FY06 AVIATION SAFETY REPORT

The purpose of the Annual Aviation Safety Report is to inform and raise the awareness of Coast Guard aircrew members regarding aviation mishaps. Improving safety awareness is essential to improving operational performance and preventing aviation mishaps. This report contains fiscal year 2006 mishap information as well as prior year 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 still important, and are reviewed separately.

THE YEAR IN REVIEW, FROM THE HEADQUARTERS' PERSPECTIVE

CG Aviation experienced two Class A mishaps in 2006. Once again, we were fortunate that neither involved serious injury. Both mishaps occurred in the operational realm and in challenging circumstances. Both crews had to overcome significant obstacles to success, requiring them to rapidly adapt to changing circumstances. It speaks well of CG aviation that we are experiencing these types of mishaps and not mishaps associated with failures of flight discipline or flagrant violation of our rules and regulations.

The Optimum Success Envelope: Adapting is what we do operationally. From the time we are notified, we are constantly experiencing, recognizing, evaluating and adapting to change. It's at each point of adaptation (read as decision point) that ORM is the most critical. Detecting and evaluating the hazard(s) that may naturally flow from the adaptation (decision point) is key. When we adapt reactively in the aircraft (instead of deliberately), then we need to understand we are moving toward an environment where perfect or near perfect performance may be required. It is very difficult to be perfect at a complex task if you have not practiced that specific task many times. Recognizing you are about to do something you don't often practice is a key point in the ORM process. We need to factor in if we have demonstrated a high level of proficiency in the required action. If we have not, we are accepting additional risk**...**and need to review the gain. Mitigating your actions to bring yourself into an area, maneuver or process where you are highly proficient, is desirable, and often possible given the proper identification of hazards and accurate analysis of your proficiency.

If we shape the battlefield well, we construct time lines that allow us to mitigate risk deliberately with time to consider several strategies and consequences. This hopefully allows us to choose the option that fits our proficiency / preparedness model best. If you can mitigate risk deliberately, you will experience less risk

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because you are performing in an envelope you have spent many hours preparing to succeed within. Deciding to stay in that envelope of course is often the toughest decision of all. Unfortunately, nobody tells us when we have just stepped outside of it, and if we are under a time crunch we are even more likely to miss the transition.

What clues do you have that might be early indicators that you are stepping out of the optimum success envelope? I'll suggest a few situations to think about::

- A non standard maneuver or a standard maneuver executed in a non standard way (e.g., maneuver must be flown out of the wind) is thought to be required to succeed.
- The key iteration required for success is begun from a position of disadvantage. (e.g., no planning is done, wx cannot be determined, no comms with RS, or boat you are hoisting to, power requirements are marginal, demo'd crew performance on this flight has already been substandard, fatigue or other acft degradation).
- You are about to do something you have not done before or about to ask someone to do something they have not done before.

Each of these issues can be mitigated but as the timeline tightens the decision points become ever more heavily weighted. At the same time our mission oriented nature makes the decision to turn back more difficult to make.

What to do? Set limits based on your optimum success envelope and stick to them. Remember the tougher the conditions, the greater your perceived need to excel, then the greater your need to stay inside the envelope. Prepare your crew to speak up and provide them the common language they need to reach you when under the gun (e.g,. two challenge rule, wave off, risk change awareness statement---"Hey sir, the risk is worse than what I thought it was going to be").

Something to think about.

DISCLAIMER: Before you review the next section in this data rich periodical please allow me a disclaimer. We are not about accident rates but risk identification and accident prevention. This report contains the data that helps to make the needed course corrections**…** but our real goal is to prevent the data! If we do the daily work of keeping each other focused on Proficiency, Risk Management and the principles of MRM and CRM, the low rates we have enjoyed historically will stay with us and so will our shipmates. Having said that, there is some excellent data here we can use to note trends, justify training needs and equipment and identify how we can improve the CG Aviation Safety program.

YEAR IN REVIEW: Transition to sectors continued in FY06; AUF was fielded at several air stations; NCR became operational; the H65 "C" upgrade reached critical mass; we received the first CASA; the H60 MSRT unit expanded its capabilities; and we continued to monitor the C-130 and HU-25 aging aircraft issues. As I write this, the 65C fleet is installing the software upgrades that will give them back their fuel calculations, as well as, several other new capabilities. Interestingly enough there seems to be a rash of H65C overtorques occurring even without the ECMS software to capture them. That may mean we 65 drivers need to get back to some fundamental attitudes that we've always had. I'll stop there.

CHANGE WILL CONTINUE: But one thing not changing is our propensity for human error. Some may mitigate (trap) error better, but all fall victim in time. One thing we can do to reduce our chances of human factor error is remove those errors we commit intentionally, e.g., shortcutting a procedure; failing to properly supervise someone; or violating a regulation. Often at the basis of these mistakes is an artificial timeline based on a perception that things need to get done quickly. Perceived pressure from a shop chief, OPS or the CO is a natural outflow of our mission oriented culture. And I am never surprised about the role it plays in "intentional errors" and "intentional non-compliance with procedure." Communication plays a huge role in setting the right expectations and creating a healthy command climate. One method of getting the communication started on the right foot is publishing a Command Safety Policy or Statement. In this policy statement the CO can make it clear what his/her safety philosophy is, making sure the other leaders in the unit are aligned and create the right perception of the command's safety climate and culture. I encourage you to review this subject with your command and if appropriate help craft the statement.

As special mission responsibilities grow so will concerns over proficiency. ATC, CG-37RCA, and CG-1131 engaged in a Special Missions review last December. This review was oriented on aligning threat, tactics, training and standardization. FSO's and all aviators need to stay engaged to identify trends and norms associated with fielding new capabilities. Timely information from the field will be critical to absorbing these new capabilities while minimizing risk. Please take the time to push information up the chain when you uncover hazards, procedures, processes or equipment that is increasing risk.

E-AVIATRS: Our reporting capability continues to improve. Miss Cathie Zimmerman has done a fantastic job making improvements to that system and continues to work daily on improving its ability to facilitate easier data mining. As always a call or e-mail to CZ is worth your flight gear's weight in gold. Clearly the field FSO's are working hard to provide an outstanding product to their respective commands and perhaps more importantly to the rest of the fleet. Please continue to utilize the interim mishap message as a means to getting important information out quickly. BZ!

VFDR: Progress continues regarding fleetwide voice and flight data recorder (VFDR) recapitalization. Thanks to LCDR Brian Glander, CDR Jeff Kotson and contractor Tony Simpson for their monumental effort in keeping this project moving along. BZ!

CREW ENDURANCE MANAGEMENT: CEM remains a front burner issue. CEM testing and data collecting was rolled into the stand up of the NCR mission via CG-1131 collaboration with CEM expert Dr. Tony Carvalhais. The data he mined from NCR crews played a key role in tweaking the NCR schedule to maximize CEM. It was an important milestone in the program and demonstrated the CG's commitment to CEM at the highest levels.

SNFS.

CDR Tom Farris
Chief Aviation Safety Division (CG-1131).

ANNUAL RECAP

We experienced two Class A aviation mishaps in FY06, there were no fatalities. The first was CG6594 (Humboldt Bay, CA) in February 2006 and the second was CG1710 (Kodiak, AK) in June 2006. Both mishaps are still in the review process but are summarized starting on page 6. We also convened a Commandant's MAB for one Class C (CG6041, MSRT/ECITY). Table 1 displays aviation mishap class and category definitions.

NOTE: We have a correction to the Class A rate reported in FY05. The CG6590 rollover should have been reported as a Class A ground mishap since there was no intent for flight. This reduces last year's mishap rate from 1.74 to 0.87.

MISHAP CLASS COST BREAKDOWN

FY02-FY06

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.

Table 1

Even with two "bad" years, Coast Guard Aviation has still averaged one Class A mishap a year for the last twenty years. Our 15 and 20-year Class A Flight mishap rates per 100,000 fight hours are 0.93 and 1.00 respectively. The Coast Guard 5- and 15-year rates are also below 1.0. Figure 1 on the next page compares Coast Guard 5, 10, 15 and 20-year Class A Flight mishap rates with the DOD services. These numbers are excellent and since they include enough hours to compare us with annual DOD rates, they are a better measure of our Safety program's effectiveness.

CG Auxiliary Aviation reported no Class A or B mishaps for the fifth year in a row. Auxiliary

Aviation flight hours and mishaps are not used in figuring CG mishap rates in this report (See page 10 for more on the AuxAir program).

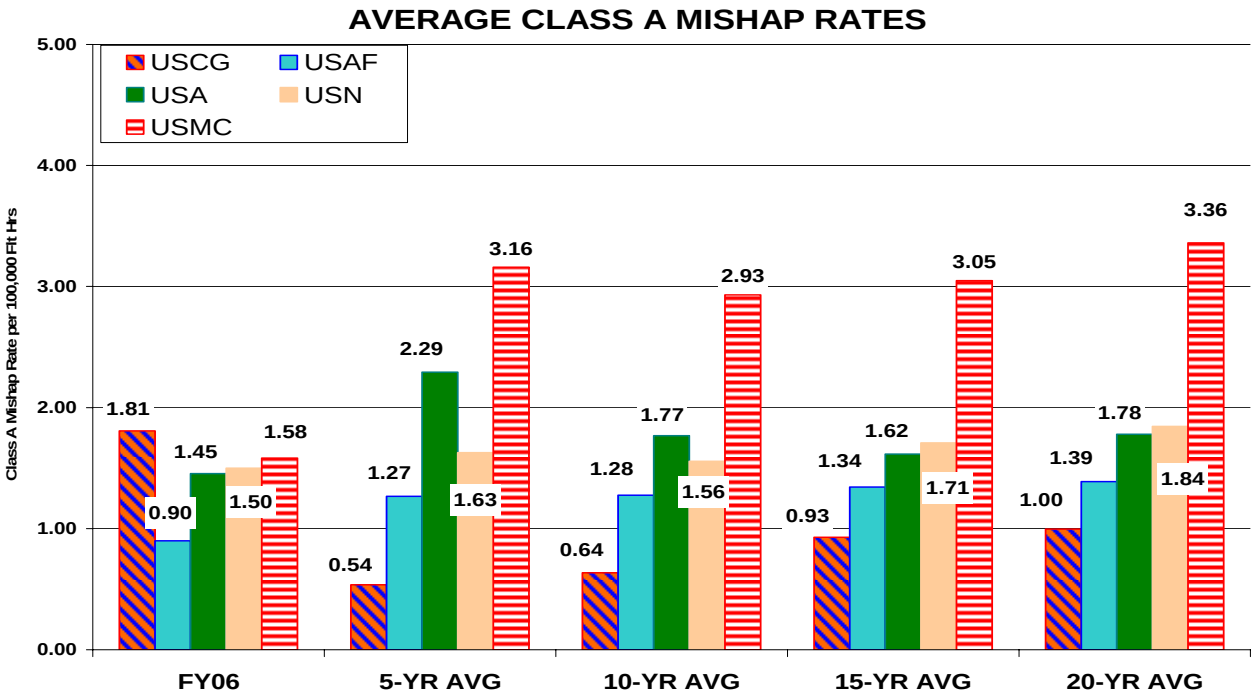


Figure 1

Flight mishap costs for FY06 were $23,923,329, the highest since FY90. The number of Flight mishaps reported this year was down from the last two years (532). This is due largely to the decrease in HH65 engine mishaps. (see Table 2 and Figure 2 on the next page). Total Aviation mishap costs (Flight, Flight-Related and Ground) for FY06 were $25,839,162 also the highest since FY90 (see Figure 3 on page 6). Of the 636 aviation mishaps reported this year, 61 were Ground and 43 were Flight-Related.

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, lost operation time and dollars). Reporting the low/no cost mishaps helps perpetuate what we believe is a very positive and 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. Hopefully your CG wide efforts toward more effective and better prevention efforts at low damage thresholds will to continue break the mishap chain earlier and keep our people and equipment safe.

