FY01 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. 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 Staff at Headquarters (see last page for telephone numbers and email addresses). This report contains fiscal year 2001 mishap information as well as prior year and DOD data for comparison. We hope all can leverage this report to evaluate our aviation mishap experience and become involved in mishap prevention.

NOTE: Unless otherwise indicated, only flight mishaps are used for the annual statistics, instead of all mishaps (flight, flight-related and ground). This is the more traditional way of reporting annual numbers (within the aviation industry). Using only flight mishaps for the annual statistics also eliminates some of the fluctuations in the mishap numbers due to reporting variations. The other categories of mishaps are still important and are reviewed separately.

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THE YEAR IN REVIEW, FROM THE HEADQUARTERS PERSPECTIVE

FY01 was a disappointing year for Coast Guard aviation safety. To begin with, Coast Guard air suffered three Class A Flight mishaps. Total Class A, B, and C Aviation Mishaps increased 19% from last year. Major mishaps included the lightning strike of the CG6008 in the Northwest, the rollover of the CG6571 on the CGC CAMPBELL, and the tragic loss of two of our Auxiliary Air brethren off the Florida Keys in the N99WD (a Piper Cherokee). Further tragedy would be if these were "hollow" losses that did not yield safer Coast Guard operations. A quick word on each mishap and some thoughts on where the lessons learned can or may take us:

CG6008: One can quickly gaff off a lightning strike as "one of those things" or an "act of God" and consider it unavoidable. However, modern safety science will tell you, that weather should never be a cause factor. Someone, somewhere, somehow chose to fly in those conditions. The good news--the unit's thorough investigation taught us a vast amount about what can "set us up" for a lightning strike. Ask most folks hanging out in an air station's wardroom what places an aircraft at risk for a lightning strike, and the vast majority will say convective activity (something that was ***not*** a factor in this mishap). However, in reviewing the *Airman's Information Manual*, it states that lightning strikes are most likely within 5 degrees C of the freezing level. Sikorsky lightning data indicates lightning strike probability is somewhat altitude dependent with the preponderance between 7000 and 12,000 feet. Finally, FAA research indicates that the presence of an aircraft can induce lightning, as was the case with CG6008, which apparently induced the only strike in that region for a 24-hour period. So perhaps the best spin here is we got a $1.1M

lesson in what causes lightning that should serve our community well to prevent similar losses.

CG6571/CGC CAMPBELL: As can be expected, this was a major investigation that brought to bear both cutter and aviation safety professionals. The final report is under review at Headquarters. The amazingly point is that all those moving parts could come to a grinding halt on a very small flight deck and result in only minor injuries! While the final report is being smoothed, I can report that the mishap board did not find any "ah-ha" cause factors that easily explain why a healthy H65 would rollover in the mishap's sea state. Quite frankly, it appears the aircraft performed as predicted given the ***accelerations*** exerted on the airframe. That's right…it is accelerations, not pitch and roll, that are the catalyst for a rollover. This mishap will serve as a watershed event for how we view the ship/helo dynamic. Already shipboard landing pitch/roll limits have been reduced until shipboard accelerations can be fully investigated. Use of TALON, which immediately secures the aircraft to the deck upon landing, has been directed as mandatory. This greatly reduces our risk exposure during landings and takeoffs. Finally, Coast Guard research has found some new equipment that could provide real-time deck motion acceleration advisories to the flight crew. This red/amber/green system holds the potential to move us away from seemingly inappropriate reliance on a seaman's opinion of the ship's inclinometer. Again, hopefully the $1.5M lost will reap benefits in safer shipboard operations.

N99WD Auxiliary Air: While the final report is currently under review, it appears this pilot experienced spatial disorientation over the dark waters off Florida. As is in the cases above, I would like to think these two fine volunteers did not lose their lives in vain. As an immediate risk reduction measure, dual instrument rated pilots were mandated for any night or instrument conditions Auxiliary flights. The subsequent investigation and recommendations hold great promise to significantly enhance the training and organization of our Auxiliary Air program.

Finally, I want to offer a word about aviation maintenance error. Our "regular readers" will recall last year we focused on FY00's 40% increase in maintenance related mishaps with a tripling of related mishap costs. We seem to have reversed this trend. For FY01, maintenance error related mishaps are down 22% and maintenance error costs are down to a third of FY00 levels. I am hopeful our Maintenance Resource Management (MRM) intervention (more fully explained in this report) played a role in these positive results and will continue downward pressure on maintenance error rates.

Any mishap is a regrettable occurrence**…**at times a crushing blow to an air station and our community as a whole. However, my hope is that each incident leaves a positive legacy. A legacy of aviators armed with lessons learned that keeps us a bit safer as we perform Coast Guard missions.

Fly Safe……CDR Dan Abel
Chief Aviation Safety (G-WKS-1)

NOTE ON AUXILIARY AVIATION (AUXAIR):
When a Coast Guard Auxiliary aircraft or any Auxiliary resource is under orders; it is a Coast Guard resource. While on orders, the Coast Guard is responsibility for any damage, death or injury. Since 1987, the National Transportation Safety Board (NTSB), under a Memorandum of Agreement (MOA), investigates Auxiliary Aviation mishaps. Per the MOA, a Coast Guard Flight Safety Officer or an Auxiliary Aviation pilot will be assigned to participate and assist in the investigation. A Commandant's Mishap Analysis Board may or may not be appointed to concurrently investigate an Auxiliary Aviation mishap.

ANNUAL RECAP

Although, we did not lose any active duty personnel in FY01, we did lose two Coast Guard Auxiliary members on Coast Guard orders. We had two aviation Class A flight mishaps, in addition to the Auxiliary mishap and no Class B flight mishaps. Coast Guard aviation flew 103,471 hours producing a Class A Flight mishap rate of 1.93 for FY01. This resulted from just two weeks in late January 2001. We have not experienced a Class A mishap rate this high since the early eighties. (Note: Because they are volunteers and fly general aviation aircraft, Auxiliary flight hours and mishaps are tracked separately and are not a part of the mishap rates in this report).

Table 1, displays aviation mishap class and category definitions. (NOTE: CH5 to the Safety and Environmental Health Manual (see page 23) changes this information for FY02). Flight mishap costs for FY01 were $4,388,670, costs are up from past years due to the two Class A mishaps (see figure 11 on page 11. While total flight mishaps costs are the highest in four years, they are still

MISHAP CLASS COST BREAKDOWN
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. (includes self-contained engine mishaps)

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.

CLASS A MISHAP RATE

$$\frac{\text{Number of Class A Mishaps} \times 100{,}000}{\text{Flight Hours}}$$

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

Table 1

lower than they have been since the early to mid nineties. Table 2, displays FY01 summary mishap data.

Total mishap cost (flight, flight-related and ground) for FY01 was $7,420,187, up from past years but still below the late 80's and early 90's total mishap costs (see figure 12 on page 12). Of the 250 mishaps reported this year, there were 51 ground and 23 flight-related incidents reported. The Class ABC flight mishap rate (per 100 flight hours) has fallen in the last decade from 0.10 in FY90 to 0.04 in FY01. This rate has been below 0.05 for the last five years. Figure 1 displays our Class A Flight mishap history along with total flight hours since 1956. Figure 2 (on the next page) displays the Coast Guard aviation Class A flight mishap rates for the past fifteen years. Finally, Figure 3, on page 4, provides a comparison of Coast Guard aviation Class A Flight Mishap Rates to the other armed services.

MAINTENANCE RESOURCE MANAGEMENT

The goal of the Aviation Safety Program is to improve the operational readiness of aviation units by conserving human resources, equipment, and funds through a reduction of aviation mishaps. Figure 4, depicts the number and cost of maintenance related mishaps in the Coast Guard over the past five fiscal years. The Maintenance Related Mishap average is 72 mishaps per year with an average loss of over $900,000 per year. In FY00 maintenance related mishaps spiked to 89 reported mishaps with a loss of over $2 Million.

