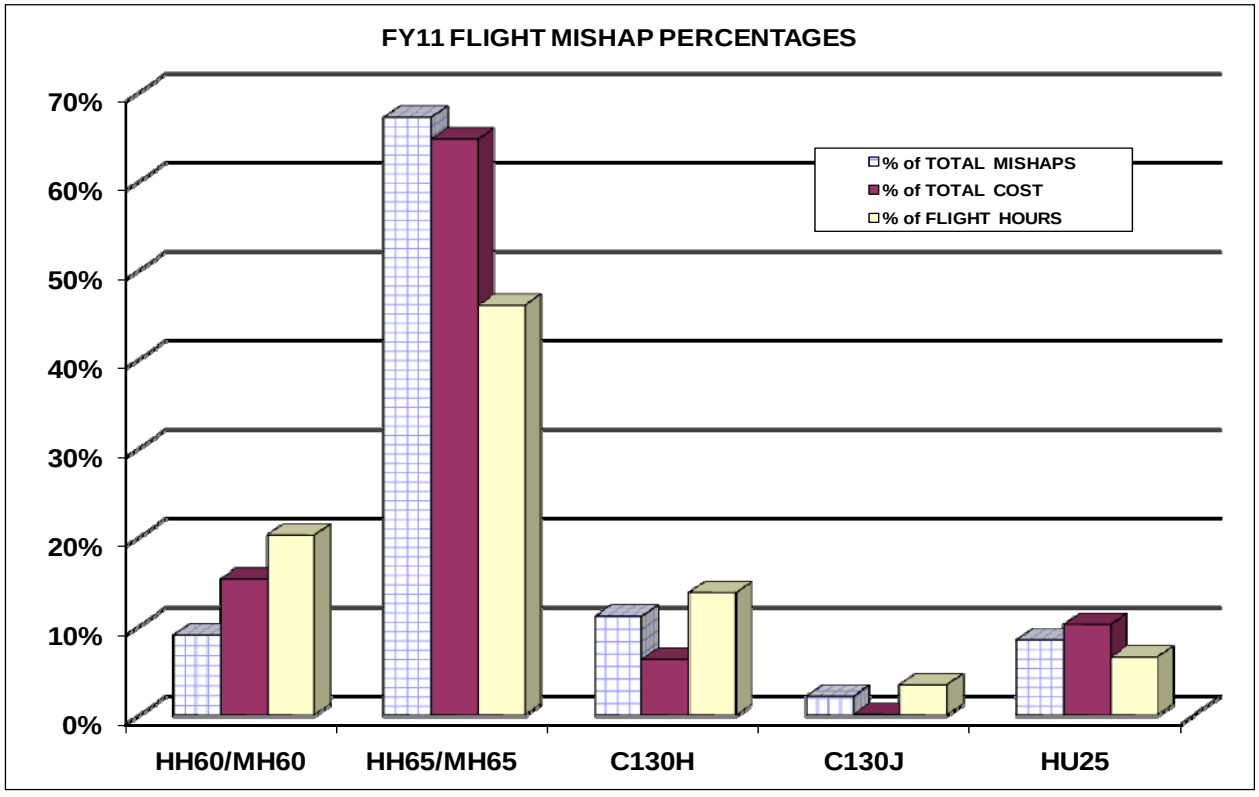



**Figure 16**

## HH60/MH60 MEDIUM RANGE RECOVERY (MRR)

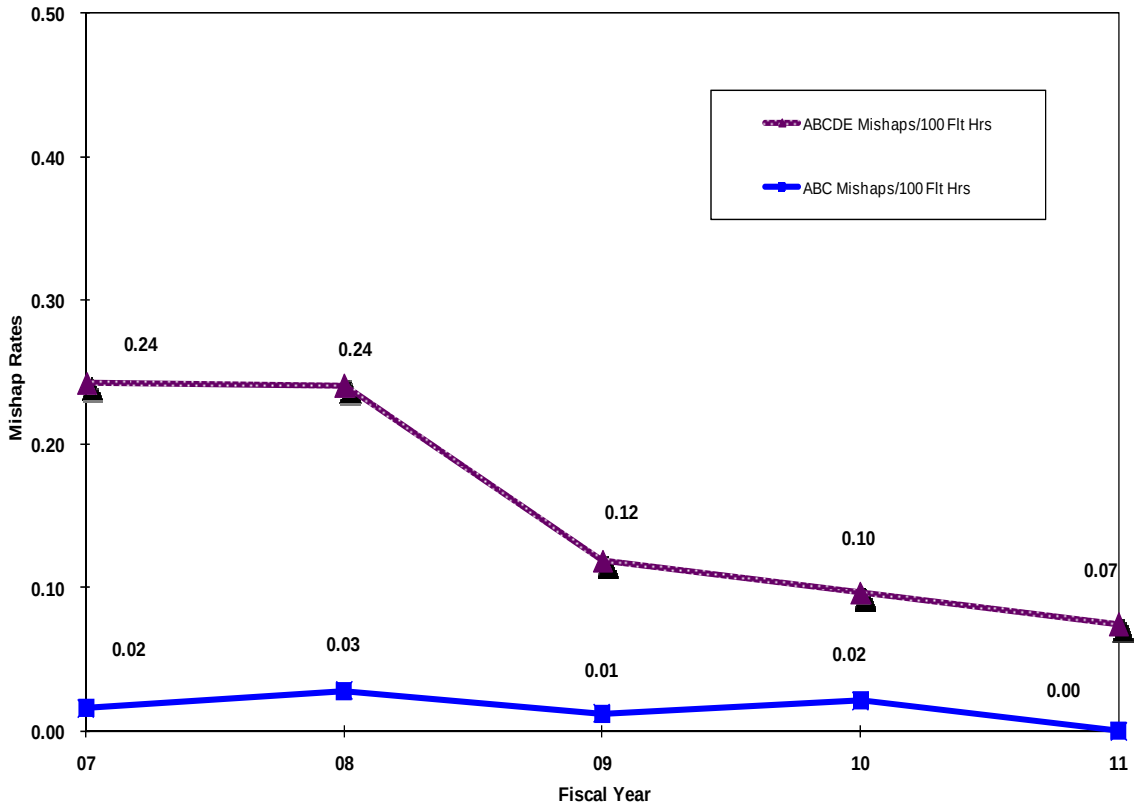
The H60 flew 22,906 hours (20% of the total flight hours) and reported 17 flight mishaps (only 9% of total reported flight mishaps). The H60 had a mishap rate (0.07), down for the seventh year. The H60's mishap cost accounted for 20% of the total FY11 Flight Mishap costs. Of the 17 H60 Flight Mishaps reported only five had costs above $10,000 and only three of those had costs above $50,000 (the Class C dollar threshold) accounting for 77% of the total H60 Flight Mishap Costs.