Maintenance Resource Management (MRM) training and awareness continues to contribute to the increased reporting of minor incidents and keeping the overall Class ABC mishap statistics down. Only eight of the 74 reported MRM events had mishap costs over $20,000, and accounted for 83% ($566,323.38) of the total MRM costs ($683,959). These higher cost MRM incidents include two engine incidents totaling over $225,626, the HU25 Class B Aviation Ground mishap ($203.153) and two ground handling mishaps. See page 14 for a discussion of the MRM program.

Table 2 on page 5, displays the FY06 Aviation mishap summary data. Figures 2 and 3 (on pages 5 and 6) display mishap cost data for the last ten years for Flight mishaps and for Total Aviation mishaps (Flight, Flight-Related and Ground). These two figures break out the Class A and Class E costs to help illustrate how engine mishaps or Class A mishaps can impact the overall mishap costs. Engine mishaps have historically accounted for half of the reported CG aviation mishaps and costs.

The Class ABC flight mishap rate (per 100 flight

hours) decreased to 0.03. It has fallen steadily from 0.08 in FY93. This rate has been below 0.05 for the last ten years and below 0.10 since FY90. The relative stability of ABC flight mishap rate indicates that when our mishaps increase or decrease it is mostly at the Class D and E. This is good sign since these mishaps are generally low cost and demonstrate our vigilance and mishap prevention efforts are paying off. This is also a positive indication that the aircrews are still diligent about reporting even the minor events.

Of the 532 Flight mishaps reported, 93% (497) were below the Class C threshold of $20,000 and accounted for 20% of the Flight mishap costs. Similarly, looking at Total mishap numbers (Flight, Flight-related and Ground), only 92% (588) of the 636 mishaps reported were below the $20,000 threshold and accounted for 24% ($6,111,911) of the Total Aviation mishap costs. Table 3 on page 6, compares our mishap numbers for the last 5 years.

Almost half (245) of the Flight mishaps reported this year were Class E, and accounted for 17% ($4,059,212) of the FY06 Flight mishap costs ($23,923,329). 85% (208) of the Class E mishaps cost less than $20,000, and 51% (125) cost less than $1,000. Only eight of the Class E mishaps had costs over $100,000, but these eight incidents represented 55% ($2,218,794) of the Flight Class E costs for FY06. Many of these incidents would have been reported as Flight-Related mishaps before we added the Class E mishap category in FY02.

CLASS	# MISHAPS	COST	FATALS	INJURIES
A	2	$17,356,000	0	0
B	2	$599,368		0
C	44	$1,771,883		9
D	329	$755,045		16
E	259	$5,356,866		1
TOTAL	636	$25,839,162	0	26

TOTAL FLIGHT HOURS	110,634
CLASS A FLIGHT MISHAP RATE PER 100,OOO FLIGHT HRS	1.81
FIIGHT MISHAPS PER 100 FLIGHT HOURS	0.48
COST PER FLIGHT MISHAP	$44,969
COST PER FLIGHT HOUR	$216

FLIGHT MISHAPS			
CLASS	# MISHAPS	COST	INJURIES
A	2	$17,356,000	0
B	1	$396,215	0
C	32	$1,499,667	1
D	252	$612,235	0
E	245	$4,059,212	0
TOTAL	532	$23,923,329	1

GROUND MISHAPS			
CLASS	# MISHAPS	COST	INJURIES
A	0	$0	0
B	1	$203,153	0
C	6	$272,216	1
D	46	$108,945	7
E	8	$532,616	1
TOTAL	61	$1,116,930	9

FLIGHT-RELATED MISHAPS			
CLASS	# MISHAPS	COST	INJURIES
A	0	$0	0
B	0	$0	0
C	6	$0	7
D	31	$33,865	9
E	6	$765,038	0
TOTAL	43	$798,903	16

Table 2

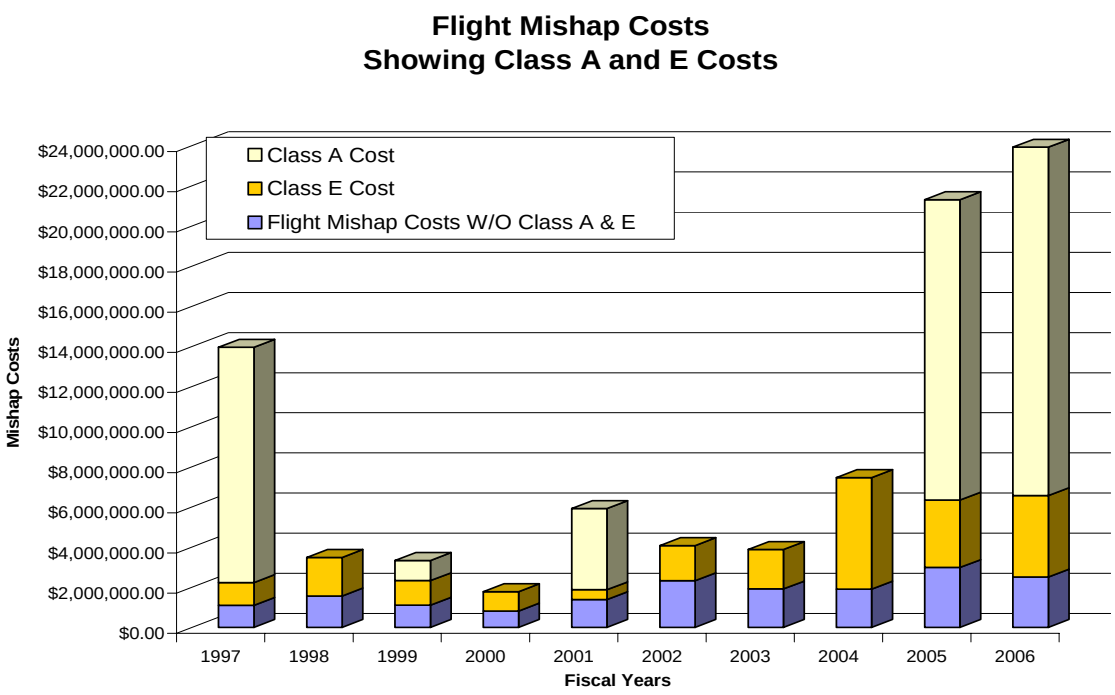
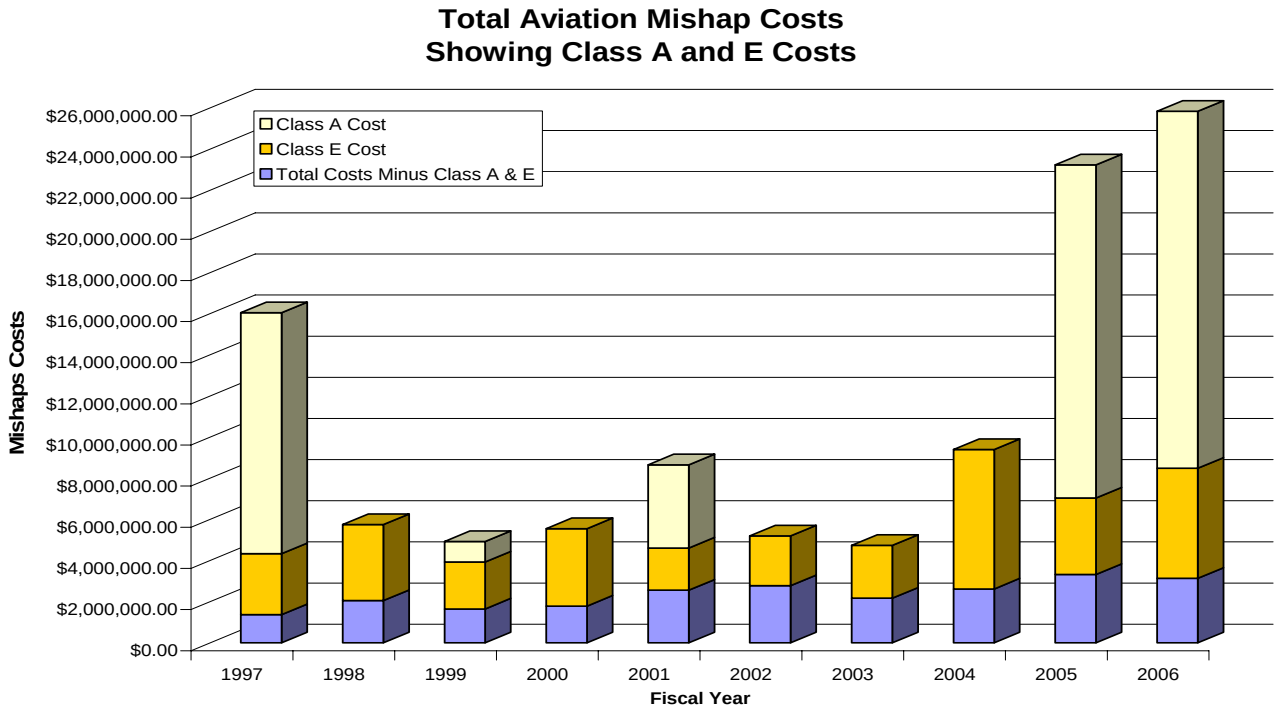


Figure 2



Note: Class E mishap cost are broken out to show the portion of Class E (engine only) mishaps costs related to the total mishap costs for each year.

Figure 3

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
FY02	197	$4,071,357	108,673	0.18	$20,667	$37	FY02	16	$1,790,951	108,673	0.01	$111,934	$16
FY03	202	$3,884,702	113,569	0.18	$19,231	$34	FY03	26	$1,431,049	113,469	0.02	$55,040	$13
FY04	680	$7,464,588	114,870	0.59	$10,977	$65	FY04	24	$1,147,984	114,870	0.02	$47,833	$10
FY05	703	$22,537,447	114,338	0.61	$32,059	$197	FY05	41	$18,437,475	114,338	0.04	$449,695	$161
FY06	532	$23,923,329	110,634	0.48	$44,969	$216	FY06	35	$19,251,882	110,634	0.03	$550,054	$174

Table 3

Figure 4 on the next page, displays our Class A Flight mishap history along with total flight hours since 1956. Also on the next page, Figure 5 displays the Coast Guard aviation Class A Flight mishap rates for the past fifteen years. Figure 6 (on page 8) provides a comparison of Coast Guard aviation Class A Flight mishap rates to the DOD military services for the last ten years.

FY06 CLASS A MISHAPS

Humboldt Bay CG6594 CFIW

On 11 February 2006, during a SAR case off the coast of Northern CA, 6594 with a crew of four crashed into the surf approximately 40 yards from the beach. 6594 was responding to a report of four people in the water (PIW). Arriving on scene, 6594 direct deployed the rescue swimmer (RS) and hoisted the RS and one person to the beach, where the RS commenced CPR. Two of the PIWs made their way to the beach as 6594 repositioned and attempted to recover the fourth person. While in a hover at approximately 25 feet, the number one engine spooled down and hover flight was no longer possible. The crew made a controlled descent into the surf. After water entry, the helicopter slowly rolled on its right side and the crew successfully egressed. All three crew members made their way to the beach without injuries. 6594 came to rest in shallow water. The fourth PIW was recovered by another CG helicopter. Mishap is still in the mishap review process.