FY01 TOTAL MISHAPS		FLIGHT HRS =		103,471
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	2	0	0	2
CLASS A COST	$2,642,715	$0	$0	$2,642,715
CLASS A RATE	1.93	0.00	n/a	1.93
TOTAL MISHAPS	176	23	51	250
TOTAL COST	$4,388,670	$1,570,555	$1,460,962	$7,420,187
TOTAL RATE	0.17	0.02	n/a	0.24
COST/MISHAP	$24,936	$68,285	$28,646	$29,681
A/B/C MISHAPS	43	6	13	62
A/B/C COST	$4,115,324	$1,555,101	$1,369,132	$7,039,557
A/B/C RATE	0.04	0.01	n/a	0.06
COST/MISHAP	$95,705	$259,184	$105,318	$113,541

Table 2

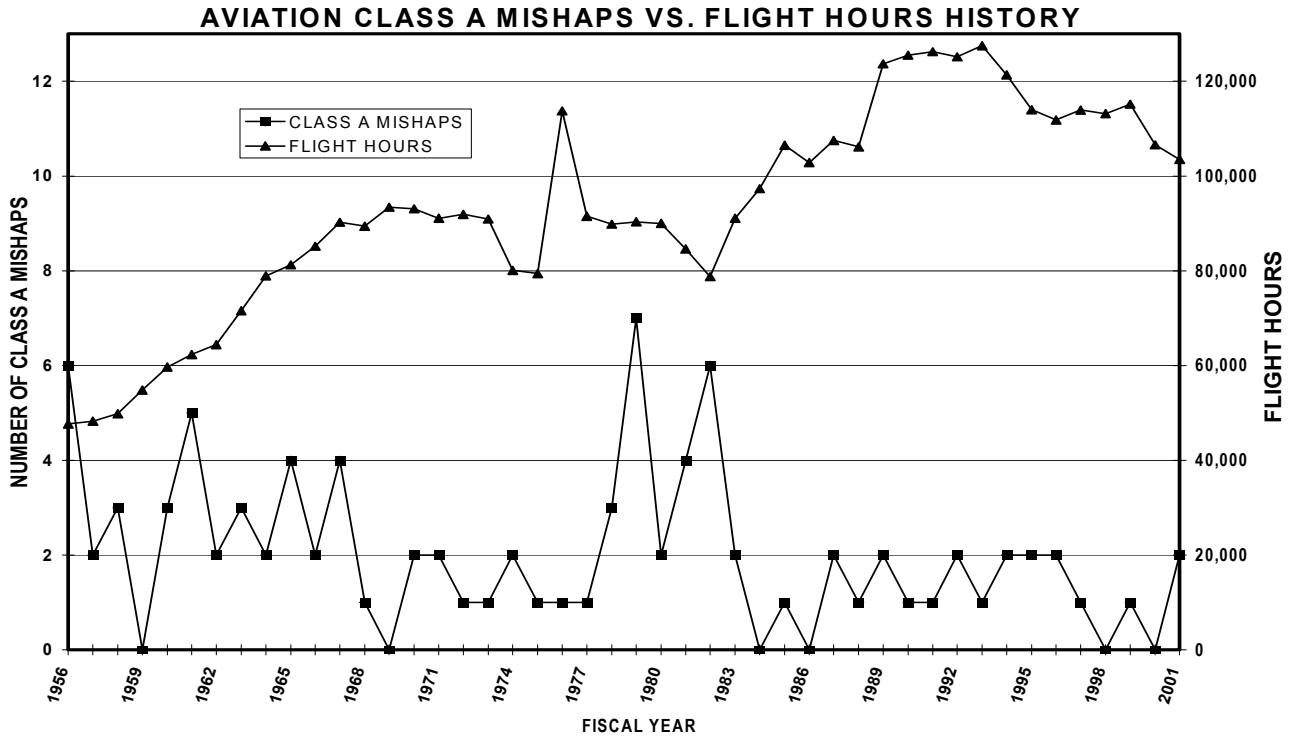


Figure 1

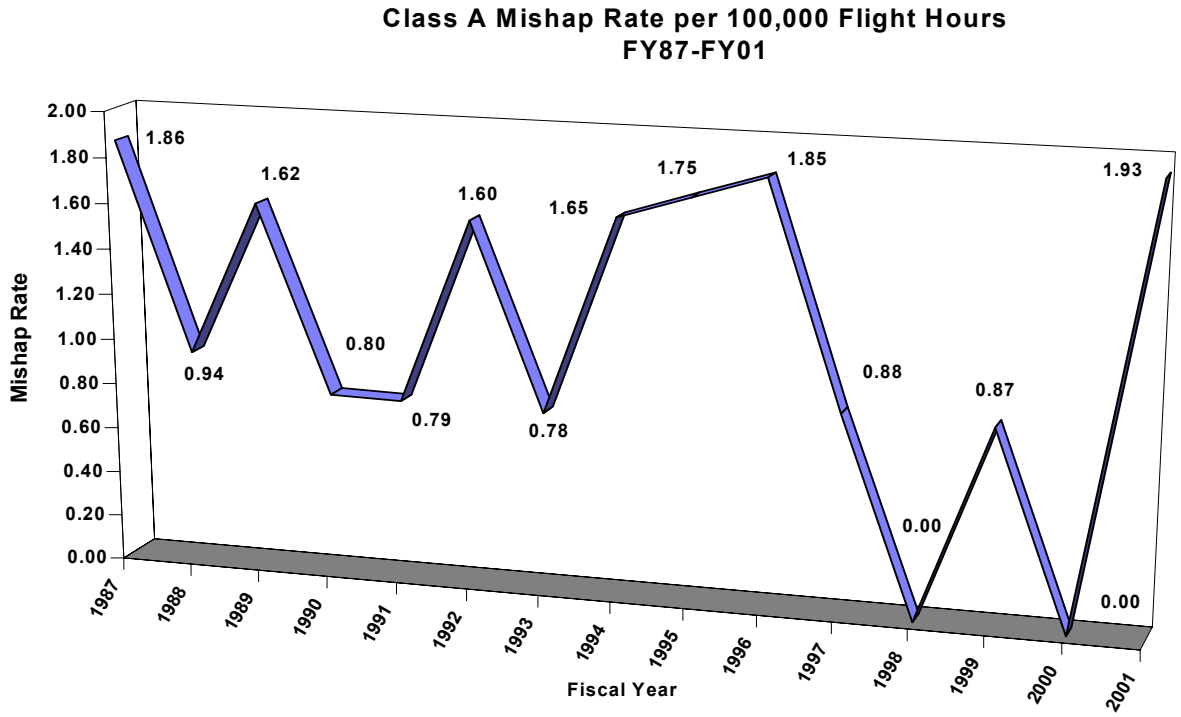


Figure 2

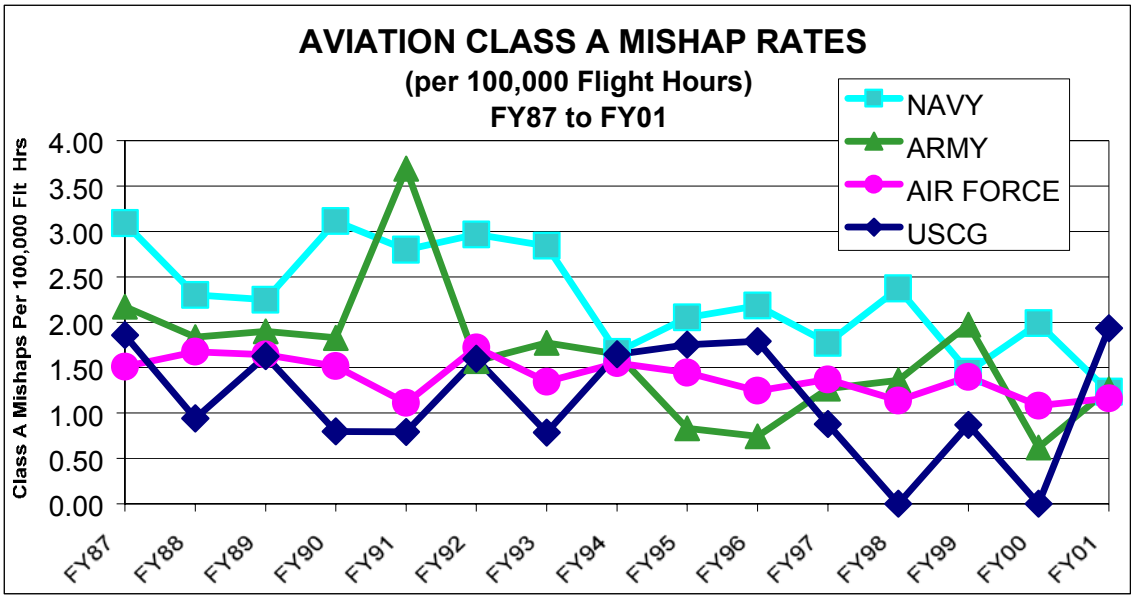


Figure 3

Similar maintenance error trends have been documented in commercial aviation operations. In order to conserve resources and reduce maintenance error, commercial aviation operations implemented a program called Maintenance Resource Management (MRM). MRM examines the role of maintainers in the chain of events that can cause an aviation mishap; develops safety nets for mishap prevention through effective operational risk management; and, introduces a behavioral skill set to prevent or reduce the severity/probability of an aviation mishap. The implementation and continued use of MRM principles in commercial aviation have significantly reduced maintenance error.