**HH60 / MH60 Flight Mishaps for FY11**

| Aircraft | Class | No. Mishaps | Cost |
|---|---|---|---|
| HH60/MH60 | A | 0 | $ 0 |
| | B | 0 | $ 0 |
| | C | 0 | $ 0 |
| | D | 12 | $ 91,996 |
| | E | 5 | $344,528 |
| **Totals** | | **17** | **$436,524** |

**Table 6**

**H60 Flight Mishap Data**




| HH60/ MH60 ABCDE | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR | HH60/ MH60 ABC | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY07 | 61 | $802,722 | 25,165 | 0.24 | $13,159 | $32 | FY07 | 5 | $380,832 | 25,165 | 0.02 | $76,166 | $15 |
| FY08 | 60 | $1,702,990 | 24,970 | 0.24 | $28,383 | $68 | FY08 | 7 | $368,767 | 24,970 | 0.03 | $52,681 | $15 |
| FY09 | 29 | $320,011 | 24,472 | 0.12 | $11,035 | $13 | FY09 | 3 | $222,671 | 24,472 | 0.01 | $74,224 | $9 |
| FY10 | 24 | $57,336,016 | 23,915 | 0.10 | $2,389,001 | $2,398 | FY10 | 5 | $56,930,780 | 23,915 | 0.02 | $11,386,156 | $2,381 |
| FY11 | 17 | $436,524 | 22,906 | 0.07 | $25,678 | $19 | FY11 | 0 | $0 | 22,906 | 0.00 | $0 | $0 |

**Figure 17**

## HH65 / MH65 SHORT RANGE RECOVERY (SRR)

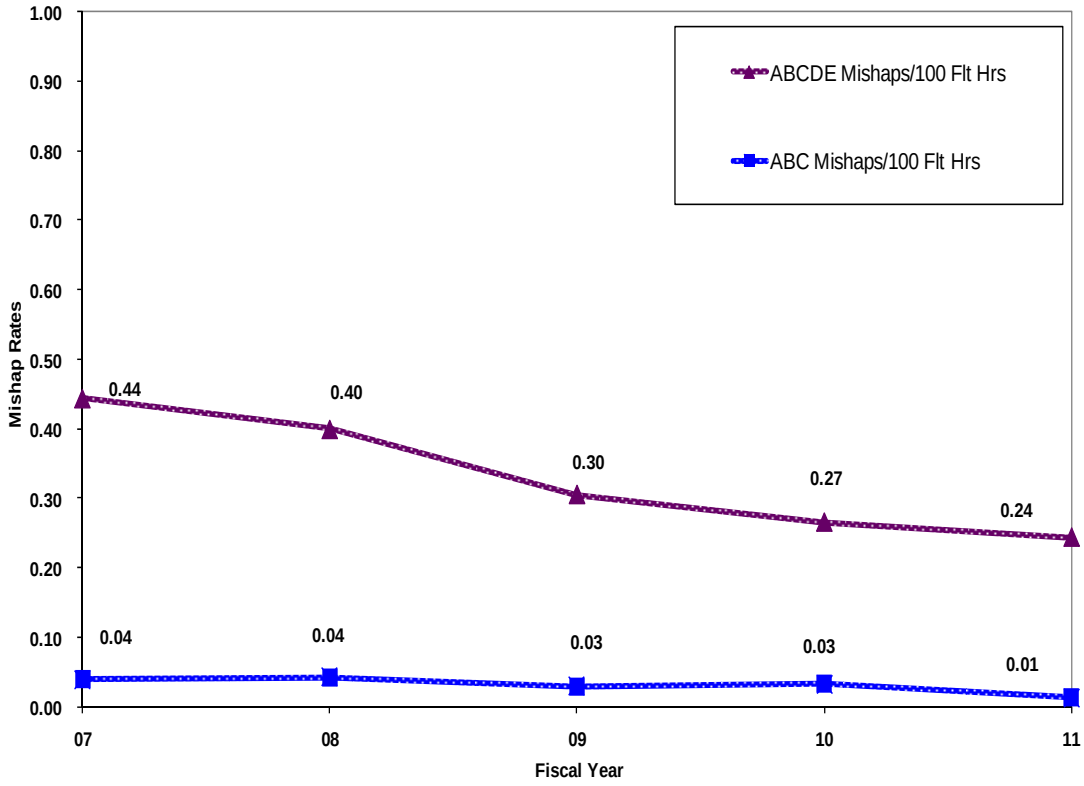
The H65 flew 52,207 (46% of the total flight hours). The H65 reported 67% (127) of the Flight Mishaps, and 65% ($1,849,856) of the Flight Mishap costs. The Dolphin mishap rate (0.24) decreased again for the eighth year, but was still the highest of all the major airframes. Of the 127 H65 flight mishaps reported in FY11, 115 reported mishap costs less than $50,000 (the Class C dollar threshold). The 12 reports about the Class C threshold, accounted for 62% ($1,144,294) of the Dolphin mishap costs.