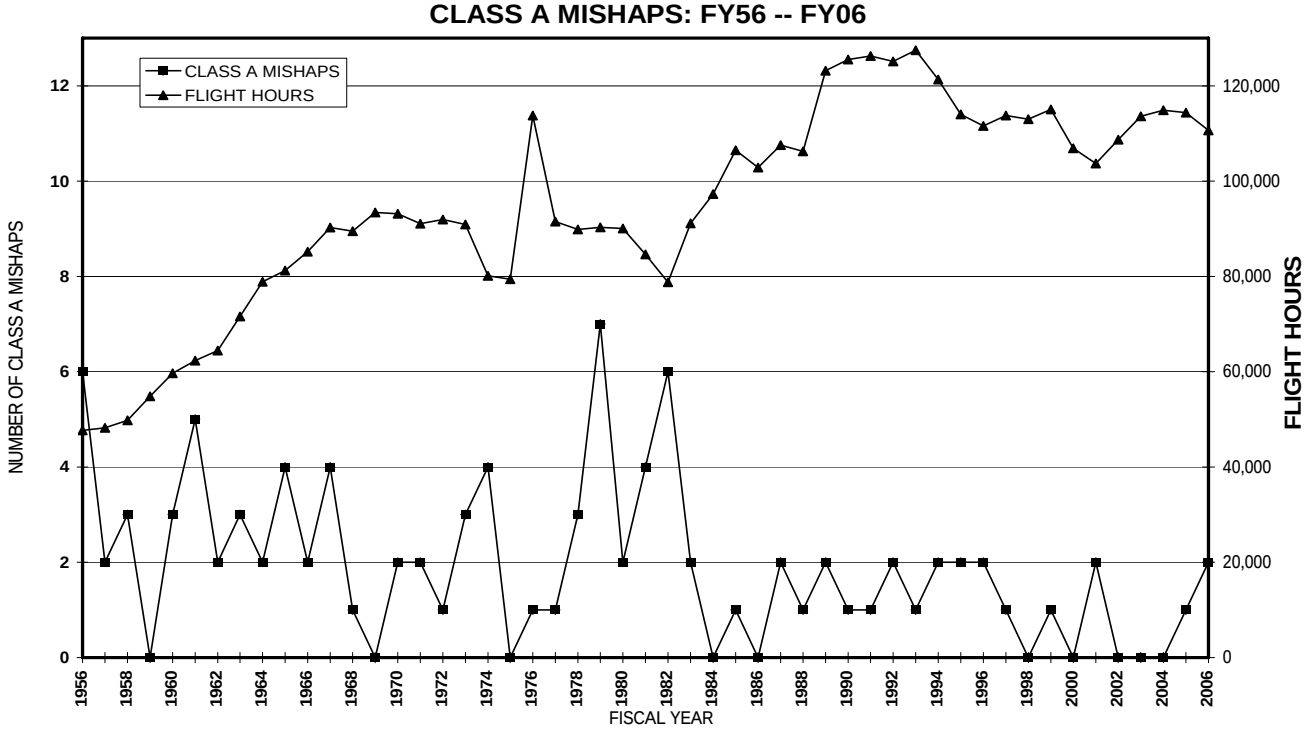
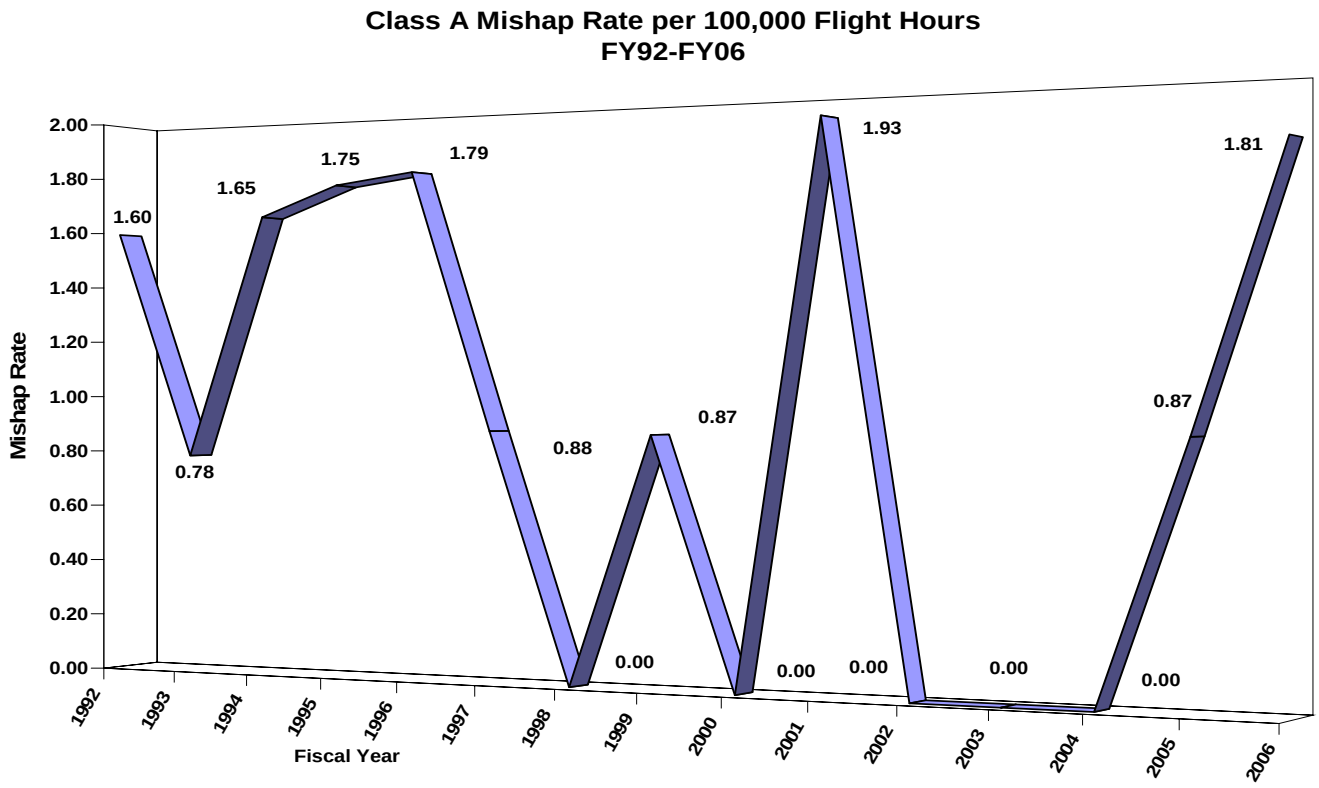


Figure 4


Class A Mishap Rate per 100,000 Flight Hours
FY92-FY06
Mishap Rate
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1.60
0.78
1.65
1.75
1.79
0.88
0.00
0.87
0.00
1.93
0.00
0.00
0.87
1.81
0.00
1992
1993
1994
1995
1996
1997
1998
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2000
2001
2002
2003
2004
2005
2006
Fiscal Year

Figure 5

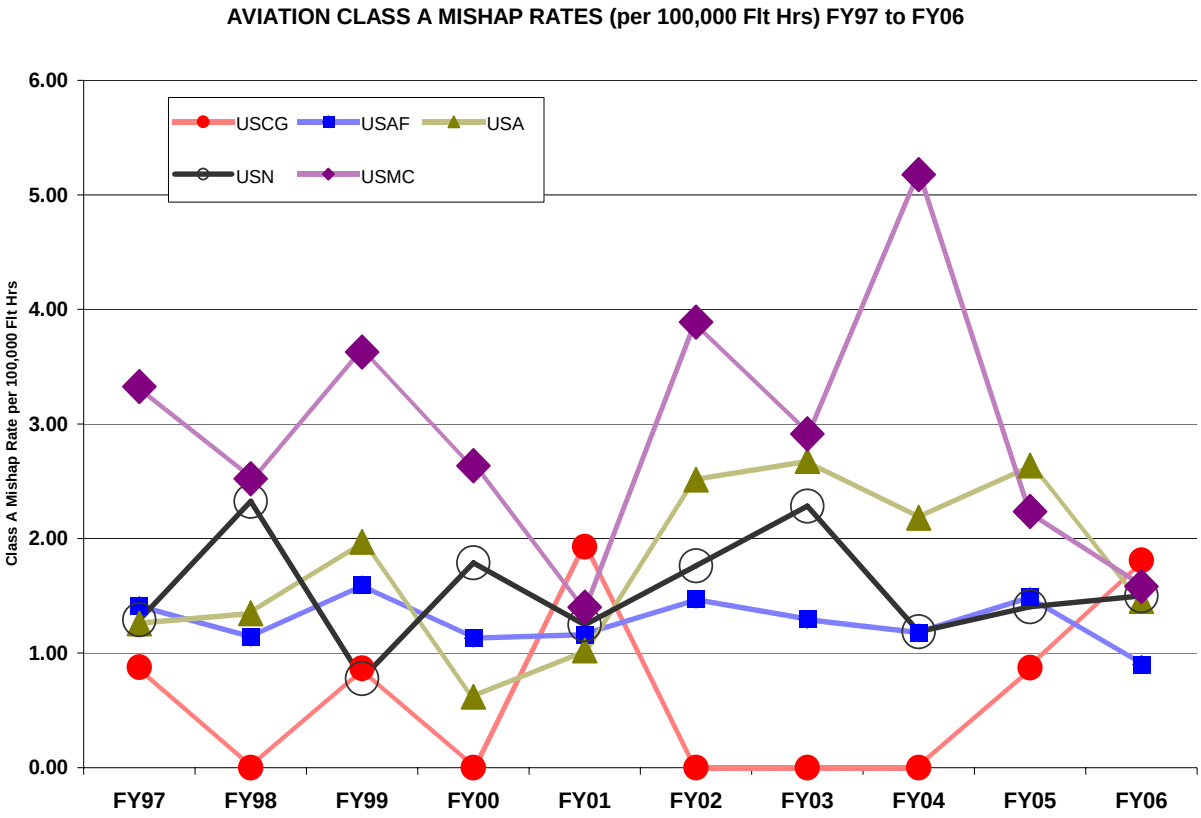

Figure 6

Kodiak CG1710 Runway Departure

CG1710 was conducting a logistics support mission to Saint Paul Island to deliver a 5000 gallon aircraft refueler truck. During landing at Saint Paul Airport, the mishap aircraft swerved to the left and departed the paved runway surface. After departing the runway surface, the mishap aircraft continued parallel to the runway on a gravel surface, swerved left again and struck VASI gear, and continued into soft ground. During the final left swerve, the right wing of the aircraft dipped, striking the ground. The number four propeller also struck the ground and departed the aircraft. The aircraft came to a rest 248 feet left of the runway edge. The mishap investigation is still ongoing.

FY06 CLASS B MISHAP

We had two Class B mishaps investigated at the unit level in FY06. Both provide valuable lessons learned for the fleet.

For an interesting read on how the holes just won't stop lining up in spite of your best efforts check out ARSC CG2115 Ground mishap (RNO 5010006001). An ARSC maintenance team was performing repairs on the CG2114 resulting from a towing mishap with a civilian Gulfstream Five. The 2114's left horizontal stabilizer was struck by the G-V's winglet.

Barbers' CG6505 mishaps (RNO 2025506060) illustrates the value of strong CRM and persistence maintenance troubleshooting. While conducting HH65C upgrades, the ATC FM instructor noticed a high frequency hum and vibration. The other aircrew did not recognize any abnormalities, in the interest of safety the flight was terminated. Once on deck, the vibration worsened and became noticeable to the entire crew. Following extensive troubleshooting the MGB, forward T/R shaft and T/E takeoff flange were replaced.

FY06 CLASS C MISHAP

Elizabeth City/MSRT CG6041 Blade Strike

CG6041 was conducting vertical insertion training to a fictional suspect commercial vessel, when the MRB tipcaps struck two stanchions on the aft portion of the vessels superstructure. At the time there were 2 ropers on deck and one on the rope. The crews

response to the blade strike placed the roper over the water, the roper was "locked out" until the aircraft was repositioned over the vessel. The "in progress" roping was then completed, the rope was cut and training secured. The mishap crew completed the rotor blade damage emergency procedure and conducted a PEL to Martha's Vineyard airport.

VOICE AND FLIGHT DATA RECORDERS / MILITARY FLIGHT OPERATIONS QUALITY ASSURANCE (MFOQA)

Although there have been a few minor technical and administrative hurdles in the otherwise rapid deployment of the new and more capable VFDRs for all airframes, the overall initiative is moving along extremely well. Some of the platforms have even had further advancements in the capabilities of their respective systems beyond what was previously planned (see airframes specifics at the end of this section).

As the project to replace the vital data capturing equipment comes closer to completion, more and more emphasis and resources will be focused on how to manage the "easier to obtain" data that the new systems will provide. This is where the Military Flight Operation Quality Assurance (MFOQA) program begins.