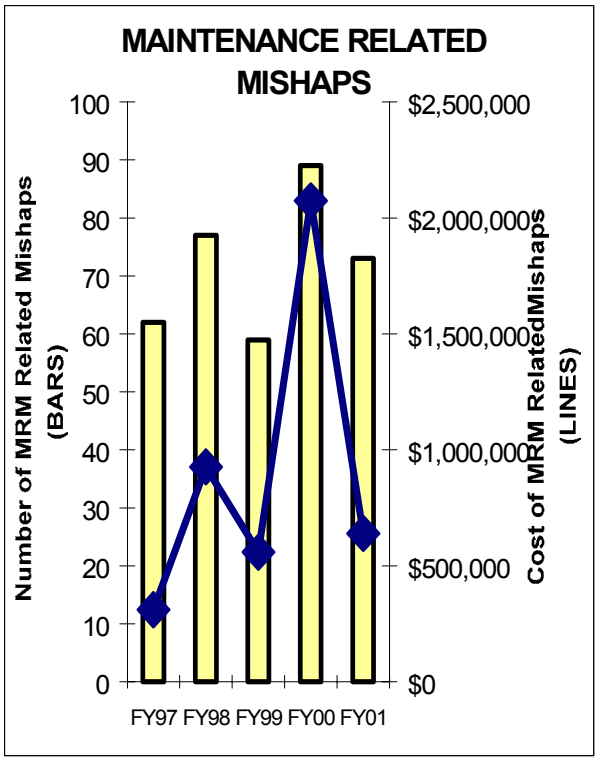


Figure 4

In January 2001 a Coast Guard Headquarters MRM Workgroup convened to address rising levels of maintenance error. The workgroup, staffed mainly by senior aviation enlisted members, considered the escalating aviation mishap rate as it relates to internal organizational factors such as workforce reduction/streamlining initiatives, retention issues, aviation rate consolidation, increased cannibalization, and unit operational tempo. Additional discussions included MRM training curricula used by commercial aviation operations, the similarities between Crew Resource Management (CRM) and MRM, training methods, delivery, etc

The workgroup achieved consensus that developing a standardized, exportable training course delivered by Coast Guard trained facilitators in a one-day training session would best serve the Coast Guards needs. A Coast Guard MRM course prototype was developed with the assistance the Navy Safety Center and was delivered at Air Station Port Angeles in April 2001. The prototype course was revised consistent with student feedback and a comprehensive training package was developed. In September 2001, 52 senior enlisted aviators received initial “train the trainer” instruction at Air Station Elizabeth City.

Each trainer was provided with the MRM knowledge, training tools, videos, and podium skills to meet the target of training all aircraft maintenance personnel by 1 April 2002. ATTC Elizabeth City has fully embraced the MRM program. All graduates of an "A" school at ATTC will now receive initial MRM training.

Fortunately, the maintenance mishaps for FY01 were significantly less than FY00. With MRM nearly implemented, the desire is for the program to continue to evolve. The Aviation Safety Division is the sponsor of a Resource Proposal (RP) to maintain program funding. The goal is to maintain the "train-the-trainer" initiative, continue ATTC training, establish dedicated senior enlisted aviation safety billets, and develop a refresher course. The ultimate goal is a progressive reduction of maintenance related mishaps and the conservation of human resources, equipment, and

funds.

CREW RESOURCE MANAGEMENT (CRM)

A CRM standardization conference was held at ATTC in January 2001 (the first such meeting since development of the Coast Guard CRM program). Instructors from ATC, ATTC, the C-130 Stan Team and G-WKS staff were present. The objective of the meeting was to ensure the various modes providing CRM training were standardized and to chart the future of our CRM program. Standardizing the various programs proved to be straight forward. Curriculum and teaching techniques were exchanged, best practices were eagerly captured and slight "tweaks" will be made to insure our pilots and aircrew receive the highest quality, standardized CRM Initial training.

Aside from implementing Operational Risk Management (ORM), our CRM program has remained steady state for a decade. Such is not the case in the commercial aviation. Professor Robert Helmreich, with the University of Texas at Austin, is a leading advocate in the continued research and development of CRM principles and skills. He leads the university's Aerospace Crew Research Project, which has exhaustively evaluated pilot performance, crew interaction and pilot error for more than 15 years. CRM as we know it evolved from their efforts. Today they are coupling the tenets of CRM training with a strong emphasis on Decision Making, Task Analysis & Error Management. Decision Making & Task Analysis skills closely resemble those taught in Team Coordination Training (TCT). Look for alignment between our CRM program and TCT's teaching in this area.

Error Management is a significant development, that will likely have a similar impact on our aviation culture as CRM had a decade ago. Error Management shifts from our aviation mindset of "highly skilled pilots/aircrew do not make mistakes" to one of "highly skilled pilots/aircrew commit errors - therefore they must be equally skilled at recognizing, trapping and mitigating errors." The philosophy is simple, To Error is Human; we cannot engage in human performance of any form without human error. (Caveat: Error management assumes technical proficiency, it does not alleviate the pilot or aircrew from being held accountable for their professional skills/proficiency level.)

Error Management shifts our attitude from "Who committed the mistake" (person focus) to "What/How/Why the mistake led to the consequence" (system focus). We all make mistakes, yet it is contrary to human nature to stand up and say, "This is what I did, this is what we should learn from it". It is a command challenge to create a climate that embraces this attitude. Personal focus results in fear of reprisal.

Error Management is system based; it focuses on how the opportunity for the mistake prevailed and what crew interaction and error traps failed to capture the mistake before it led to a significant consequence. The *consequence* of the error is the focus. Error does not cause incidents, accidents or fatalities - Consequence does. Error Management targets the gap between the error & consequence.

Error management focuses on the development of specific error management strategies. Strategies that target the what/how/why the error continued to the consequence (aircrew interaction, leadership, decision making, task analysis, and systemic problems). Error Management hones existing CRM skills and modifies existing training philosophies to provide professionals with the mind set and skills to "trap, mitigate and avoid the consequences of error."

Look this summer for the principles of Error Management in your CRM Refresher Course. FSOs will receive Error Management training at this year's FSO standardization conference.

NOTE: Continental Airlines fully embraced Error

Management and it has proven remarkably successful. Their program has become the industry standard.

OPERATIONAL RISK MANAGEMENT

What's that old saying? "You gotta go out……but……" For you old timers, you know the second half is "….you don't have to come back". For many years this was the rallying cry of brave souls who served in the Coast Guard.

However, such a bold attitude can have tragic results. After four major Coast Guard vessel mishaps between 1991-1993, the National Transportation Safety Board twice recommended the Coast Guard provide risk assessment training. The tragic loss of the CG6549 and crew (off Humboldt Bay in 1997) was the catalyst for a formalized Operational Risk Management (ORM) program. The Chief of Staff of the Coast Guard directed the Office of Safety and Environmental Health (G-WKS) to develop a standardized risk management policy for the Coast Guard. For the aviation community, we have always dabbled in ORM, just called it a different name.

COMDTINST 3500.3 of 23 NOV 00 mandated ORM to be integrated in all operations. How are you identifying and managing risks???

Risk Assessment/Risk Management has always been one of the four tenets for Crew Resource Management (CRM) that we review in training at least annually. The existing CRM training program was expanded to include ORM, thereafter, Coast Guard aviation was indoctrinated in more formalized risk management. ORM basically is a continuous process of the following steps:

1. Identify Mission Tasks
2. Identify Hazards (Gotchas)
3. Assess Risks (Hazard that can impact the mission)
4. Identify Options
5. Evaluate Risk vs. Gain
6. Execute Decisions
7. Monitor the Situation

As a job aid, one product of the 2000 Flight Safety Officer's Workshop was a standardized **Coast Guard Aviation Risk Matrix**. It builds on the "PEACE" (Planning, Event, Asset, Communications, and Environment) framework employed in earlier CRM training. Completion of this matrix has become a mandatory preflight duty at some units. It is available on the Aviation Safety Website at http://www.uscg.mil/hq/G-W/g-wk/g-wks/g-wks-1/wks1.htm. If you are not conversant with its use….download it and give it a try on the next trainer or duty night. It serves as a handy way to organize your risk management thoughts prior to a launch.

CREW VOICE RECORDERS AND FLIGHT DATA RECORDERS (CVR/FDR)

As you know, the helicopter community has been upgraded to include both cockpit voice and flight data recording capability; commonly referred to by its trade name VADR. This article summarizes the current CVR/FDR capability in the C130 & HU25 fleets, and the efforts underway to achieve parity with the rotary-wing community.

The C130 does not have FDR capability and its CVR is rapidly becoming unsupportable. The HU25 does not have CVR capability and its FDR is not supportable. The C130 CVR and the HU25 FDR both use a magnetic tape to store the respective voice and flight data. These tapes are no longer manufactured and replacement tapes are scarce. Bottom line, the CVR/FDR capability within both communities is limited and that limited capability has or is quickly becoming unsupportable.