**HH65 / MH65 Flight Mishaps for FY11**

| Aircraft | Class | No. Mishaps | Cost |
|---|---|---|---|
| HH65/MH65 | A | 0 | $ 0 |
| | B | 0 | $ 0 |
| | C | 7 | $ 799,378 |
| | D | 103 | $ 688,398 |
| | E | 17 | $ 362,110 |
| **Totals** | | **127** | **$1,849,856** |

**Table 7**

**H65 Flight Mishap Data**




| HH65/ MH65 ABCDE | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR | HH65/ MH65 ABC | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY07 | 221 | $2,958,060 | 54,139 | 0.41 | $13,385 | $55 | FY07 | 20 | $1,827,078 | 54,139 | 0.04 | $91,354 | $34 |
| FY08 | 217 | $11,390,704 | 54,351 | 0.40 | $52,492 | $210 | FY08 | 23 | $10,756,305 | 54,351 | 0.04 | $467,665 | $198 |
| FY09 | 168 | $4,440,946 | 55,094 | 0.30 | $26,434 | $81 | FY09 | 16 | $1,248,416 | 55,094 | 0.03 | $78,026 | $23 |
| FY10 | 146 | $24,450,138 | 55,093 | 0.27 | $167,467 | $444 | FY10 | 18 | $23,585,383 | 55,093 | 0.03 | $1,310,299 | $428 |
| FY11 | 127 | $1,849,886 | 52,207 | 0.24 | $14,566 | $35 | FY11 | 7 | $799,378 | 52,207 | 0.01 | $114,197 | $15 |

**Figure 18**

## HC130H LONG RANGE SURVEILLANCE (LRS)

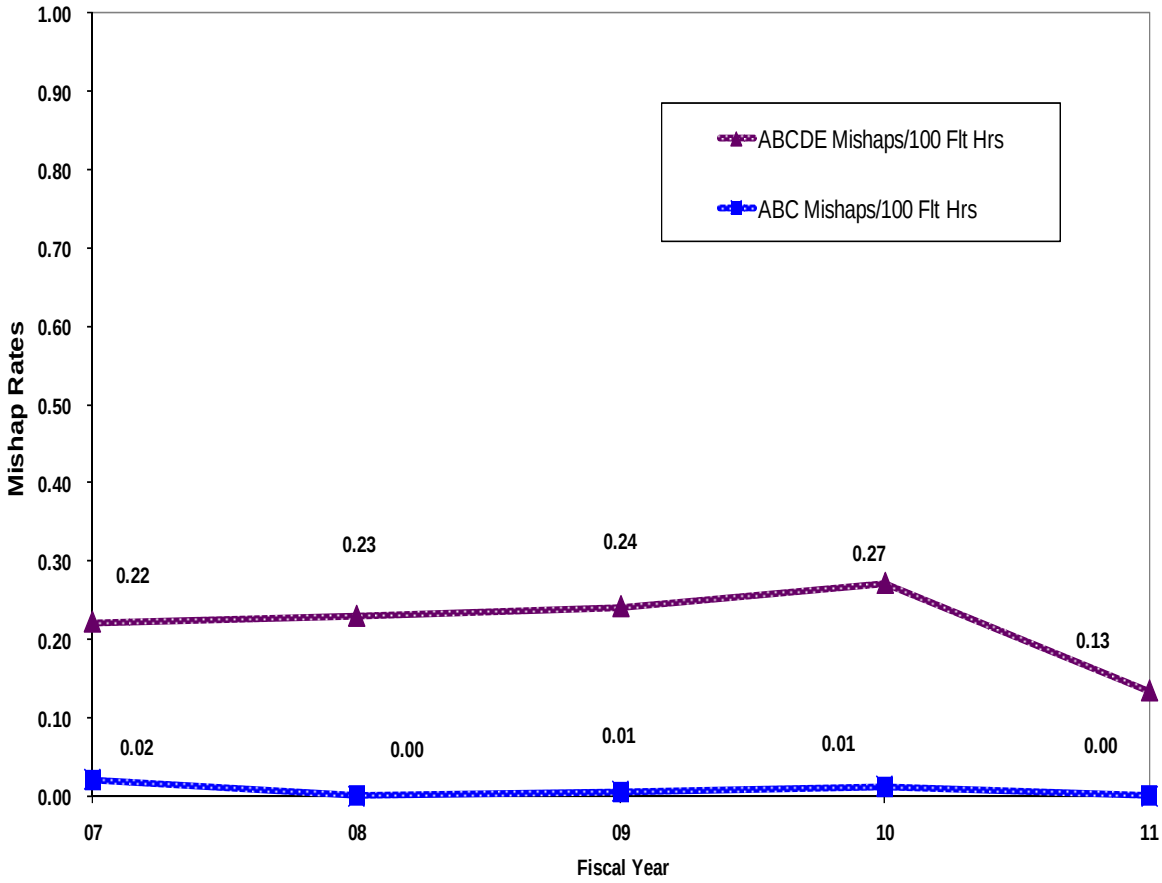
The HC130H flew 15,605 hours and reported 21 mishaps and a mishap rate (0.13). The Herc mishap rate was the lowest since FY91. There were no Flight Mishaps with cost above the Class C threshold of $50,000 and 17 mishaps reported costs below $5,000.