Despite the fact that the current name of the new program may be somewhat intimidating, the basic premise MFOQA is founded on is fundamentally simple. The new VFDRs and associated Flight Data Acquisition Units (FADUs) now offer all of the same parameters that are captured on the "black box" to the user at the unit level. No longer will we have to wait for a significant accident/incident to trigger the elaborate VFDR data retrieval process (which involves removing the unit from the airframe, shipping it and waiting for the downloaded data). Very soon the information retrieval process will be as simple walking out to the aircraft and removing the computer card.

Soon the data will be available on demand, and can be applied to a myriad of aviation safety, operations, training, standardization, and maintenance concerns. How soon? In some cases the installation of the equipment on the airframes may outpace the implementation of the policy and associated support equipment and software. Before the end of summer 2007 each platform should have the prototype system installed and tested on at least one airframe.

As can be expected one of the most significant hurdles to overcome in this new program is the management of information (large amounts and potentially sensitive information). With every aircraft in the Coast Guard delivering every second of every parameter captured by the VFDR, the numbers add up quickly. How much will need to be retained? Who will have access to the data? How will it be presented: computer animation or numbers? Will the data be presented for a single flight or mission to help training and standardization, or will it be collected and analyzed in aggregate form? These are tough questions that will need to be answered and ultimately managed via a thorough and inclusive program level policy.

Since the HH65C is at the forefront of the prototype process, the test and evaluation of the system will most likely start early this spring at the HH65 prime unit. A program and policy development working group with representatives from each of the program level aviation offices and other key stakeholders will meet periodically to discuss the management of this powerful new capability. By fall 2007, the working group will provide senior level aviation leadership with a draft policy that outlines recommendations for future program management.

Specifics VFDR program advancements by platform are:

- HH65: K3 VADR is currently installed on two aircraft. One at ATC Mobile where the prototype is complete, and one at PAX River waiting EMC testing as part of the AUF prototype. It is anticipated CGAS Atlantic City will be the first unit to receive the new VADRs. CGAS Atlantic City will be the focal point for the test and evaluation of the capability in conjunction with HH65 prime unit and the MFOQA working group. Fleet wide installations will most likely take place throughout the summer as operations and scheduling permit. Units will most likely not receive the download software until the test and evaluation is complete. The exact timeline and unit breakdown is still to be determined.
- HH60: K3 VADR Installations will start in March 2007 with the prototype conducted at CGAS Elizabeth City. Unit personnel can complete installation, and the TCTO has been written and is currently being reviewed for approval.
- HU25: A minor set back of the HU25 VFDR full deployment will result in more capability.

The units contained bad circuit parts, so as part of the fix; the company provided digital memory at no extra charge. This will significantly increase the capability and speed of downloading data.

- HC130: The Flight Data Acquisition Unit (FDAU) upgrade to the HC130 VFDR will now include a new Engine Indicating Display System (EIDS). This system will replace the existing 32 'steam gauges' in the cockpit with two displays. This system will send information to the FDAU for recording to the VFDR. Overall a tremendous added benefit to standardization and situational awareness that will be ushered in with the MFOQA capability.

As always, special thanks to Tony Simpson and CDR Jeff Kotson from ARSC for their technical and managerial oversight of this program.

AVIATION SAFETY POSTGRADUATE TRAINING

With the graduation of LCDR Jeremy Smith and his pending assignment to the Aviation Safety Division (CG-1131) at Headquarters, this summer will mark a significant milestone for the Coast Guard's Aviation Safety Program. During the creation of the Aviation Safety Training Allowance Billet (TAB), four billets were identified as potential pay back tours. (ARSC Command Safety Officer, ATC Command Safety Officer, and two CG-1131 Aviation Safety Specialists). This summer the third graduate from the program will be the first assigned to the HQ Aviation Safety Program. This fully staffs the range of validated billets with masters level graduates and is a testament to the value the organization places on the Aviation Safety Program. (If you don't feel good about that then you should!)

The future of the program is equally bright. LCDR Chris Chase is currently in his second semester at the Embry Riddle Prescott Campus and LCDR Roberto Torres starts classes at the Embry Riddle Daytona Campus this fall. The FY08 allocation for the Aviation Safety TAB has already been approved and the solicitation message and guidelines for applicants should be released early this spring. The competition for this TAB has been steadily increasing as well and is another positive sign in the health of the aviation safety culture. All eight applicants last year were of superior quality, and we are confident that this year's round of applicants will be equally outstanding performers.

The two identified graduate programs for this TAB will be explained in the solicitation message, but for more information on the specifics please visit the schools websites:

Master of Science in Safety Science, Embry Riddle Prescott Campus: http://www.erau.edu/omni/pr/academicorgs/prssd/index.html

Master of Science in Aeronautics (MSA) with specialization in Aviation/Aerospace Safety Systems at the Embry Riddle Daytona Campus: http://www.erau.edu/db/degrees/ma-aeroscience.html

If you have any questions about the program, please feel free to contact the Program Manager, LCDR Brian Glander, or any of the current or past graduates of the program:
CDR Jeff Kotson
LCDR Tony Nygra
LCDR Jeremy Smith
LCDR Chris Chase
LCDR Roberto Torres

AUXILIARY AVIATION

In August 2005 Air Station Port Angeles released an AuxAir Class E mishap message of an in-flight engine failure of a multi-engine AuxAir aircraft. The mishap investigation, determination was made that the failed engine had been operated well beyond the manufacturer's recommended Time Between Overhaul (TBO). Following the investigation, the Auxiliary Aviation Standardization Team researched data provided by the Federal Aviation Regulations, various aircraft manufacturers, aviation insurance underwriters, and the Federal Aviation Administration (FAA) in order to gain a more thorough understanding of the possible ramifications of operating an aircraft beyond TBO.

Because of the similarities between the Civil Air Patrol (CAP) and the Coast Guard AuxAir, the Office of Auxiliary (CG3-PCX) also met with members of the CAP to learn how their organization handled issues regarding TBO. From this meeting CG3-PCX learned that the CAP does not allow its aircraft to operate beyond TBO.

As a result of the investigation's findings and the data collected by the AuxAir Stan Team and CG3-PCX, a recommendation was made to mandate a policy that would not allow Coast

Guard Auxiliary aircraft to operate beyond the manufacturers' recommended TBO. The Auxiliary Aviation Standardization Team drafted and released a message that required all Coast Guard Auxiliary aircraft to comply with manufacturers' recommended TBO in order to be offered for use as an AuxAir facility.

Since this message was released, several Air Stations voiced a concern over the potential reduction of available AuxAir facilities. As a result, the Coast Guard Offices of Auxiliary, Aviation Safety, Aviation Forces, Aviation Engineering, and CG Claims and Litigation reviewed the new policy to determine if the new TBO mandate was excessively restrictive and warranted modification. The findings of the review were that this new policy ultimately strengthens the safety and credibility of the Auxiliary Aviation program and no modifications to the policy are warranted. Despite this new requirement, the Coast Guard Auxiliary Aviation program remains an extremely valuable asset, combining the talents of skilled pilots and aircrews with safe and reliable facilities capable of performing various missions in support of Coast Guard operations.

	FY03	FY04	FY05	FY06
Total Hours Flown	18,462	17,994	18,085	17,403
# Acft (End Of Year)	280	294	289	303
# Pilots – all (EOY)	431	442	486	320
# Aircrew (EOY)	123	150	153	367

Table 4

Auxiliary Aviation statistics for the last four calendar years are shown in Table 4 above. (Special thanks to LTJG Shannon Scaff CG3-PCX for writing this article)

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 no cost lessons learned and any incident having value to the rest of the fleet. These reports are valuable mishap prevention tools.

Aviation Injury

There were 22 reported aviation related injury mishaps in FY06 involving injury to 21 aviation personnel, two boat crew and two "fast ropers". Over half of these injuries involved improper procedures, the wrong tool or improper/poorly designed equipment. Inattention, complacency, awareness and motivation were factors in over half of these incidents as well, and 30% listed lack of training or experience as a factor.

Thirteen people were hurt during hoisting ops (six Rescue Swimmers, three boat crew, two Flight Mechs and two fast ropers). Two Rescue Swimmers suffered bruises, strains or sprains during recovery and two mechs reported back injury during swimmer ops. Two swimmers and three boat crew experienced static discharge shock during hoisting

There were no HAZMAT incidents or reports of personnel being sprayed or otherwise exposed to fuels or fluids this year. We had one AST injured while servicing a HEEDS bottle and one incident of possible weather radar exposure. There was one report of blocked ears and two reports of electric shock during maintenance procedures.

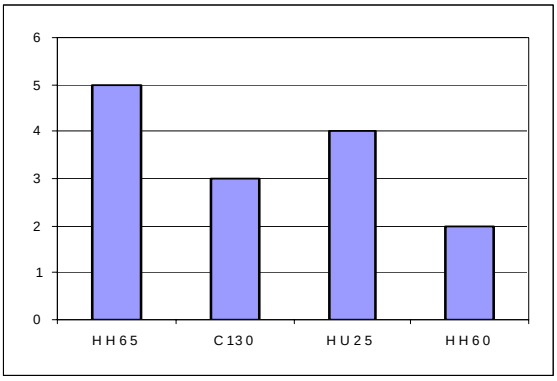

Figure 7

Birdstrikes

There were fourteen birdstrikes reported in FY06 with reported damage costs of $117,146. Damage involved two HH60 main rotor blades, one HU25 and one HC130 engine. Radomes on both a Herc and a Dolphin were damaged by birdstrikes. Birdstrikes damaged windscreens on a Dolphin and a Falcon as well as wings on one Herc and one Falcon. Other damage included three HH65s and one HU25. Figure 7 and 8 show breakouts of the FY06 birdstrikes.

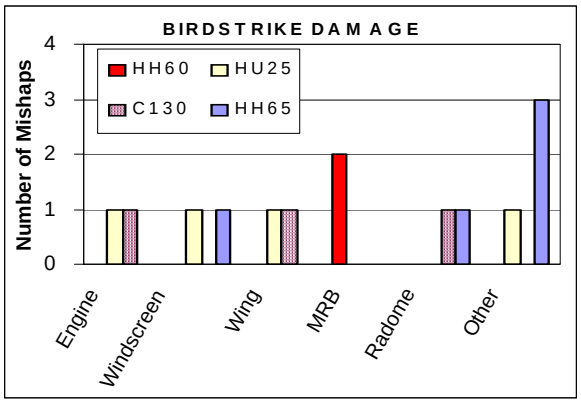

Figure 8

Near Midair Collision

There were seven near midair collisions (NMAC) reported in FY06. Reported NMAC's have decreased since Traffic Collision Avoidance Systems (TCAS) were installed in Coast Guard aircraft in the mid-nineties. NMAC's involved four HH65, two Falcons and one HH60. NMAC involved two helos, three civil, one commercial and one military aircraft.

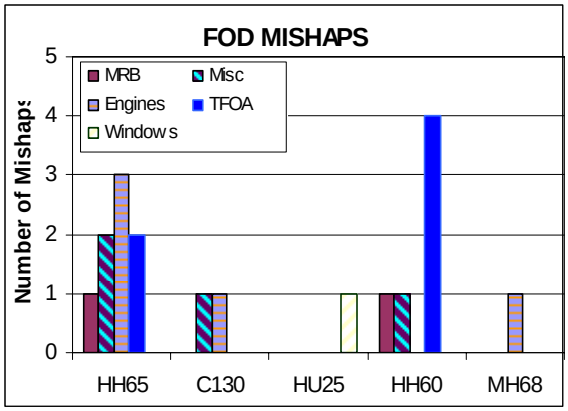

Figure 9

FOD Mishaps

The eighteen Foreign Object Debris (FOD) incidents reported this year resulted in $92,036 in damage. Figure 9 shows a breakdown of the reported FOD incidents. Foreign object debris mishaps involved one windscreen, two main rotor systems, and five engines. Eight HH65's, two C130's, one HU25, six HH60's and one MH68 were involved in FOD mishaps this year. Parts, tools or other maintenance supplies left in the aircraft accounted for five mishaps and over $12,000 (see Figure 10). There were six reports of TFOA and two incidents of non Coast Guard property being damaged by rotorwash.