G-WKS-1, in concert with support from G-SEA and G-OCA, has submitted Resource Proposals (RP's) to seek funds to correct this situation. Our FY03

proposal survived the scrutiny of Coast Guard budget review and remains in the draft FY03 budget, partially funded at $2.7M. This is a significant milestone as it demonstrates organizational commitment to upgrade CVR/FDR capability in the fixed-wing fleet; it provides the seed money to get the ball rolling. FY03 RP funds the engineering & design aspects of the project, purchases hardware (boxes/sensors/wire bundles/data download equipment) and begins the modification of airframes. Our FY04 RP seeks continuation of the project to eventually upgrade the CVR/FDR capabilities in a fleet of twenty-seven C-130s and twenty HU25s. The total project will cost approximately $9M.

THE DOLLARS AND CENTS OF AVIATION SAFETY

These safety reports can, at times, become a dizzying blur of percentages and dollar figures. It helps to put our losses in perspective. In a "good year" we lose about $5M in total aviation mishaps (A-D; flight, flight-related, and aviation ground mishaps). Put into a useful framework, if avoided, this $5M could fund the operations of:

6 H65s for a year,
5 H60s for a year,
3 C130s for a year, or
3 HU25s for a year.

But, the figures above capture only the labor and replacement parts from a mishap. It totally ignores the "opportunity costs" for a grounded aircraft. "Opportunity costs" capture precluded asset use due to unavailability. A good example is a recent towing mishap in which a C130 struck a hanger tail door. Parts and labor added only $20,000 to our annual mishap cost database. However, that aircraft was ***grounded for six weeks*** awaiting replacement parts and required a dedicated C130 sortie to ferry a replacement horizontal stabilizer. That was the ***real*** impact of the mishap.

Now, to apply similar logic to other mishaps. Let's optimistically assume that an aircraft is *grounded on average three days after a mishap*: one day to teardown and order the parts; one day for parts shipment; and, one day to get and install the part. This means our mishaps preclude about 750 days of flying. Applying an average number of days required for an airframe to meet programmed hours and the per hour rate we charge a civilian user for use of the airframe, and you find mishaps cost the Coast Guard another $13, 600,000 in lost opportunities. Combined with the $5M above in parts and labor, and mishap losses totaling $18,600,000 could fund the following operations:

26 H65s for a year,
17 H60s for a year,
11 C130s for a year, or
10 HU25s for a year.

Finally a quick look at lost work time. Coast Guard-wide we lose 2866 workdays per year. That equates to 11 staff years. Add to this, an average of 10 service members lost each year to off-duty mishaps (i.e. motor vehicle, recreation, etc.) and the Coast Guard must make up productivity for 21 members. As you can see, in the "cash strapped" Coast Guard…economics alone demand all of us to work smarter and safer to reduce needless losses!!! DA

MISHAP REPORTING

The aviation community benefits from a positive attitude towards mishap reporting. Honest and open reporting is essential if we are to retain a healthy safety culture. We must never forget that Class C or D mishaps are generally no more than a thin line from being an incident with catastrophic consequences.

Each incident should serve as a warning that prevention efforts need to be intensified. Class C and D mishaps should be viewed as inexpensive lessons learned. They represent the largest source of data from which we can all learn and prevent the more devastating and expensive Class A and B mishaps. Mishap reporting and review of Class C and D events will alert the entire fleet to evolving hazards and raise the performance of all Coast Guard aviation.

FSO's and Commands are encouraged to report all incidents, even those without damage or dollar cost. These incidents provide important heads up to other units and topics for hangar flying sessions. This is information that can be used as tools for mishap prevention.

RECOMMENDED ACTIONS

Unless you've worked at Headquarters, ATC, ARSC or one of the Stan Teams, you may never have heard of the Recommended Action Tracking System (a.k.a. "RATS"). RATS is a tracking system for the recommendations made by the Commandant assigned mishap investigations, unit (Class C & D) mishap messages, after action reports, etc. Most RATS are connected to an aviation mishap, but the system tracks any safety-related recommendation.

Periodically, each headquarters aviation office is given a report of the new and pending recommendations in RATS. Each new recommendation is reviewed to verify that it is a valid or attainable recommendation. They are also reviewed to be sure that RATS is the appropriate way to accomplish the recommendation. Once it is determine that a recommendation will be taken for action, it becomes an active/pending recommendation. RATS then tracks the progress of the item until it is completed or closed out. As such, staff elements are held accountable to those reporting mishaps and making recommendations in the field.

Since the inception of RATS in 1990, 823 recommendations have been addressed, 164 of these are still pending some type of action. FY01 began with 130 pending RATS, 70 new RATS were submitted and 36 were closed out. Of the 164 pending RATS, some are being researched for a workable solution or funding is needed to implement the corrective action. Keep feeding the RATS, those in the field know best what needs to be changed to work safer.

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 foreign object damage with engine damage only incidents. Flight-related mishap reports also include close calls, lessons learned and incidents that have value to the rest of the fleet. These reports are a valuable mishap prevention tools.

Near Midair Collision

There were only six near midair collisions (NMAC) reported in FY01. Reported NMAC's have continued to decrease since the Traffic Collision Avoidance System (TCAS) was installed in Coast Guard aircraft in the mid-nineties. Of the NMAC reported, two involved civilian aircraft, three involved other military aircraft and one was not identified.

Aviation Injury

There were nineteen aviation related injury mishaps reported in FY01 involving injury to 21 Coast Guard aviation personnel. The number of reported injuries to Coast Guard aviation personnel remains fairly constant. At least half of these injuries involved improper procedures, the wrong tool, and improper or poorly design equipment. Injuries included four people hurt during hoisting (two rescue swimmers and two boatcrew), three people sprayed with hydraulic fluid and two with fuel. Three people were cut in the face and two suffered eye injuries. There was one twisted ankle, two hand injuries and four other injuries reported. Nine incidents occurred during maintenance activities.

Personnel protective equipment (PPE) played a big role in minimizing injuries this year. PPE was used and prevented a more severe injury in at least five of these incidents. Unfortunately, there were at least four incidents where PPE could have prevented the injury, if it had been used.

Birdstrikes/FOD/Engine Failures

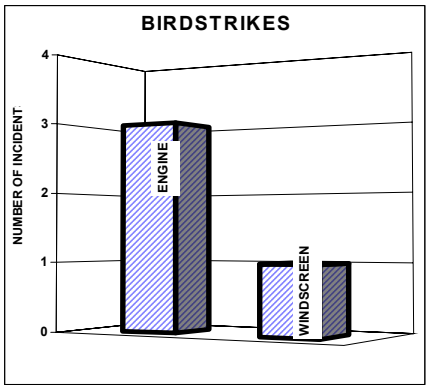


Figure 5

There were only four incidents involving birdstrikes reported in FY01, the lowest ever reported. Birdstrikes resulted in damage to three engines and one windscreen for a total of $93,077 in mishap costs.

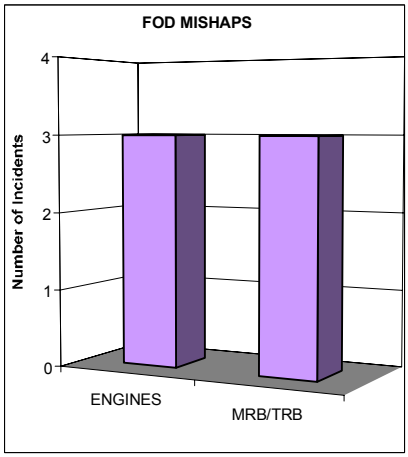


Figure 6

There were six FOD incidents reported this year resulting in $151,846 damage, down from previous years. FOD damaged 3 engines, 2 rotor systems and one tail rotor (all HH65). Four incidents were related to poor maintenance practices.

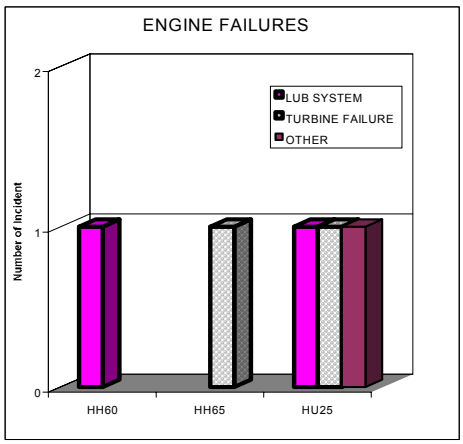


Figure 7

Five inflight engine failures or shutdowns occurred resulting in $2,577,209 in mishap costs. (See Figure 7). The Falcon had three inflight failures, while the Dolphin and the Jayhawk reported one each.