**HC130H Flight Mishaps for FY11**

| Aircraft | Class | No. Mishaps | Cost |
|---|---|---|---|
| HC130 | A | 0 | $ 0 |
| | B | 0 | $ 0 |
| | C | 0 | $ 0 |
| | D | 10 | $ 94,257 |
| | E | 11 | $ 8 4,918 |
| **Totals** | | **21** | **$179,175** |

**Table 8**

**C130H Flight Mishap Data**




| HC130H ABCDE | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR | HC130H ABC | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY07 | 43 | $1,178,387 | 19,366 | 0.22 | $27,404 | $61 | FY07 | 4 | $129,904 | 19,366 | 0.02 | $32,476 | $7 |
| FY08 | 41 | $775,271 | 17,877 | 0.23 | $18,909 | $43 | FY08 | 0 | $0 | 17,877 | 0.00 | $0 | $0 |
| FY09 | 40 | $1,046,521 | 16,558 | 0.24 | $26,163 | $63 | FY09 | 1 | $73,200 | 16,558 | 0.01 | $73,200 | $4 |
| FY10 | 44 | $49,000,208 | 16,228 | 0.27 | $1,113,641 | $3,019 | FY10 | 2 | $48,426,256 | 16,228 | 0.01 | $24,213,128 | $2,984 |
| FY11 | 21 | $179,175 | 15,605 | 0.13 | $8,532 | $11 | FY11 | 0 | $0 | 15,605 | 0.00 | $0 | $0 |

**Figure 19**

# HU25 MEDIUM RANGE SURVEILLANCE (MRS)

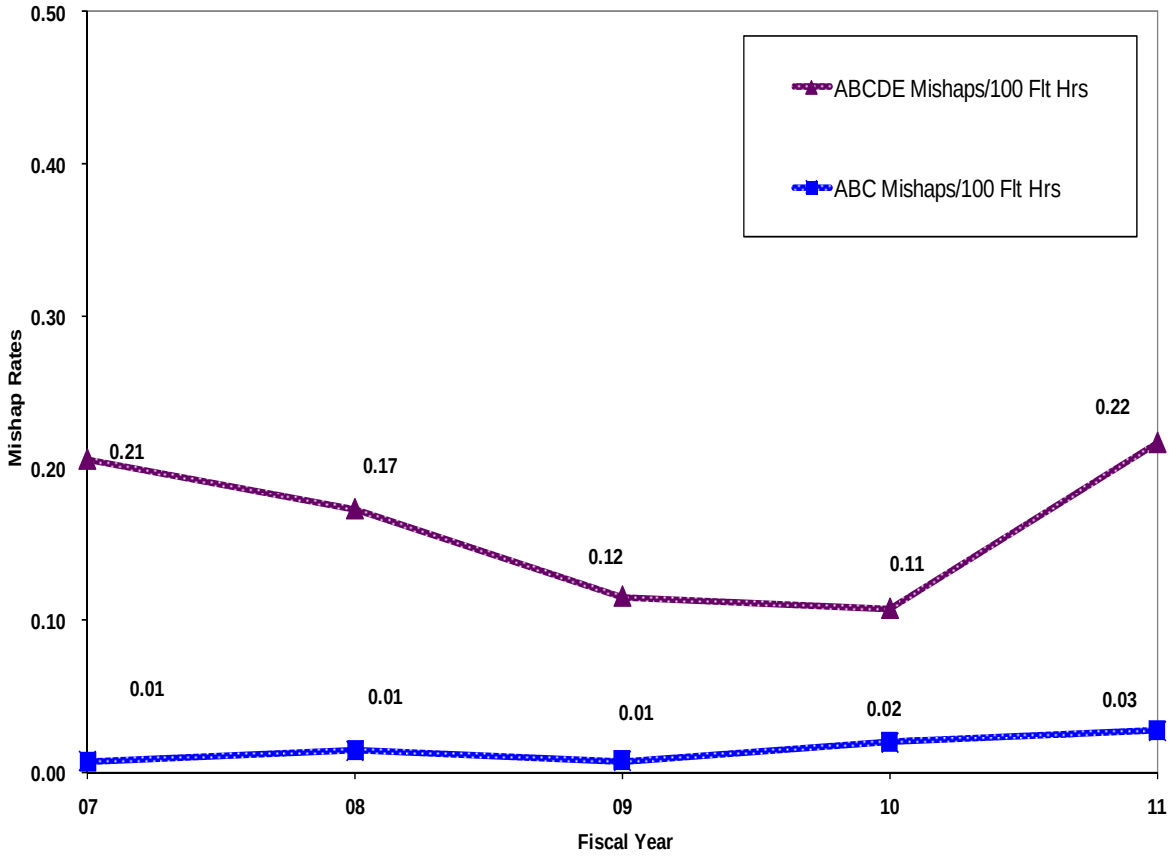
The HU25 flew 7% (7,389) of the total hours and reported only 16 (8%) of the total flight mishaps and 10% of the costs. The Falcon's total mishap cost ($291,348) was the lowest since FY97. All but two mishaps reported cost under $50,000 (the Class C threshold), and those two represented 42% ($132,651) of the total mishaps cost.