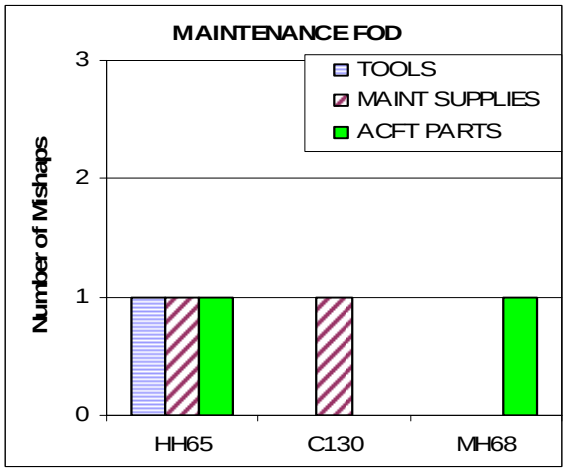

Figure 10

ENGINE MISHAPS

Class E mishaps accounted for 41% (259) of the reported Total Aviation(ground, flight, flight-related) mishaps and 21% ($5,356,866) of the Total mishap costs in FY06 (this would have been 63% without the cost of the two Class A mishaps) Engine mishaps historically account for half the mishaps and half the mishaps cost each year. There were 30 engine inflight shutdowns, failures or flameouts with mishap costs over $20,000 reported in FY06. These 30 mishaps resulted in $4,487,598 of mishap costs (this does not include partial power losses/torque-splits). Figure 11 shows a breakdown by mishap and aircraft type of those 30 mishaps.

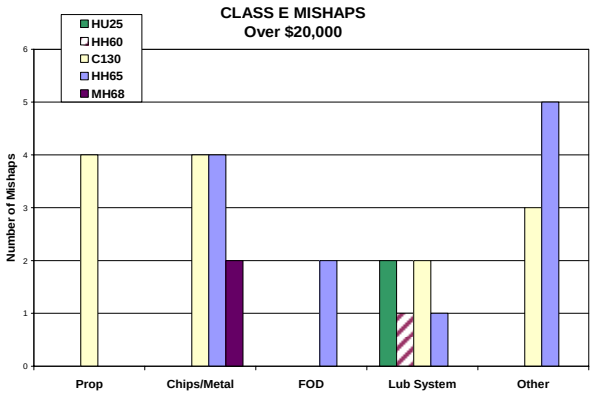

Figure 11

SHIP-HELO MISHAP REVIEW

There were twenty-nine mishaps totaling $260,043 mishaps reported in FY06 involving ship-helo operations. Only four of these 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 25 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 they accounted for 5.4% of the mishaps and 1% of the total mishap costs.

WEATHER RELATED MISHAPS

Weather contributed to twenty-one reported mishaps resulting in $325,351 in damage. These incidents included electronic malfunctions due to moisture, parts prematurely failing due to corrosion, and airframes damaged by wind, ice and lightning.

GROUND MISHAP REVIEW

Sixty-one aviation ground mishaps were reported in FY06. Both the number and the cost of ground mishaps was down again this year. Total cost for these mishaps was $1,116,930. (See Figure 12). Of the 53 non-engine related ground mishaps, ground handling (ground support equipment (GSE), towing, blade folding, fueling, washing or jacking) accounted for 25% of mishaps (15), and 5% of the costs ($52,110). Both these figures are down from previous years and in the past have represented almost 50% of ground mishaps. 15% of the ground mishaps (9) incidents involved towing and accounted for $8,794 (8%) of the mishap costs.

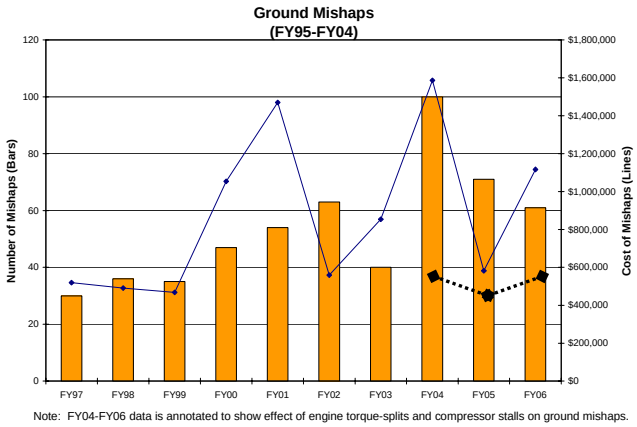

Figure 12

Virtually all of the ground mishaps listed some form of human factors as one of the cause factors. The wrong part, tool, equipment or incorrect procedures were factors for 15% (10) of the ground mishaps. Insufficient Q/A, review or supervision was cited in 18 (21%) of the mishaps. A quarter (15) of the ground mishaps listed awareness, complacency or inattention as a factor. Of the 61 ground mishaps reported this year, 51 were below $20,000 in cost, totaling $116,708. Conversely, the four most costly ground mishaps totaled $797,739.

MAINTENANCE HUMAN FACTOR EVENTS

Seventy-four mishaps listed some type of maintenance human factor as a cause. These mishaps included incomplete passdown, poor communications, inappropriate procedures, improperly followed procedures, a lack of supervisor review, or Q/A problems (Figure 13 below). The wrong part, poor equipment/part design, cannibalization or lack of parts was listed as a cause in half (37) of the mishaps. Ten (14%) mishaps were the result of FOD or poor tool control. Sixteen percent (12) mishaps listed culture, norms or habits as a factor. Thirty (41%) of the mishaps involved incomplete, improperly followed, work arounds, inappropriate or unavailable procedures.

Inattention, complacency or awareness was a factor in thirty-six (49%) of the incidents reported. Q/A review or supervision was cited as a cause factor in 50% (37) of the mishaps. Some form of inexperience, lack of training, or staffing issues were factors in 27% of the

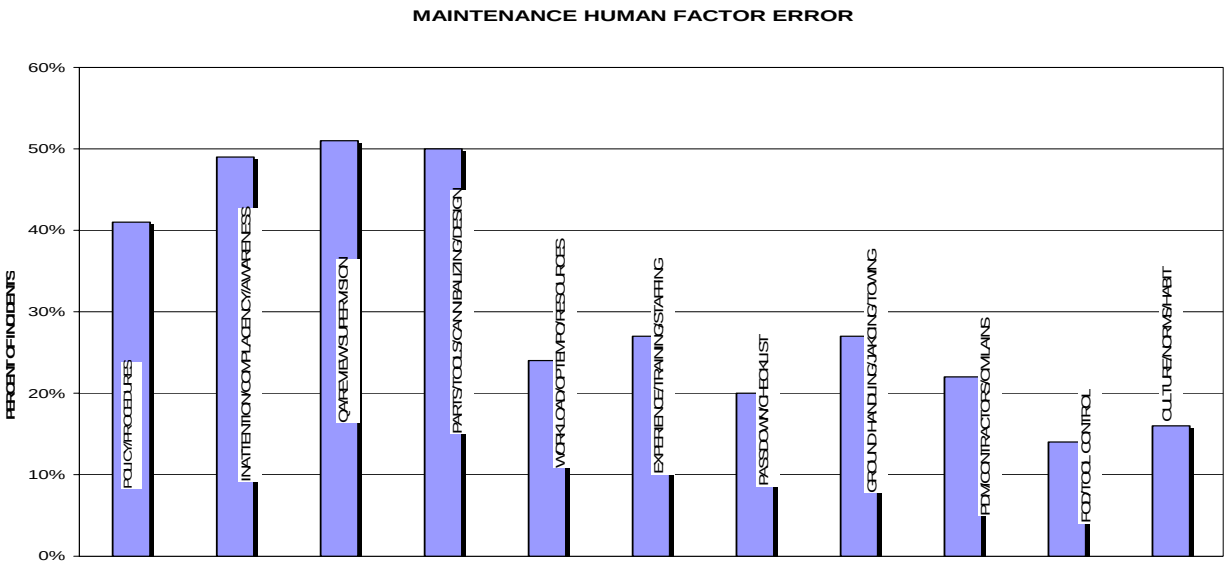
MAINTENANCE HUMAN FACTOR ERROR
PERCENT OF INCIDENTS
60%
50%
40%
30%
20%
10%
0%
POLICY/PROCEDURES
INATTENTION/COMPLACENCY/AWARENESS
QA/REVIEW/SUPERVISION
PARTS/TOOLS/PLANNING/DESIGN
WORKLOAD/TIME/RESOURCES
EXPERIENCE/TRAINING/STAFFING
PASS DOWN/CHECKLIST
GROUND HANDLING/TAXIING/TOWING
FOD/CONTRACTORS/SOMLANS
FOD/TOOL CONTROL
CULTURE/ORG/SHIFT

Figure 13

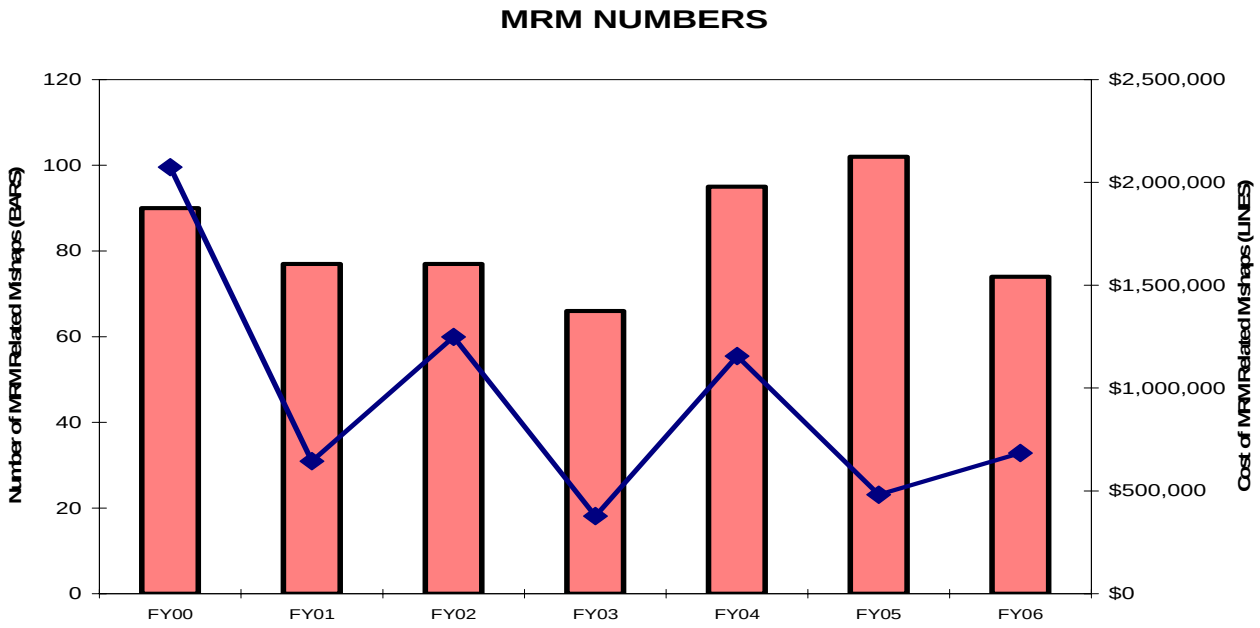

Figure 14

incidents. Workload, feeling rushed, or lack of resources was mentioned in 24% (18) of the mishaps. Poor passdown, incomplete checklist, or poor communications were also listed in 20% of the mishaps. Ground handling, jacking or towing were listed in 27% (20) of the reported mishaps.

MAINTENANCE RESOURCE MANAGEMENT (MRM)

Reported MRM related mishaps dropped to seventy-four in FY06 dropped compared to 95 in FY05. The total cost of these mishaps was $683,959 up from the $481,460 reported last year (see Figure 14 above). Looking at a longer timeframe, the five year average mishap cost is $612,575 and the average annual cost for MRM mishaps since its Coast Guard inception in 2001 is $765,261. Both down from the $1.1M average experienced during the five years preceding MRM's introduction. We believe this is an indication that MRM training is driving a cultural change. A culture, in which mistakes and near misses are more freely admitted and that the lessons learned from these incidents are acted on earlier resulting in changes to maintenance norms, procedures and practices before they injure someone or become high-dollar mishaps.