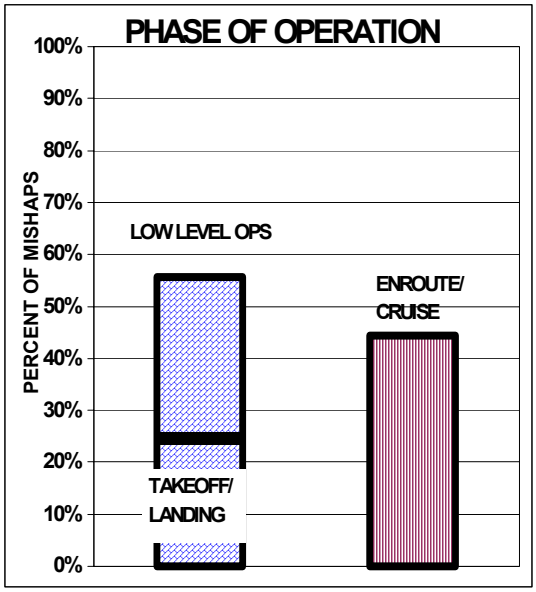
WEATHER RELATED

Weather contributed to sixteen mishaps and resulted in $135,645 damage. These incidents included electronic malfunctions due to moisture, parts prematurely failing due to corrosion, and airframes damaged by wind, rain, lightning or ice. In addition, all three Class A mishaps involved weather.

SNAKE STRIKES! ? ! ?

We've all heard of ground strikes, tree strikes, tail strikes, birdstrikes and lightning strikes. The Coast Guard has always had our deer strikes and even a few kite strikes. As of FY01 you can add snake strikes to the list of "things" causing damage to our aircraft. And I'm not talking about the big reptile found sunning himself behind the chocks of a Coast Guard C130, posted on the internet.

The incident went something like this, as the throttles were being advanced for takeoff, an osprey, holding something in its talons, approached the aircraft from the 12 o'clock position. The osprey made a rapid climb to avoid the nose of the aircraft. As it disappeared over the windscreen, it jettisoned the load. Which turned out to be a snake about 3 to 4 feet in length. The snake struck the C130 radome and was gone. The takeoff was aborted and no apparent damage was found to the aircraft. You just never know what hazards are lurking out there.



PHASE OF OPERATIONS

Figure 8

Most aviation mishaps occur during takeoff, landing, and low level operations, not enroute. In FY01, 46 mishaps (29% of reported flight mishaps) occurred during some phase of landing or takeoff and 39 mishaps (25%) were during low-level ops (drops, hoist, hover, autos, search, etc). (see Figure 8). As expected, mission profiles that produce a larger number of takeoffs, landings or low-level operations increase the likelihood of a mishap. This is important to remember when making risk management decisions.

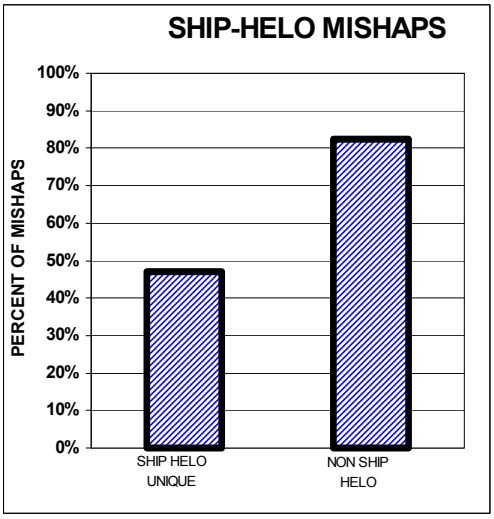


Figure 9

SHIP-HELO MISHAP REVIEW

There were twenty-two mishaps reported in FY01 (up from previous years) involving ship-helo operations totaling $1,639,295 in mishap costs. Without the CG6571/CGC Campbell Class A mishap, costs would have only been 78,648. Eight (36%) of these mishaps were unique to the ship-helo environment (e.g., aircraft damage due to ship movement, portable hangar, HIFR mishaps, and tiedowns). The remaining 64% were not the result of the ship-helo interface (e.g., chip lights, smoke/fumes, overtorques, landing gear problems, indicator problems, etc.).

Ship-helo related mishaps make up less than 10% of the total mishaps reported and less than 5% of total mishap costs (not including the Class A mishap). The flight mishap rate for ship-helo ops is 1.45 per 1,000 hours flown compared to the total aviation flight mishap rate of 1.70 per 1,000 flight hours. Aviation "ground mishaps" (with no intent for flight) service-wide, account for 20% of the total aviation mishaps report, while "ground mishaps" account for 18% of the ship helo mishaps.

GROUND MISHAP REVIEW

Fifty-one aviation ground mishaps were reported in FY01 for a total mishap cost of $1,460,962. The high cost of ground mishaps, again this year was due to a catastrophic engine failure during a post maintenance ground run. Over 50% of the ground mishaps reported, and more than 40% ($232,869) of the ground mishap costs, resulted from incidents involving Ground Support Equipment (GSE), towing, blade folding, fueling, washing or jacking. 40% of the ground mishaps listed some form of human factors as one of the cause factors.

The wrong tool/equipment, the wrong part or incorrect procedures accounted for over half of the ground mishaps. Not surprising, more than a third of the ground mishaps list staffing, resources, insufficient personnel and lack of experience or knowledge as a cause factor.

MAINTENANCE HUMAN ERROR MISHAPS

Seventy-three mishaps listed some type of maintenance human factor error as a cause factor. These mishaps included incomplete passdown, poor communications, inappropriate procedures, improperly followed procedures, lack of supervisor review or Q/A problems. Eighty-nine percent of the mishaps involved incomplete, improperly followed, inappropriate or unavailable procedures. Fifty (68%) mishaps involved the wrong part, poor equipment/part design, or lack of parts (see Figure 10). Inattention, complacency or awareness was a factor in over half (55%) of the incidents reported in FY01. Poor passdown, incomplete checklist or poor communications were also listed in about a quarter of the mishaps. Some form of inexperience, lack of training, or staffing issues were factors in over a 40% of the incidents. Workload, feeling rushed or lack of resources were mentioned in almost 40% of the mishaps.

SUMMARY INFORMATION

Coast Guard aviation flight mishap costs for FY01 were over $4.3 million, up this year in part because of the two Class A mishaps. Aviation mishap costs are illustrated in Figure 11 and 12. Figure 11 shows flight mishap costs (for all airframes) for the last ten years and Figure 12 shows total mishap costs (flight, flight related and ground) for all airframes for the last ten years. Total Coast Guard aviation mishaps costs (flight, flight-related and ground mishaps) for FY01 were over $7.4 million, up from prior years. Tables 3 and 4 display summary data for each airframe.

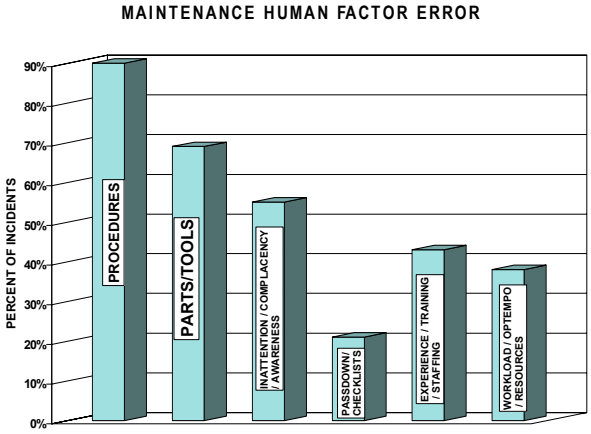


Figure 10

The pie charts (Figures 13, 14 and 15) show the percentage of total mishaps, flight hours and total mishap costs for each airframe. Generally , each airframe represents roughly the same percentage of mishaps as flight hours. However, the HU25 community had a disproportionate percentage of mishaps (27%) for the flight hours (15%) flown. Conversely, the C130 community flew 19% of the flight hours, but generated a mere 8% of the mishaps (figures 13 and 14).