**HU25 Flight Mishaps for FY11**

| Aircraft | Class | No. Mishaps | Cost |
|---|---|---|---|
| HU25 | A | 0 | $ 0 |
| | B | 0 | $ 0 |
| | C | 2 | $132,651 |
| | D | 11 | $ 96,574 |
| | E | 3 | $ 62,123 |
| **Totals** | | **16** | **$291,348** |

**Table 9**

**HU25 Flight Mishap Data**




| HU25 ABCDE | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR | HU25 ABC | NO. MISHAPS | COST | FLIGHT HOURS | MISHAPS/ 100 FLIGHT HOURS | COST/ MISHAP | COST/ FLIGHT HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY07 | 28 | $1,208,689 | 13,624 | 0.21 | $43,167 | $89 | FY07 | 1 | $25,586 | 13,624 | 0.01 | $25,586 | $2 |
| FY08 | 24 | $405,536 | 13,876 | 0.17 | $16,897 | $29 | FY08 | 2 | $53,279 | 13,876 | 0.01 | $26,639 | $4 |
| FY09 | 15 | $562,653 | 12,982 | 0.12 | $37,510 | $43 | FY09 | 1 | $43,926 | 12,982 | 0.01 | $43,926 | $3 |
| FY10 | 11 | $1,640,077 | 10,232 | 0.11 | $149,098 | $160 | FY10 | 2 | $1,585,904 | 10,232 | 0.02 | $792,952 | $155 |
| FY11 | 16 | $291,348 | 7,389 | 0.22 | $18,209 | $39 | FY11 | 2 | $132,651 | 7,389 | 0.03 | $66,326 | $18 |

**Figure 20**

## FLIGHT SAFETY PROGRAM

### FSO and Aviation Command Training

⇒ Traditional FSO training will continue at the Navy's School of Aviation Safety with the ASO Course located at NAS Pensacola, FL.

⇒ Aviation COs will continue to receive the Aviation Safety Command Course at the Navy's School of Aviation Safety.

### Safety Standardization Visits

⇒ CG-1131 Safety Stan Visits are determined by CO turnover (every three years for O-6 commands and every two years for O-5 commands). The goal is to conduct visits within nine months of each Air Station change of command.

⇒ The Safety Stan visits focus on the flight safety program requirements contained in the Air Ops Manual, ORM Instruction and the Safety & Environmental Health Manual.

⇒ The checklist used during the Aviation Safety Stan Visits is available on the CG-1131 Website.
http://www.uscg.mil/hq/cg1/cg113/cg1131/default.asp

⇒ Units may request unscheduled or informal assist visits and safety training at any time.

⇒ See chapter 2.F.1.b (2) (i) of COMDTINST M5100.47 for more information.

### "CG-1131.COM"

http://www.uscg.mil/hq/cg1/cg113/cg1131/default.asp

⇒ Our web site is available from any internet-capable computer. Accordingly, CG-1131 carefully reviews content for general public viewing, and can only post internet-releasable, non-privileged information.

### Laser Hazard Control Program

⇒ After three years of effort, ALCOAST 326/11 promulgating the Coast Guard Light Amplification by Stimulated Emission of Radiation (LASER) Hazard Control Policy, COMDTINST 5100.27 was released.

⇒ COMDTINST 5100.27: provides general information and safety guidance to all CG employees regarding hazards associated with lasers; provides specific policy direction for the acquisition of lasers and the approval process for Class 3B and Class 4 lasers and lasers that require an exemption from federal regulations; and provides prescriptive guidance on the program elements required for each class of lasers.

⇒ Although it is mandatory that each unit with Class 3B and 4 lasers have a designated laser safety officer, it is not required they attend the Navy course to fulfill that role. FSOs should anticipate receiving basic laser safety training and program information at the annual FSO Standardization Course.

### CRM

⇒ COMDTINST 3750.1 CRM is currently being routed to CG-11 for signature and fleet distribution. Some notable changes to the program include:

⇒ The CG Portal continues to serve as the main information transfer between FSOs.

⇒ FSOs will continue to receive their CRM Refresher facilitator qualification during the annual FSO Stan Course. This training qualifies them to provide unit level CRM Refresher training.

⇒ ONLY FSOs currently in a FSO billet and who attended the last FSO Stan Course are qualified to teach unit level Refresher CRM training. This is an annual re-qualification requirement and does not follow the individual once they leave the FSO billet.

#### CRM Initial Training

⇒ For pilots: CRM initial will be facilitated by ATC Mobile instructors and required before any pilot designation in a Coast Guard aircraft.

⇒ For aircrew: CRM initial will be facilitated by ATTC Elizabeth City instructors and required before graduation from A School or before receiving any aircrew designation in a Coast Guard aircraft.

⇒ For Aviation Mission Specialists (AMS): CRM initial is required prior to designation as AMS.

⇒ For Auxiliary pilots and aircrew: CRM initial is required before designation.