These achievements have continued to be borne through the hard work and dedicated efforts of ATTC's cadre of MRM Instructors, who delivered MRM Initial training to over 337 "A" School students (87 more students than FY05), and qualified 29 unit MRM Facilitators this past year. In turn, these MRM Facilitators have been responsible for conducting regular MRM refresher training at the unit level for all of the aviation maintenance personnel in the Coast Guard. Facilitator training is conducted on an annual basis at ATTC in Elizabeth City, NC.

The goal is to train enough personnel each year to provide each air station with a qualified instructor for each airframe, and an additional instructor for air stations with more than five of any one type of aircraft. Facilitator qualifications are good for three years, while refresher training is required by all maintenance personnel every two years. Changes to the Aeronautical

Engineering Maintenance Management Manual (COMDTINST M13020.1) chapter 6, have been made that requires a CG-41 waiver to conduct aircraft maintenance if the biennial refresher is not completed.

While MRM provides the knowledge and awareness of human factors on the hangar deck, in the shops and on the flight line, it does not provide a systems approach to analyzing events that provide clues to the potential source of a future mishap. Every day "events" occur (e.g., a missed or improperly executed step in a maintenance procedure, improper use of a tool or machine, etc.) that constitute errors but fall short of causing a reportable mishap under our safety reporting requirements (the portion of the "iceberg" that lies above the waterline).

Maintenance Event Trend Analysis (META) is an event investigation process, trend analysis and database tool designed specifically for Aeronautical Engineering use, providing a simple means of tracking those human error events that "lie below the waterline." By concentrating our attention there, we can make policy and process improvements and increase awareness before a mishap occurs. As it exists now, this tool is a paper form that can be used for collecting and analyzing trends at the unit level. This form is available on ATTC's website at: http://cgweb.arsc.uscg.mil/attc/MRM.htm.

A few units are using META with great success. Air Station Clearwater has made extensive use of their locally-developed, electronic META Access database. CG-1131 continues to seek funding sources to integrate an electronic META graphical user interface and database program with ALMIS for the purposes of collecting this data CG-wide and analyzing it at the macro level. Additional personnel for larger air stations and CG-1131 have also been requested as part of this Resource Proposal. We hope to have the initial version of the electronic META program/database in place by early FY08 to begin limited trial use and testing.

SUMMARY INFORMATION

Tables 5 and 6, display mishap summary information for FY06 associated with each of the four major airframes. The pie charts on the next page, (Figures 14,15, and 16) illustrate the percentage of total mishaps, flight hours and total mishap costs for each airframe. As expected the percentages for each factor is roughly the same for per airframe.

AIRFRAME REVIEW

Pages 17-20 contain mishap data for each major aircraft type. In reviewing these pages, it should be noted that with only eleven reportable Flight Class A's and 4 Class B's in the last ten years, the ABC Flight mishap rate for all aircraft is made up mostly of Class C mishaps. Note the ABC Flight mishap rate for each airframe and CG aviation is fairly stable.

FY06 FLIGHT MISHAP PERCENTAGES

AIRCRAFT	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST	FLIGHT HOURS	% of FLIGHT HOURS
HH60	54	10%	$1,267,832	5%	23,949	22%
HH65	319	60%	$4,770,714	20%	49,962	45%
MH68	11	2%	$261,930	1%	3,317	3%
C130H	90	17%	$16,650,446	70%	17,946	16%
C130J	4	1%	$3,356	0%	932	1%
HU25	54	10%	$969,051	4%	13,529	12%
C37A/C143	0	0%	$0	0%	1,000	1%
TOTAL	532		$23,923,329		110,634	

Table 5

FY06 FLIGHT MISHAP PERCENTAGES				
CLASS	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST
A	2	0%	$17,356,000	73%
B	1	0%	$396,215	2%
C	32	6%	$1,499,667	6%
D	252	47%	$612,235	3%
E	245	46%	$4,059,212	17%
TOTAL	532		$23,923,329	

Table 6

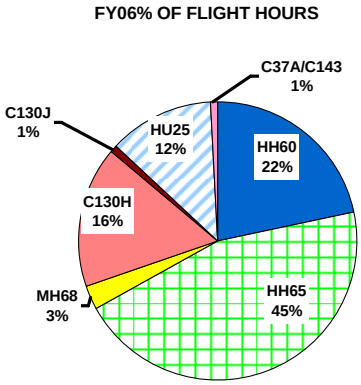

Figure 15

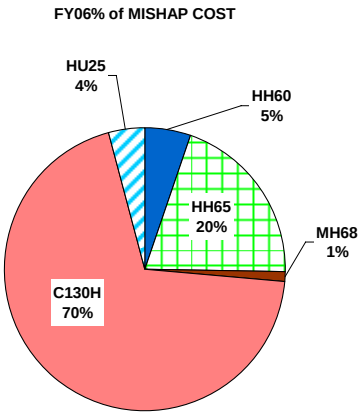

Figure 16

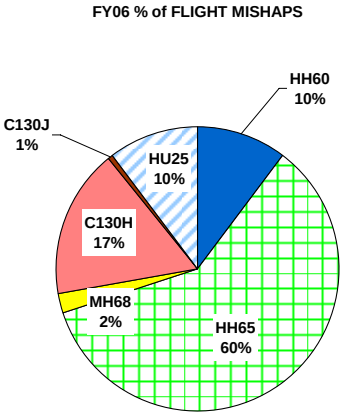

Figure 17

HH60J MEDIUM RANGE RECOVERY (MRR)

The HH60J flew 23,949 hours (22% of the total flight hours) and reported 54 flight mishaps (only 10% of total reported flight mishaps). The HH60J had a mishap rate (0.23) the lowest of the 4 major airframes. The Jayhawk also had the lowest cost per flight hour ($53) The HH60J mishap cost accounts for only 5% of the total FY 06 Flight mishap costs. Of the 54 HH60J flight mishaps reported, 23 cited costs of less than $1,000. Of the eight Class E mishaps five reported cost less than $20,000.

HH60J Flight Mishaps for FY06

Aircraft	Class	No. Mishaps	Cost
HH60J	A	0	$ 0
	B	0	$ 0
	C	7	$ 340,835
	D	39	$ 146,729
	E	8	$ 780,268
Totals		**54**	**$ 1,267,832**

Table 7

HH60 ABCDE	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	HH60 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY02	29	$312,820	23,665	0.12	$10,787	$13	FY02	2	$56,044	23,665	0.01	$28,022	$2
FY03	37	$1,370,502	25,098	0.15	$37,041	$55	FY03	7	$508,426	25,098	0.03	$72,632	$20
FY04	54	$682,270	24,869	0.22	$12,635	$27	FY04	6	$347,958	24,869	0.02	$57,993	$14
FY05	74	$15,923,313	25,100	0.29	$215,180	$634	FY05	8	$15,371,712	25,100	0.03	$1,921,464	$612
FY06	54	$1,267,832	23,949	0.23	$23,478	$53	FY06	7	$340,835	23,949	0.03	$48,691	$14

Table 8

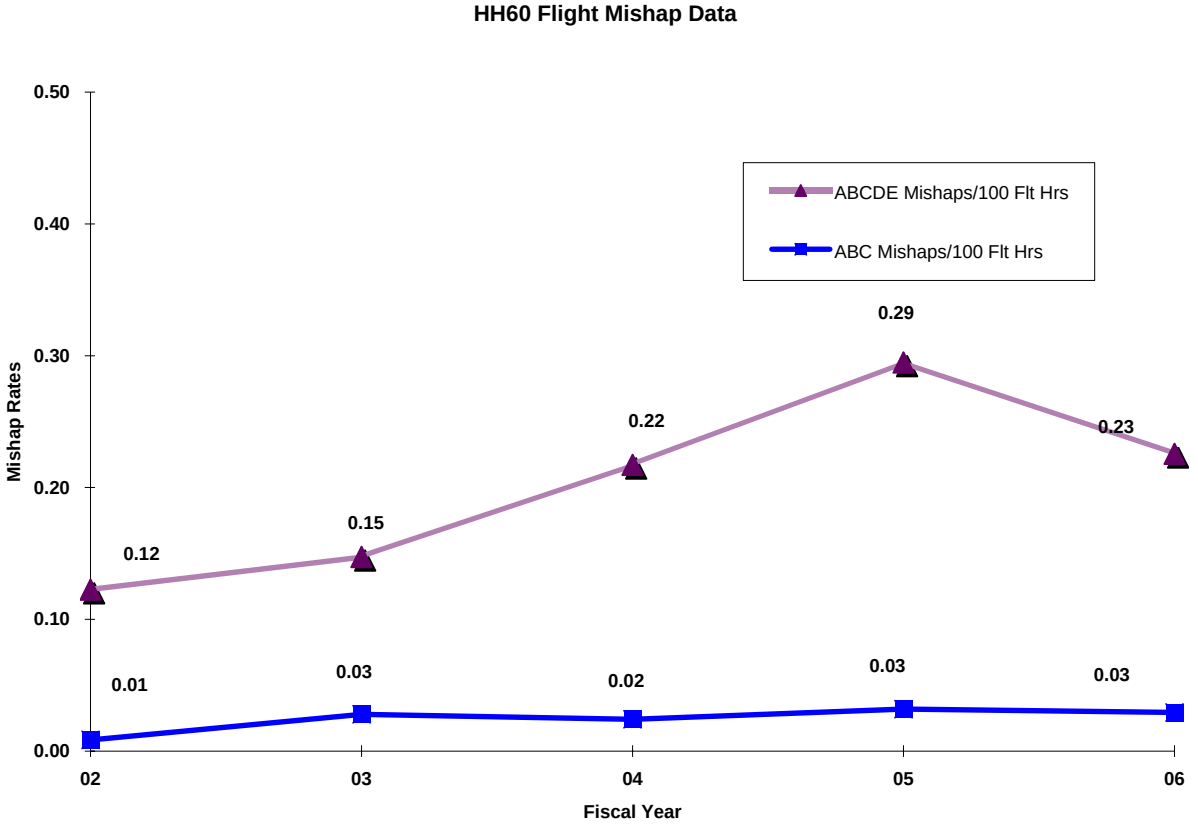

Figure 18

HH65 SHORT RANGE RECOVERY (SRR)

The HH65 flew 49,962 hours, and experienced the first FY06 Class A mishap. The HH65 reported 60% (319) of the mishaps, and 20% ($4,770,714) of the mishap cost. The Dolphin mishap rate (0.64) decreased again this year, but was still the highest of all the major airframes. Of the 319 HH65 flight mishaps reported in FY06, 180 were Class E mishaps. 158 of the Class E mishaps reported cost of under $20,000 (Class C threshold) and of these, 87 had associated cost under $1,000.