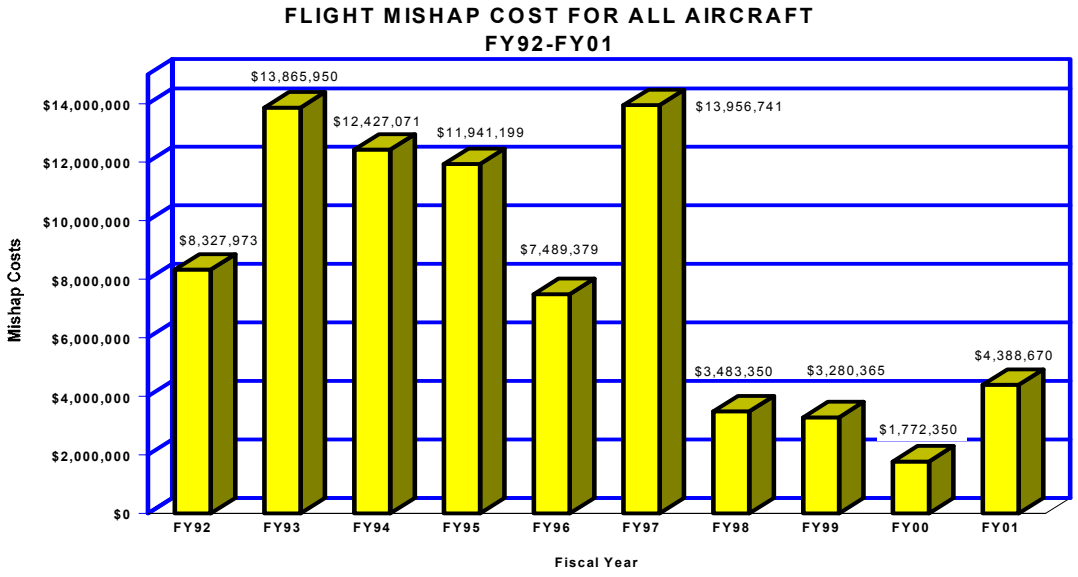


Figure 11

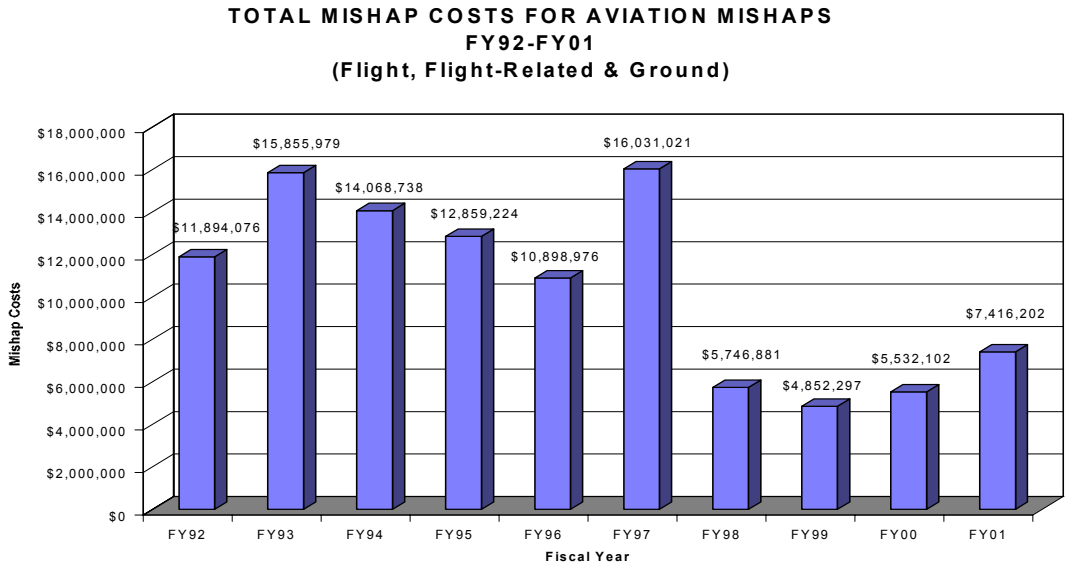


Figure 12

FY01 FLIGHT MISHAP PERCENTAGES				
CLASS	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST
A	2	1%	$2,642,715	60%
B	0	0%	$0	0%
C	42	24%	$1,481,923	34%
D	132	75%	$264,032	6%
TOTAL	176		$4,388,670	

Table 3

FY01 FLIGHT MISHAP PERCENTAGES						
AIRCRAFT	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST	FLIGHT HOURS	% of FLIGHT HOURS
HH60	34	19%	$1,443,680	33%	21,872	21%
HH65	74	42%	$2,451,885	56%	44,996	43%
MH90	8	5%	$11,717	0%	1,421	1%
C130	14	8%	$65,096	1%	18,794	18%
HU25	45	26%	$406,978	9%	15,339	15%
VC4 &C20	1	1%	$9,314	0%	1,049	1%
TOTAL	176		$4,388,670		103,471	

Table 4

FY00 % of Total Mishaps

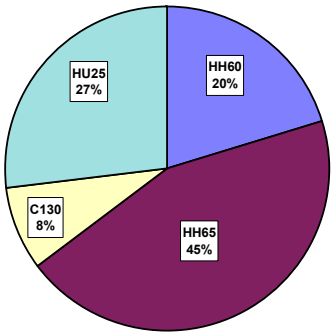


Figure 13

FY00 % of FLIGHT HOURS

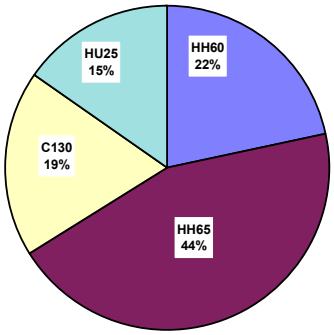


Figure 14

FY00 % of TOTAL COST

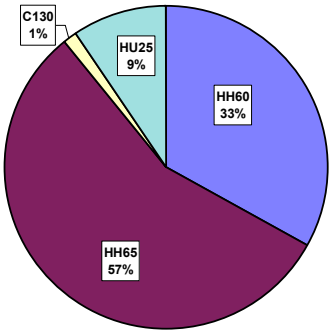


Figure 15

AIRFRAME REVIEWS

The following four pages contain mishap data for each major aircraft type.

HH-60J MEDIUM RANGE RECOVERY (MRR)

The HH-60J flew 21,872 hours (21% of the total flight hours) and reported 34 flight mishaps (19% of total reported flight mishaps). Mishaps costs ($1,443,680) were up this year. The H60 had its first Class A mishap this year, an inflight inflight lightning strike (see page one). The HH-60J mishap rate was 0.16 for FY01.

HH-60J Flight Mishaps for FY01

Aircraft	Class	No. Mishaps	Cost
HH-60J	A	1	$ 1,092,068
	B	0	$ 0
	C	5	$ 287,187
	D	28	$ 64,425
Totals		**34**	**$1,443,680**

Table 5

HH60 ABCD	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
FY97	39	$782,289	25,081	0.16	$20,059	$31	FY97	21	$12,617,588	49,794	0.04	$600,838	$253
FY98	66	$734,948	25,266	0.26	$11,136	$29	FY98	19	$954,866	48,540	0.04	$50,256	$20
FY99	56	$791,300	25,207	0.22	$14,130	$31	FY99	17	$654,867	49,780	0.03	$38,522	$13
FY00	36	$568,351	23,684	0.15	$15,788	$24	FY00	13	$398,726	45,663	0.03	$30,671	$9
FY01	34	$1,443,680	21,872	0.16	$42,461	$66	FY01	6	$1,379,255	21,872	0.03	$229,876	$63