#### CRM Refresher Training

⇒ CRM Refresher will be conducted by a unit FSO or in conjunction with annual ATC Mobile unit standardization visit.

⇒ For pilots: Required annually and must be completed within 15 calendar months of CRM initial or subsequent CRM refresher training.

⇒ Pilots in DIFPRO status shall receive CRM refresher every two years.

- ⇒ For aircrew: Required annually and must be completed within 15 calendar months of CRM initial or subsequent CRM refresher training.
- ⇒ For AMS: Required annually and must be completed within 15 calendar months of CRM initial or subsequent CRM refresher training.
- ⇒ For Auxiliary pilots and aircrew: Required during annual unit safety fly-in.

⇒ Failure to meet CRM Refresher training requirements will cause the member to lapse in qualification per COMDTINST 3710.1.

⇒ ATC Pilot and Enlisted Instructors will be accompanied by the unit FSO when presenting CRM Refresher and case study material, during unit standardization visits,

⇒ CRM Refresher training can only be logged "complete" after attendance at an aviation unit refresher training.

⇒ Unit CO will be responsible to ensure maximum attendance during unit standardization visit CRM Refresher training.

## AVIation Accident TRacking System (e-AVIATRS)

http://apps.mlca.uscg.mil/kdiv/aviatrs/

⇒ CG-1131 maintains and reviews all CG aviation mishap information. We're into the ninth year of **E-AVIATRS**. The first mishap report was submitted to the new database on 21 November 2003

⇒ The two functions added in Fall of 2010; "Mishap Reporting Notification" and "Extension Request" have been very beneficial in helping CG-1131 and other HQ programs stay aware of pending mishap reports.

⇒ The Recommended Action Tracking System (RATS) module is being populated and updated. New report generators have been added to RATS.

⇒ The HFACs module went live in December 2007. The DOD Human Factors Analysis and Classification System (HFACS) as part of both CG mishap reporting databases.

⇒ Currently, HFACS is only required for Class A and B mishaps, but can now be used for all CG aviation mishaps.

⇒ The programming staff continues to make updates throughout the year, but at least once a year major revisions are made based on input and suggestions from the users.

⇒ Aviation mishap reports can be submitted to the database without a CGMS message if the report is for trending and tracking only. Remember these reports do not get the visibility with the Aviation Program Managers and ALC as a CGMS message.

⇒ Aviation related injuries shall be reported only in **e-AVIATRS.**

⇒ All information reported in the mishap message is captured in **e-AVIATRS** and can be searched and retrieved.

⇒ There are over 15,000 records dating back to FY79 in the database. All legacy data from the **AVIATRS** database has been converted to **e-AVIATRS.**

⇒ Users can use the **e-AVIATRS** search capabilities or can continue to contact CG-1131 for data searches and aviation mishap information. (Contact Miss Zimmerman at cathie.zimmerman@uscg.mil)

⇒ We encourage comments and suggestions. Almost all suggestions have led to improvement to the database.

## Your Coast Guard Aviation Safety Staff

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Your ideas and suggestions related to this report or other safety issues are valuable. Please pass them to your unit Flight Safety Officer (FSO) or contact the HQ Aviation Safety Staff.