HH65 Flight Mishaps for FY06

Aircraft	Class	No. Mishaps	Cost
HH65	A	1	$ 2,356,000
	B	1	$ 396,215
	C	12	$ 396,517
	D	125	$ 271,210
	E	180	$ 1,350,772
Totals		**319**	**$ 4,770,714**

Table 9

HH65 ABCDE	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	HH65 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY02	100	$861,004	50,067	0.20	$8,610	$17	FY02	6	$350,044	50,066	0.01	$58,341	$7
FY03	92	$1,097,536	51,019	0.18	$11,930	$22	FY03	14	$722,489	51,010	0.03	$51,606	$14
FY04	487	$4,740,167	52,196	0.93	$9,733	$91	FY04	9	$377,962	52,196	0.02	$41,996	$7
FY05	431	$4,292,923	51,276	0.84	$9,960	$84	FY05	17	$1,930,010	51,276	0.03	$113,530	$38
FY06	319	$4,770,714	49,962	0.64	$14,955	$95	FY06	14	$3,148,732	49,962	0.03	$224,909	$63

Table 10

HH65 Flight Mishap Data

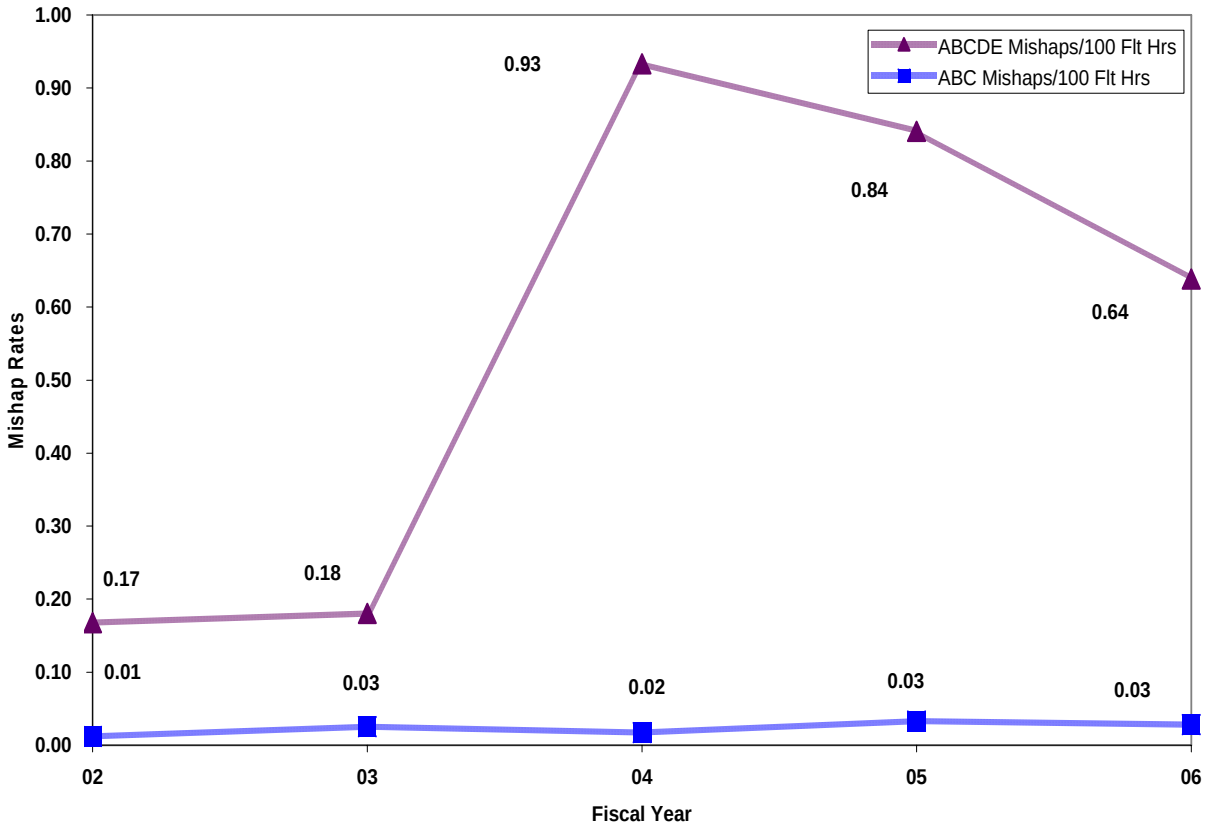

Figure 19

HC130H LONG RANGE SEARCH (LRS)

The HC130H flew 17,946 hours and reported 90 mishaps and had the second FY06 Class A mishap (see page 8). Because of the Class A mishap, the C130 had the highest mishap cost per flight hour ($928) and per mishap ($185,005) of all the major airframes.

Only 17 of the 90 C130H flight mishaps had costs above $20,000. 55 of the mishaps had costs below $1000. Of the 43 Class E mishaps reported, only eight involved costs of more than $20,000.

HC130H Flight Mishaps for FY06

Aircraft	Class	No. Mishaps	Cost
HC130	A	1	$ 15,000,000
	B	0	$ 0
	C	8	$ 562,127
	D	38	$ 59,736
	E	43	$ 1,028,583
Totals		**90**	**$ 16,650,446**

Table 11

C130 ABCDE	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	C130 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY02	23	$476,709	18,851	0.12	$20,726	$25	FY02	5	$331,701	18,851	0.03	$66,340	$18
FY03	19	$941,794	19,353	0.10	$49,568	$49	FY03	1	$70,789	19,353	0.01	$70,789	$4
FY04	67	$1,602,704	18,748	0.36	$23,921	$85	FY04	6	$244,790	18,748	0.03	$40,798	$13
FY05	99	$1,210,032	19,009	0.52	$12,223	$64	FY05	11	$554,451	19,009	0.06	$50,405	$29
FY06	90	$16,650,446	17,946	0.50	$185,005	$928	FY06	9	$15,562,127	17,946	0.05	$1,729,125	$867

Table 12

C130 Flight Mishap Data

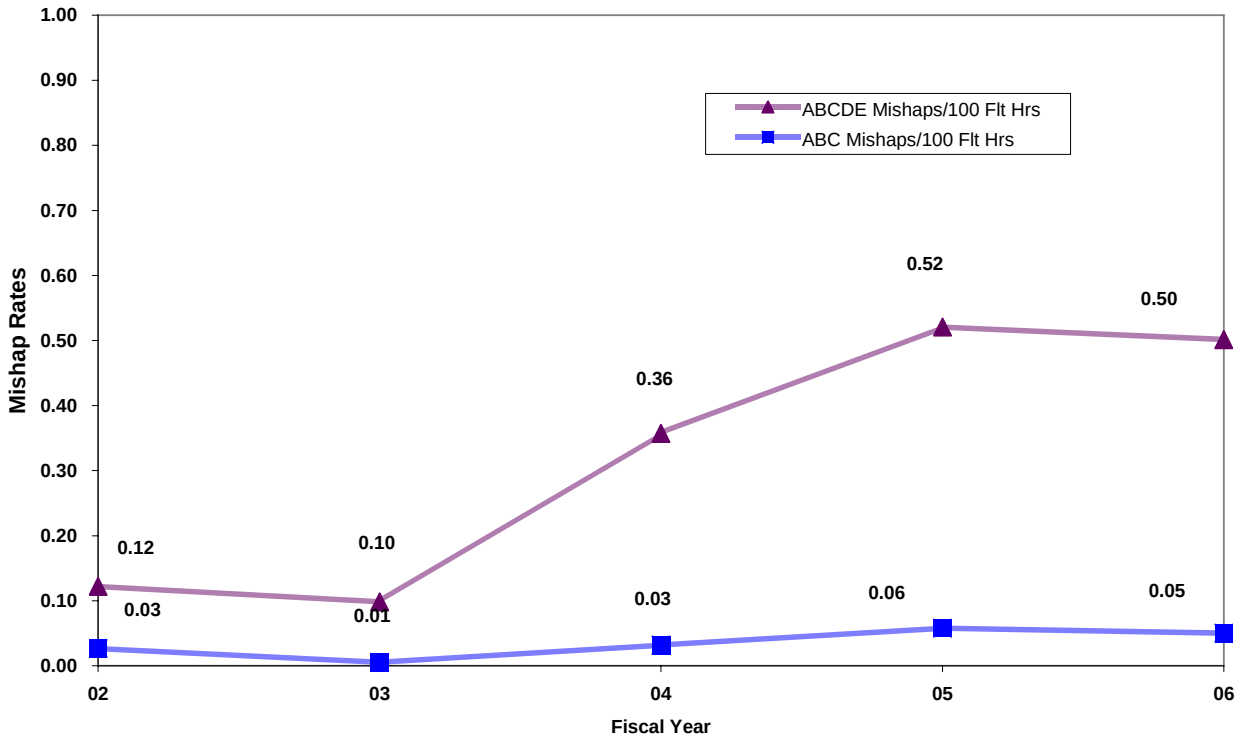

Figure 20

HU25 MEDIUM RANGE SEARCH (MRS)

The HU25 flew 12% (13,529) of the total hours and reported 54 (10%) of the total flight mishaps. The Falcon had the lowest total mishap cost per flight hour ($72) and cost per mishap ($17,945) were up again this year.

Of the 54 HU25 flight mishaps for FY06, twelve were Class E. All but three of the Class E mishaps were under $20,000. Twenty-nine of the 54 flight were under $1,000. Only seven flight mishaps reported mishap costs over $20,000.

HU25 Flight Mishaps for FY06

Aircraft	Class	No. Mishaps	Cost
HU25	A	0	$ 0
	B	0	$ 0
	C	4	$ 164,196
	D	38	$ 89,806
	E	12	$ 715,049
Totals		**54**	**$ 969,051**

Table 13

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
FY02	31	$1,596,952	12,219	0.25	$51,515	$131	FY02	2	$289,472	12,219	0.02	$144,736	$24
FY03	42	$295,745	13,544	0.31	$7,042	$22	FY03	4	$110,987	13,544	0.03	$27,747	$8
FY04	58	$400,117	13,761	0.42	$6,899	$29	FY04	3	$177,274	13,761	0.02	$59,091	$13
FY05	66	$914,674	13,923	0.47	$13,859	$66	FY05	4	$467,784	13,923	0.03	$116,946	$34
FY06	54	$969,051	13,529	0.40	$17,945	$72	FY06	4	$164,196	13,529	0.03	$41,049	$12