Table 6

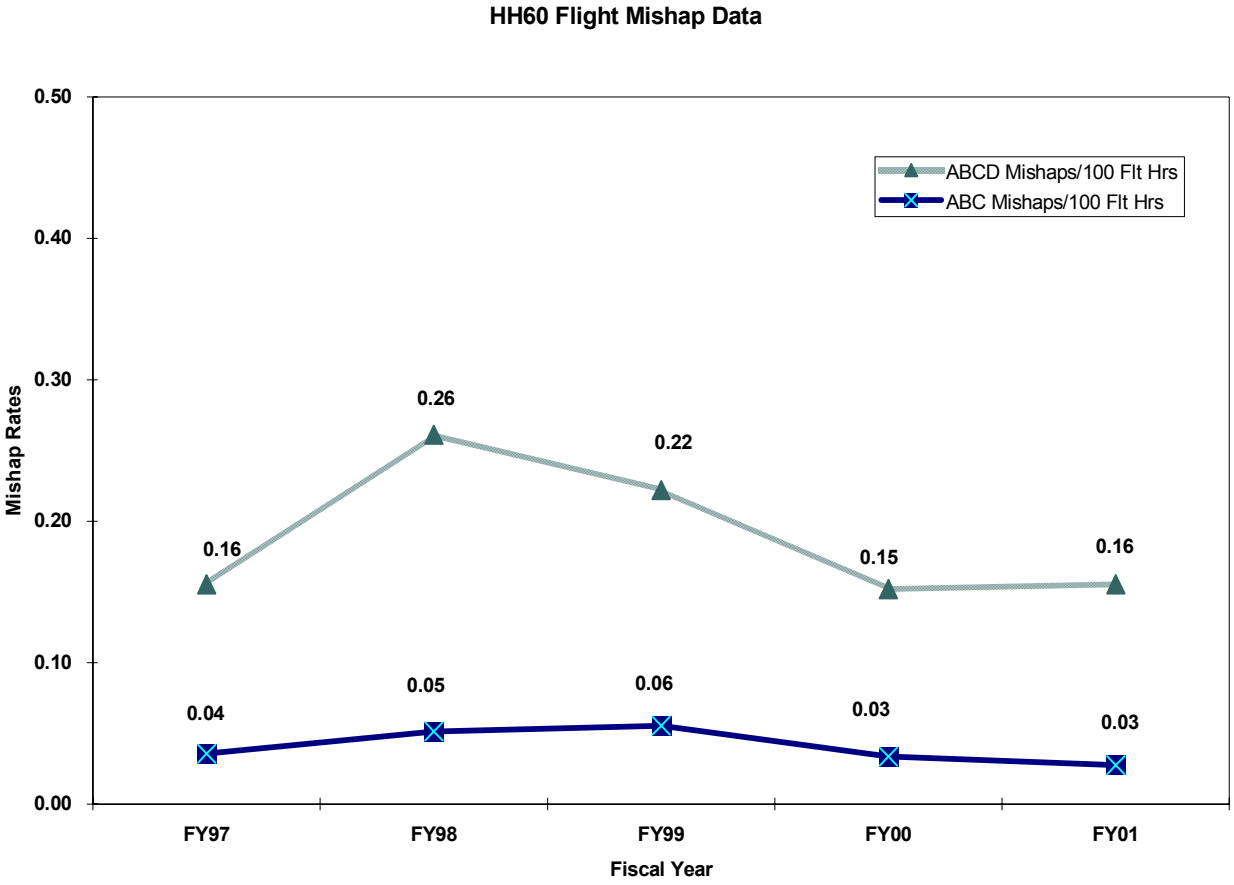


Figure 16

HH-65A SHORT RANGE RECOVERY (SRR)

65A flew 44,996 hours (43% of total flight hours), the most of all the airframes. This airframe reported the most mishaps (74 mishaps, 42%) and the highest costs ($2,451,885, 56%) of all the airframes. The HH65 mishap costs are up this year due the Class A mishap (see page two). The Dolphin's mishap rate for FY01 was 0.16.

HH-65A Flight Mishaps for FY01

Aircraft	Class	No. Mishaps	Cost
HH-65A	A	1	$ 1,550,647
	B	0	$ 0
	C	20	$ 799,462
	D	53	$ 101,776
Totals		**74**	**$2,451,885**

Table 7

HH65 ABCD	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
FY97	118	$12,784,629	49,794	0.24	$108,344	$257	FY97	5	$93,501	23,421	0.02	$18,700	$4
FY98	100	$1,084,566	48,540	0.21	$10,846	$22	FY98	8	$342,018	23,249	0.03	$42,752	$15
FY99	92	$790,066	49,780	0.18	$8,588	$16	FY99	17	$654,867	49,780	0.03	$38,522	$13
FY00	67	$536,361	45,663	0.15	$8,005	$12	FY00	13	$398,726	45,663	0.03	$30,671	$9
FY01	74	$2,451,885	44,996	0.16	$33,134	$54	FY01	21	$2,350,109	44,996	0.05	$111,910	$52

Table 8

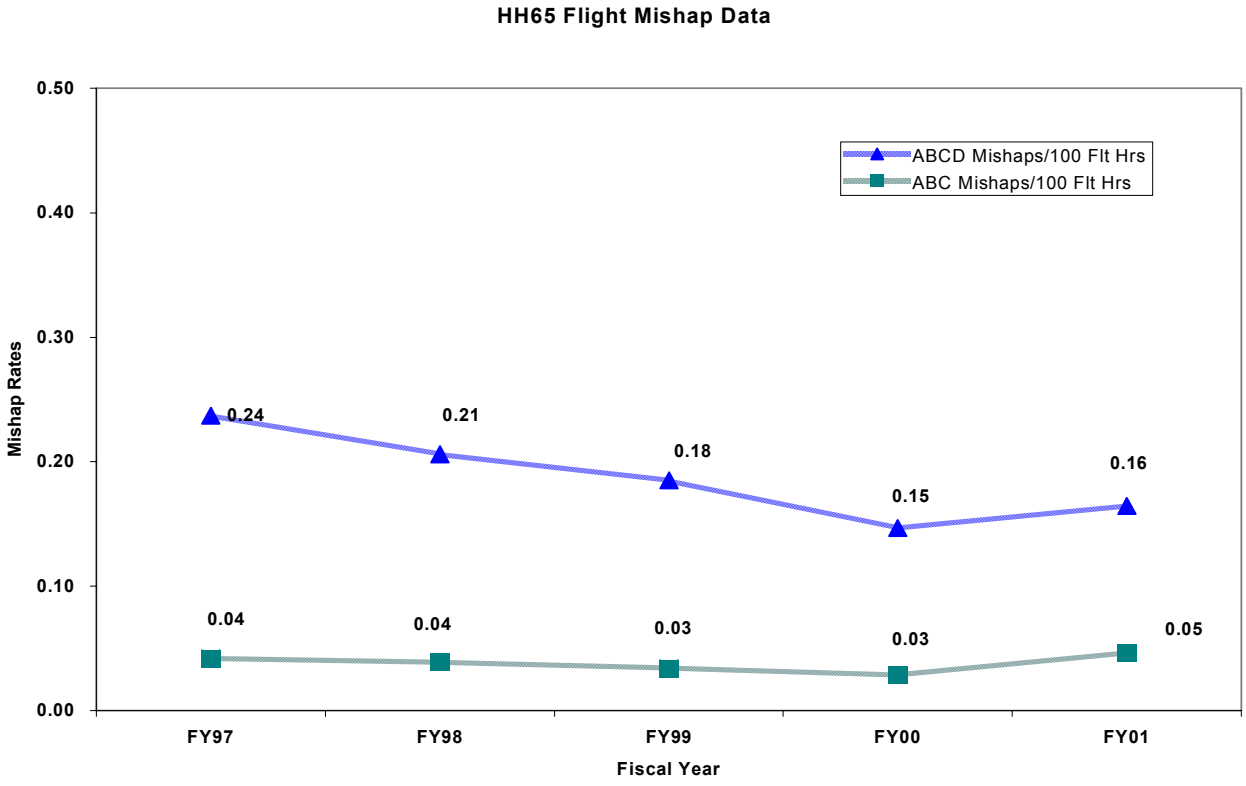
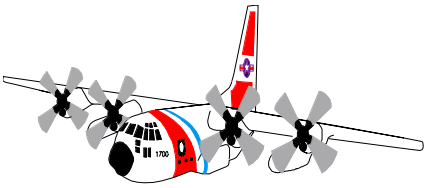


Figure 17

HC-130H LONG RANGE SEARCH (LRS)



The HC-130H flew 18,794 hours (18% of total flight hours) and reported the fewest flight mishaps (14 mishaps, 8% of reported flight mishaps). The HC-130H reported a very good year. The HC130H, not only had the lowest mishap rate and mishap costs of all the airframes in FY01 (0.07 and $65,096), but also the lowest rate and mishap costs for the HC130 since we've been keeping track.

HC-130 Flight Mishaps for FY01

Aircraft	Class	No. Mishaps	Cost
HC-130	A	0	$ 0
	B	0	$ 0
	C	2	$ 35,298
	D	12	$ 29,798
Totals		**14**	**$ 65,096**

Table 9

C130 ABCD	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
FY97	21	$112,062	23,421	0.09	$5,336	$5	FY97	5	$93,501	23,421	0.02	$18,700	$4
FY98	37	$427,881	23,249	0.16	$11,564	$18	FY98	8	$342,018	23,249	0.03	$42,752	$15
FY99	27	$387,385	23,108	0.12	$14,348	$17	FY99	8	$352,058	23,108	0.03	$44,007	$15
FY00	23	$307,817	20,060	0.11	$13,383	$15	FY00	7	$257,712	20,060	0.03	$36,816	$13
FY01	14	$65,096	18,794	0.07	$4,650	$3	FY01	2	$35,298	18,794	0.01	$17,649	$2