**Hail and Farewell**: This summer we said farewell to LCDR Jeremy Smith and welcomed LCDR Brian Potter to the staff.

## CLASS A MISHAP SUMMARY

| DATE | ACFT | SUMMARY | CAUSE FACTORS |
|---|---|---|---|
| JAN 1992 | C130 | Uncontained #3 reduction gearbox failure shortly after takeoff. Prop and half of gearbox departed nacelle, struck fuselage resulting in decompression and severing of MLG hyd line. | Overhaul Procedures, Material |
| MAR 1992 | HH65 | Aircraft impacted water during practice MATCH to water at night. | Fatigue, Disorientation, CRM, Supervisory, Crew |
| AUG 1993 | HH65 | During daylight delivery of ATON personnel and equipment, aircraft crashed while landing on elevated helipad. | Aircrew, CRM, Training |
| JUL 1994 | HH65 | Aircraft impacted side of cliff in low visibility during night SAR mission to assist S/V aground. | Communications, Crew, Situational Awareness CRM |
| AUG 1994 | HH65 | Hardlanding during daylight practice autorotation, aircraft impacted ground, slid and rolled on side. | Aircrew, CRM, Training |
| JAN 1995 | HH65 | During night pollution surveillance flight, with two MSO personnel on board, aircraft experienced engine fluctuations. While analyzing problem, aircraft flown into water. | Situational Awareness, CRM, Aircrew, Mechanical |
| AUG 1995 | HH65 | Deployed helo experienced rapid left yaw while conducting left pedal hover. Acft accelerated through wind line, spin could not be countered, impacted water. | Design, CRM, Aircrew, Situational Awareness, Trng |
| DEC 1995 | RG-8 | During patrol, sensor operator and pilot detected smoke. Pilot determined eng was on fire, secured eng, crew bailed out (per EP). Crew recovered. Acft lost at sea. | Cause of engine fire unknown, Training, Design |
| APR 1996 | HH65 | At end of 5-hour mission, pilot and crewman were practicing hover maneuvers over taxiway. During third hover, entered left turn; unable to counter and impacted ground. | Aircrew & Supervisory, Fatigue, Procedures, Design |
| JUN 1997 | HH65 | Night SAR in high winds and seas for sailboat taking on water. Shortly after arriving on scene, acft went lost comms. Crew did not egress, helicopter sank in 8,500 feet of water. | Aircrew, Supervisory, Trng, Design, Assignment, Policy/Procedures, Material |
| AUG 1999 | HU25 | Rear compartment fire light during T/O, crew performed boldface, light remained illuminated, emergency declared. Rear compartment fire light extinguished after fire extinguisher activated. Hyd sys light illuminated. Acft landed, crew egressed, fire dept extinguished fire. | Maintenance, QA, Procedures, Trng, Mechanical, Supervision, |
| JAN 2001 | HH60 | Lightning strike during airway trainer. Investigation revealed damage to numerous components as well as widespread magnetization of airframe and components. | Environmental Conditions |
| JAN 2001 | HH65 | After fifth night shipboard landing, crew signaled for primary tiedowns. Prior to attachment of tiedowns, helo rolled to right. MRBs impacted deck, helo spun approx 140 degrees counter clockwise and came to rest on right side. | Dynamic rollover, Policies, Environment, Procedures |
| DEC 2004 | HH60 | During 7th hoist of remaining crewmembers on M/V in danger of running aground in high winds and heavy seas, acft was engulfed by heavy sea spray erupting from large swell striking the bow of M/V. Acft departed controlled flight and crashed into sea. Vessel's master and RS still on M/V witnessed mishap were rescued later. HH-65A hovering above mishap acft, recovered downed aircrew and one M/V crewmember. | Environmental Conditions, Trng, Fatigue, Attention |
| SEP 2005 | HH65 Ground | During ground run, acft became light on MLG and began right yaw, spinning clockwise on deck. Right MLG departed ramp during second revolution, left horiz stab, vert fin, and MRB contacted ground. Acft came to rest on left side approx 225 degrees from original heading. Crew (pilot, BA and 3 contractor techs) egressed acft. | Aircrew |
| Feb 2006 | HH65 | Responding to 4 PIW, helo crashed into surf approx 40 yards off beach. As helo was attempting to recover fourth PIW, #1 eng was inadvertently shutdown resulting in rapid power loss and loss of further flt. Crew made controlled descent into surf and helo slowly rolled on side, crew successfully egressed and reached beach without injuries. | Policy, Design, Aircrew, ORM |
| Jun 2006 | C130H | During lndg, acft swerved and departed paved rwy and continued parallel to rwy on gravel, swerved left again, struck departure end VASI, and continued onto soft tundra. During final swerve, right wing, striking ground, #4 prop struck ground and departed acft. Acft came to rest 248 feet left of rwy. | Aircrew, CRM, Trng, Habit, Procedures/Policies, Design |
| Mar 2008 | H65 FltRel | During recovery of numerous survivors from a sunken fishing vessel, non-CG members fell from basket while being brought into cabin. | Procedures, Environment, Trng, Supervision, Comms |
| Sept 2008 | HH65 | While conducting night trainer, hoist cable snagged on trng boat, acft impacted water. All four crewmembers perished. | Material/Equip, Aircrew, CRM, Design, Procedures |
| Oct 2008 | HH65 FltRel | Hoist cable damaged during basket delivery for injured PIW. RS injured using Emergency Recovery Device, precluding further hoisting. Acft departed to transport injured RS to medical. PIW was later recovered, deceased, by another asset. | |
| Oct 2009 | HC130 | During SAR for overdue, acft involved in midair collision with USMC AH-1W Cobra conducting trng. Both acft were destroyed resulting in 7 CG fatalities and 2 USMC. | Joint Investigation Pends |
| Mar 2010 | MH60 | During cross-country flight acft impacted the ground in mountainous terrain. Acft damaged beyond economical repair; two crew members were seriously injured. | Investigation Pends |
| April 2010 | MH65 | While transitioning to forward flight from a hover, during night over water training flight acft impacted the water and sank, all crew members egressed without serious injury | Investigation Pends |
| April 2010 | MH65 | During day practice fixed pitch tail rotor malfunction, acft impacted runway and rolled over. Aircraft experienced serious damage, all crew members egressed without injury. | Investigation Pends |
| July 2010 | MH60 | During ferry flight, acft impacted electrical transmission wires and crashed in surf. Three crewmembers were fatally injured and the aircraft was destroyed. | Investigation Pends |