Table 14

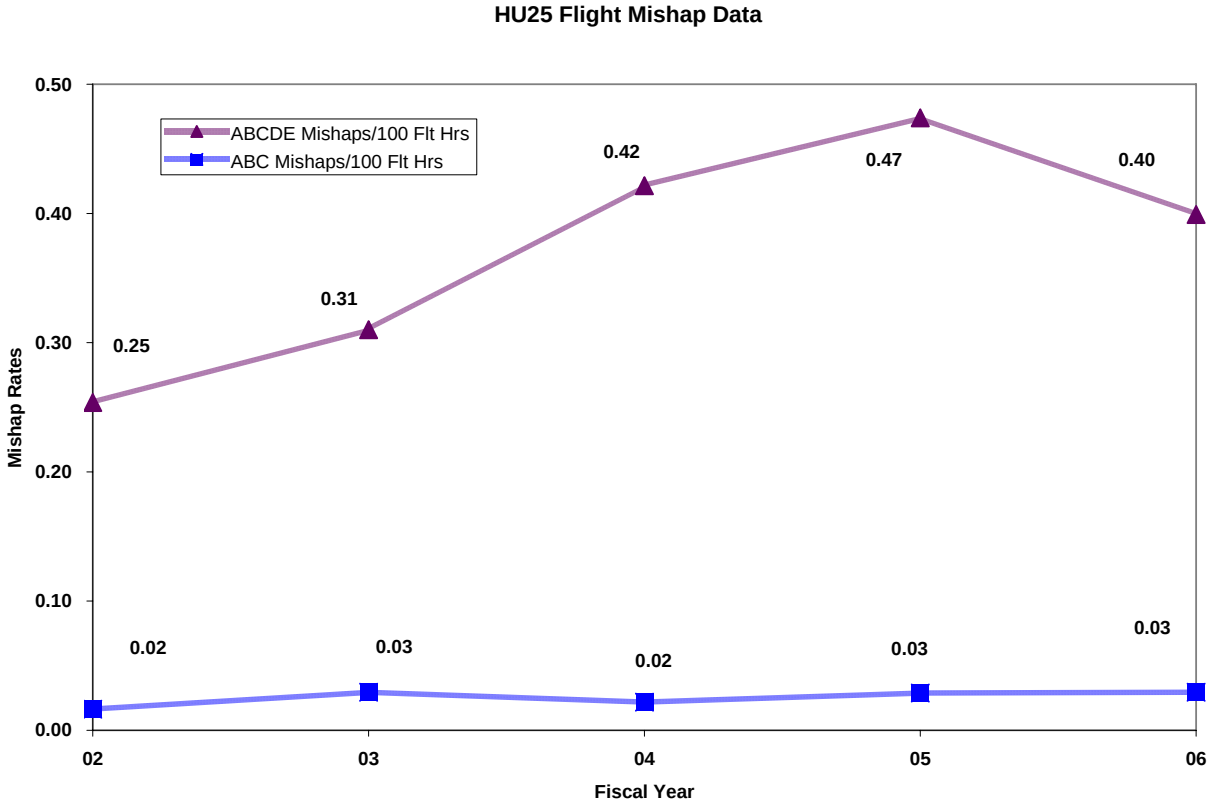

Figure 21

CLASS A MISHAP SUMMARY

DATE	ACFT	SUMMARY	CAUSE FACTORS
AUG 1990	E2C	Returning from night LE patrol, aircraft developed wing fire and crashed short of runway while on final approach.	Fire
AUG 1991	HH65	During daylight, low speed photo pass, aircraft experienced uncommanded left yaw and impacted ice.	Aircrew Error
JAN 1992	C130	Uncontained failure of # 3 reduction gearbox shortly after takeoff. Prop and front half of gearbox departed nacelle, struck fuselage resulting in explosive decompression and severing of MLG hydraulic line. Aircraft landed without further damage.	Overhaul Procedures, Material
MAR 1992	HH65	Aircraft impacted water during practice MATCH to water at night.	Fatigue, Disorientation, CRM, Supervisory & Aircrew Error
AUG 1993	HH65	During daylight delivery of ATON personnel and equipment, aircraft crashed while landing on elevated helipad.	Aircrew Error, CRM, Training
JUL 1994	HH65	Aircraft impacted side of cliff in low visibility during night SAR mission to assist S/V aground.	Communications, Situational Awareness, CRM, Aircrew
AUG 1994	HH65	Hardlanding during daylight practice autorotation, aircraft impacted ground, slid and rolled on side.	Aircrew Error, 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 Error, Mechanical
AUG 1995	HH65	During daylight flight, deployed helo experienced rapid left yaw while conducting left pedal turn in a hover. Aircraft accelerated through wind line, spin could not be countered. Aircraft impacted water.	Design, CRM, Aircrew Error, Situational Awareness, Trng
DEC 1995	RG-8	While conducting patrol, sensor operator and pilot detected smoke in cockpit. Pilot determined engine was on fire, secured engine and crew bailed out (as required by emergency procedures). Crew recovered within an hour entering water. 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 Error, 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 Error, Design, Trng, Assignment, Policy/Procedures, Material
AUG 1999	HU25	Rear compartment fire lt illuminated during touch and go. Crew continued T/O, called out boldface procedures. Fire lt remained illuminated, emergency declared. Rear compartment fire lt extinguished approx 10 sec after fire extinguisher activated. Hyd sys lt illuminated during "before landing checks." Acft landed, crew egressed, fire dept extinguished fire. Major fire damage.	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 the right. Main rotor blades impacted flight deck and 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 and rescued later. HH-65A hovering above mishap acft recovered downed aircrew and one M/V crewmember.	In mishap review process
SEP 2005	HH65 Ground	During maint ground run acft spun clockwise on deck and rolled onto left side. Crew consisted of pilot, BA and 3 contractor techs. During ground run, acft became light on MLG and began right yaw. Right MLG departed ramp during the second revolution, left horizontal stabilizer, vertical fin, and MRB contacted the ground. Acft continued to spin right and roll left, coming to rest on left side approx. 225 degrees from original heading. Crew egressed acft unassisted after all motion stopped, mishap pilot who was assisted.	In mishap review process
Feb 2006	HH65	Responding to 4 PIW, helo crashed into surf approx 40 yards off beach. RS had been direct deployed and hoisted to beach to commenced CPR. As helo was attempting to recover fourth PIW, No. 1 eng shutdown resulting in rapid power loss, further flt not possible. Crew made a controlled descent into the surf and helo slowly rolled onto right side and crew successfully egressed and reached the beach without injuries.	In mishap review process
Jun 2006	C130H	During landing to deliver 5000 gallon acft refueling truck, acft swerved left and departed paved runway surface. After departing runway surface, acft continued parallel to the runway on a gravel surface, swerved left again, struck departure end VASI, and continued into soft ground. During final left swerve, the right wing dipped, striking the ground, no. 4 propeller struck ground and departed acft. Acft came to rest 248 feet left of runway edge. Crew egressed successfully.	In mishap review process

Note: Mishaps are seldom, if ever the result of a single cause, they are a combination of several cause factors. Each cause factor often appears insignificant. A mishap is a sequence of events (which may seem unrelated) that results in tragic consequences.

Table 15

CLASS B MISHAP SUMMARY FY90-FY06

DATE	ACFT	SUMMARY	CAUSE FACTORS
MAR 1990	HH65	Power increase on #1 engine mis-analyzed and flight terminated w/autorotation and hard landing in sugar cane field. #1 fuel control failed, driving engine into overspeed and #2 engine decelerated to compensate for # 1 engine overspeed.	CRM, Supervisory & Aircrew Error, Material, Training, Procedures, Fixation
MAR 1991	HH65	While delivering passengers to Navy vessel, pilot pulled excessive collective overtorquing MGB and overspeeding both engines. Pilot was mistakenly advised to return to CG Cutter. Aircraft experienced hard landing upon return to CG cutter.	Supervisory & Aircrew Error, CRM, Training, Situational Awareness, Procedures
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 Error, 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 engine 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 engine to regain power.	Mechanical, Aircrew Error, CRM, Training, Procedures
MAY 1993	HH65	During instrument approach to hover over water, rotorwash engulfed aircraft in salt spray. Pilots lost visual contact with surface resulting in MGB overtorque and overspeeding both engines during ITO.	Aircrew, Procedures, Darkness, 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	Crew dropped DMB to aid relocation of lone raft at sea and departed scene for fuel. Unknown to crew, DMB struck a female in the raft. Rafters were later rescued, female underwent surgery and recovered.	Supervisory & Aircrew Error, 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.	CRM, Aircrew & Supervisory Error, Procedures, Distractions, Judgment
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 stabilize 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 and helo came to rest on left MLG structure. MRB and TRB did not impact ground. Crew safety egressed acft with no significant 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 suffered damage during inspection/test of repairs performed by ARSC team. The original damage occurred when a civilian G-V being towed struck the left horizontal stabilizer. Damage required ARSC level repairs.	Fatigue. Resources, Environment, Policy
JUL 2006	HH65	During trng flt, FMI noticed high freq hum and vib. Following extensive trouble shooting, MGB, forward T/R driveshaft and T/R takeoff flange replaced. Securing pins on T/R takeoff flange lock nut 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

Note: Mishaps are seldom, if ever the result of a single cause, they are a combination of several cause factors. Each cause factor often appears insignificant. A mishap is a sequence of events (which may seem unrelated) that results in tragic consequences.

Table 16

DOD CLASS "A" MISHAP RATES COMPARISON

Class A mishap rates for the DOD services are compared in Table 17. When reviewing the DOD rates and comparing them to the Coast Guard, we need to consider the effect our limited flight hours have on our mishap rate. While one Class A mishap can greatly impact the Coast Guard mishap rate , one more or one less mishap would have little effect on the DOD rates.

FY06 CLASS A AVIATION MISHAP RATES FOR ALL SERVICES

	USCG	USAF	USA	USN	USMC
# Class A	2	19	17	14	6
Flight Hours	110,591	2,110,341	1,168,959	933,521	379,174
Mishap Rate	1.81	0.90	1.45	1.50	1.58

FY05 CLASS A AVIATION MISHAP RATES FOR ALL SERVICES

	USCG	USAF	USA	USN	USMC
# Class A	1	32	30	13	9
Flight Hours	114,388	2,142,803	1,137,511	925,558	402.412
Mishap Rate	0.87	1.49	2.64	1.40	2.24

Table 17

FLIGHT SAFETY PROGRAM

Training Courses

We are well on our way to completing 100% of our initial allocation. Similar to the additional $150K+ LCDR Rush added to last years $400K training budget, we have obtained an additional $50K in funds this year. We anticipate more before the end of the FY07, and expect to offer a few large audience accident investigation courses to maximize the exposure of unit personnel to aviation incident management techniques and procedures.

The management of the available training quotas will be broken down by quarter and will be advertised via a quarterly solicitation. Be on the look out for the messages from CG-1131 regarding future courses. Even though the primary target audience is still FSO coded billets, additional training is being offered to any member of an aviation unit who has potential to serve on an aviation accident investigation board.

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

⇒ COs will continue to receive the Aviation Safety Command Course at the Navy's School of Aviation Safety (NAS Pensacola, FL).

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 complete all visits within nine months of each Air Station change of command.

⇒ CG-1131 completed twelve Safety Stan Visit in FY06.

⇒ 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/g-w/g-wk/wks/AviationHome.htm.

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

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

"CG-1131.COM"

http://www.uscg.mil/hq/g-w/g-wk/wks/AviationHome.htm

⇒ 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. The website includes:

- Links to safety & health manuals and instructions with the latest changes.
- Anthropometric measurements and related information.
- Aviation safety presentations, safety stand downs and training ideas.

- ORM, CRM and MRM information and presentations.
- Mishap investigation and reporting requirements and other information.
- CG Mishap Investigation Guide (MIG).
- Links to e-AVIATRS and e-MISHAP.
- Aircraft voice and flight data recorder (VFDR) information.
- Information on the Safety Stan Visit Program, including updated safety standardization checklists.
- Recent Annual Aviation Safety Reports.
- Links to military and civilian aviation sites.
- Link to the NTSB database

CRM

⇒ The CRM program is under review to update the initial and refresher CRM training programs. Three ATC Mobile instructors and a CG-1131 rep attended a civilian CRM symposium to gather "best practices" for program improvement.

⇒ The update will include CRM Automation Airmanship Training to raise the awareness of complacency issues associated with the new "glass cockpit" aircraft and existing legacy CG platforms.

⇒ Initial CRM training will be taught only by ATC Mobile or ATTC qualified CRM instructors

⇒ FSOs will continue to receive a CRM facilitator qualification during the annual FSO Stan Conference. This training qualifies them to provide unit level CRM refresher training.

⇒ New requirement for annual CRM refresher will take affect when the new Air Operations Manual (COMDTINST M3710.1F) is promulgated.

AVIation Accident TRacking System (e-AVIATRS)

http://webapps.mlca.uscg.mil/kdiv/Aviatrs/

⇒ We're into year four of **E-AVIATRS**. The first mishap report was submitted to the new database on 21 November 2003.

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

⇒ Version 2.0 and 2.2 came online in June 2004 and July 2005, eliminating many workarounds.

⇒ A check field was added in 2006 to collect information on the type of small boat involved in a mishap.

⇒ We are working on incorporating the DOD Human Factors Analysis and Classification System (HFACS) as part of both CG mishap reporting databases.

⇒ Currently we only use HFACS for Class A and B mishaps, but it will soon be available for all CG aviation mishaps.

⇒ All legacy data from the **AVIATRS** database has been converted to **e-AVIATRS**. There are over 12,000 records dating back to FY79 in the database.

⇒ **e-AVIATRS** eliminated the duplicate reporting requirements for aviation-related injuries. Aviation related injuries shall be reported only in **e-AVIATRS.**

⇒ **E-AVIATRS** auto-generates the body of the CGMS message from the data entered. All the drafter has to do is enter the correct PLAD and appropriate AIG.

⇒ Aviation mishap reports can now be submitted to the database without a CGMS message being sent if the report is for trending and tracking only.

⇒ All information reported in the mishap message is captured in **e-AVIATRS** and can be searched and retrieved. CG-1131 will still maintain and review aviation mishap information.

⇒ Until **e-AVIATRS** search capabilities are fully developed, please 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. Most are incorporated and almost all suggestions have been a positive improvement.

Hail and Farewell: Summer 06 we welcomed LCDR Brian Glander, FSO from Air Station Kodiak and said farewell to LCDR Steve Pruyn (now at Air Station Detroit).

Your Coast Guard Aviation Safety Staff

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NOTE: Our new phone numbers and email addresses.

http://www.uscg.mil/hq/g-w/g-wk/wks/AviationHome.htm

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 Aviation Safety Staff at Headquarters).