## Table 10
## CLASS B MISHAP SUMMARY

| DATE | ACFT | SUMMARY | CAUSE FACTORS |
|---|---|---|---|
| May 1992 | HU25 | Aircraft landed with left MLG up after MLG failed to extend. MLG unlock control cable separated, preventing MLG door from opening and stopping landing gear sequence. | Material, Aircrew, CRM, Procedures, |
| May 1992 | HH60 FltRel | During live litter hoist from RHI, litter cables failed, dropping litter approx 30ft to water. | Procedures, Maintenance, Supervisory, |
| Dec 1992 | C130 | Engine turbine wheel failed inflight. Damage limited to engine. Failure attributed to material fatigue and manufacturing processes. | Material, Procedures, Manufacture |
| Mar 1993 | HH65 | At end of offshore SAR, pilot misdiagnosed and improperly managed #2 eng indicating sys failure and secured #2 eng. Situation further aggravated by series of uncoordinated inputs by both pilots. FM recognized situation, advanced FFCL, allowing remaining eng to regain power. | Mechanical, Aircrew, CRM, Training, Procedures |
| May 1993 | HH65 | During instrument approach to hover over water, rotorwash engulfed aircraft in salt spray. Pilots lost visual contact w/surface resulting in MGB overtorque and overspeeding both eng during ITO. | Aircrew, Procedures, CRM, Environment, Disorientation |
| Aug 1993 | HH3 | During flood relief support, MRBs contacted hangar, as crew completed turn into parking space. Crew had parked in same position several times. | CRM, Aircrew, Situational Awareness, Procedures |
| Mar 1994 | HH65 | Fenestron contacted runway during practice single engine landing for annual Stan check ride. | Awareness, Training, Supervisory & Aircrew |
| Sept 1994 | HU25 FltRel | DMB dropped to aid in relocating lone raft at sea, acft departed scene for fuel. Unknown to crew, DMB struck female in raft. Rafters later rescued, female underwent surgery and survived. | Supervisory & Aircrew, Procedures |
| Apr 1995 | HH60 | MRB tipcap departed inflight. Returning along coast from trng flt in VFR conditions, crew felt abnormal vibration. Vibrations so severe, pilots had difficulty reading instruments and controlling acft. Acft damaged during ldng on boulder-strewn beach. | Material Failure |
| Jul 1995 | HH65 | Deployed acft taxied into side of Navy hangar. Five navy personnel inside hangar received minor shrapnel injuries. Acft sustained shrapnel and sudden stoppage damage. | Aircrew & Supervisory, Procedures, Distractions, CRM, |
| Aug 1995 | HH65 | PAC was attempting to park helo between two other aircraft. MRB struck chain link fence. Two other aircraft and several buildings sustained shrapnel damage. | Aircrew, CRM, Distractions, Situation Awareness |
| Dec 1996 | HH60 FltRel | Acft diverted from trng flt to assist F/V reported taking on water and sinking. Two PIW were recovered using basket, third PIW recovered using direct deployment. Victim's survival suit was improperly donned and filled with water. FM and RS encountered difficulties victim, added weight caused victim to slip out of strop and fall to water. | Environment, Procedures, Design, Equipment, |
| Jan 1997 | HH65 FltRel | Acft was launched on early morning SAR to assist F/V aground and breaking up. First victim was located face down in debris, unconscious and unresponsive. Victim had improperly donned PFD and slipped out of quick-strop while being brought in cabin. FM and RS tried to hold the victim, but he slipped out of PFD and quick-strop. | Procedures, Aircrew, Training, Design |
| Mar 1998 | HU25 | Fan spinner departed in flight. Large section of fan spinner lodged in engine bellmouth, resulted in engine, fuselage, wing and horizontal stabilizer damage. | Material, Design, Procedures, Aircrew |
| Jun 2002 | MH68 | During T-course day flt, crew entered an uncontrollable ground resonant state due to failure of dynamic rotor head component. As acft was shutdown, left MLG collapsed, helo came to rest on left MLG structure. MRB and TRB did not impact ground. Crew safety egressed with no injuries. | Material, Maintenance |
| May 2005 | HU25 | During warm-up syllabus in local area, crew observed an unsafe right MLG indication during extension. After extensive troubleshooting, acft was landed. As acft entered gradual left turn to exit rwy right MLG collapsed, causing right wing tip to scrape rwy and right inboard gear door broke off. All aircrew egressed safely with no injuries. | Material, Procedures, Aircrew |
| Jan 2006 | HU25 | Acft damaged during inspection/test of repairs performed by ARSC. Original damage occurred when civilian G-V was towed into left horizontal stabilizer. Damage required ARSC level repairs. | Fatigue. Resources, Environment, Policy |
| Jul 2006 | HH65 | FMI noticed high freq hum and vib. Following extensive trouble shooting, MGB, forward T/R driveshaft and T/R takeoff flange replaced. T/R takeoff flange lock nut securing pins were broken during PDM/Charlie mod, allowing T/R takeoff flange lock nut to back off. Tension from ECS belt was holding T/R takeoff flange to MGB. | PDM, Procedures, Maintenance, QA |
| Feb 2007 | HH65 | After completing day local area patrol and all maneuvers required for RT-1, crew commenced hover practice over rwy. During third 360 degree pedal turn, (AFCS and manual trim secured, NR high) acft entered rapid left yaw as tail came thru wind line. Acft made 3 complete turns, rt MLG and NLG contacted rwy prior to recovery. | Environment, Design, Aircrew, Procedures |
| Mar 2007 | HH65 | MLG strut collapsed into the wheel well as a result of hyd strut actuator failure. Acft was on deck disembarking 2 passengers. PAC had collective locked and LG pinned | Material |
| Mar 2008 | HH65 | CP announced bird approaching at same altitude as helo. PAC took evasive action, as did the bird. Bird impacted acft, significantly damaging windscreen and pilot door. Crew maintained control of acft and reviewed procedures for blade damage and windscreen cracks. Acft RTB and landed, acft suffered significant structural damage and was trailered to ARSC for repairs. | Birdstrike |
| Nov 2009 | HU25 | Nose strut collapsed during landing while conducting a routine training mission. The aircraft was retired from service due to the high cost of repair | Investigation Pending |
| Feb 2010 | MH65 | Acft experienced 11 previous alternator failures and was unavailable for almost two months. CO grounded acft for lack of confidence. Troubleshooting led to rewiring AC system, replacing 4 alternators, four alternator controls units and the MGB. | Material |
| Sept 2010 | MH60 | During DLG training with cutter, acft experienced high speed shaft failure in #2 engine while hovering approximately 80 yards off the port quarter of the cutter | Investigation Pending |

## Table 11