Table 10

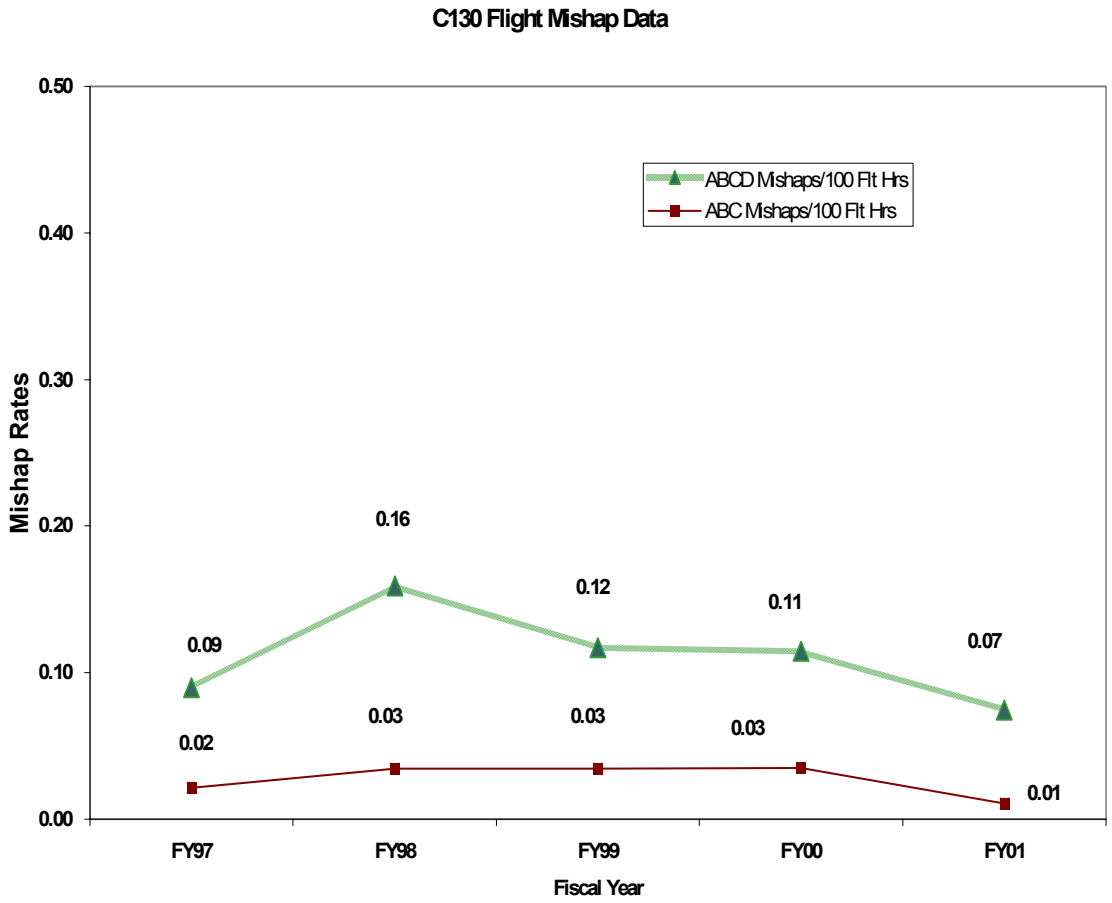
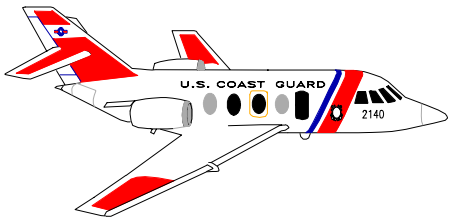


Figure 18

HU-25 MEDIUM RANGE SEARCH (MRS)



The HU-25 (all models) flew the fewest hours (15,339 hours, only 15% of the total flight hours) and yet reported 45 mishaps (26% of total mishaps). The Falcon's mishap rate was the highest of the airframes (0.29). Mishap costs ($406,978) were slightly up this year, but only 9% of the total FY01 flight mishap costs.

HU-25 Flight Mishaps for FY01

Aircraft	Class	No. Mishaps	Cost
HU-25	A	0	$ 0
	B	0	$ 0
	C	14	$ 350,662
	D	31	$ 56,316
Totals		**45**	**$ 406,978**

Table 11

HU25 ABCD	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
FY97	44	$217,107	14,467	0.30	$4,934	$15	FY97	4	$125,307	14,467	0.03	$31,327	$9
FY98	57	$1,235,955	14,972	0.38	$21,683	$83	FY98	13	$1,109,861	14,972	0.09	$85,374	$74
FY99	35	$1,311,514	15,491	0.23	$37,472	$85	FY99	8	$1,244,893	15,491	0.05	$155,612	$80
FY00	35	$357,741	15,997	0.22	$10,221	$22	FY00	8	$311,057	15,997	0.05	$38,882	$19
FY01	45	$406,978	15,339	0.29	$9,044	$27	FY01	14	$350,662	15,339	0.09	$25,047	$23

Table 12

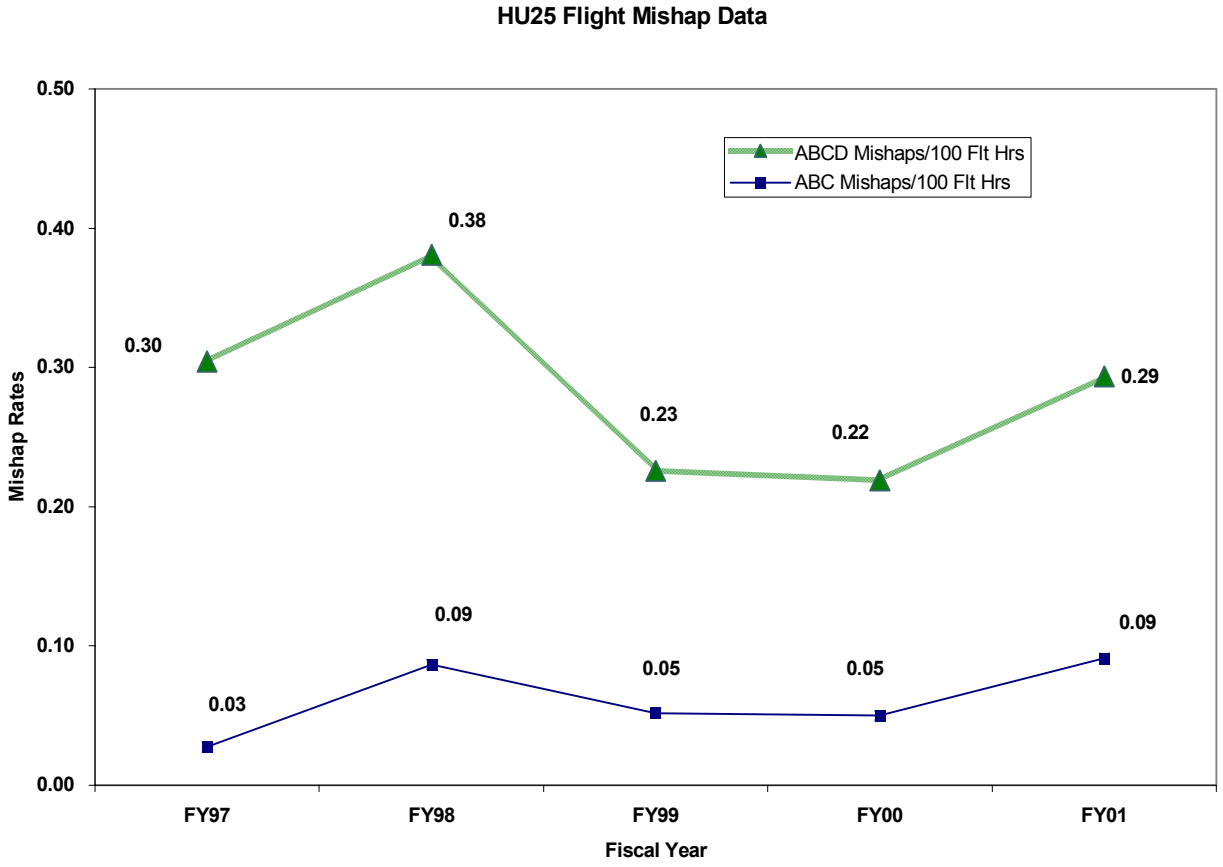


Figure 19

CLASS A AND B MISHAP SUMMARY

Tables 13 and 14 summarize the Class A and B flight mishaps for the last ten years. Mishaps are seldom, if ever the result of a single cause. They are a combination of several cause factors. When viewed alone, each cause factor often appears insignificant. A mishap is a sequence of seemingly unrelated events that results in tragic consequences.

CLASS A MISHAP SUMMARY
FY92-FY02

DATE	ACFT	SUMMARY	CAUSE FACTORS
JAN 1992	C130	Uncontained failure of # 3 reduction gearbox 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
JULY 1994	HH65	Aircraft impacted side of cliff in low visibility during night SAR mission to assist sailing/vessel aground.	Communications, Situational Awareness, CRM, Aircrew Error
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, Training
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 was recovered within an hour after entering water. Aircraft was lost at sea.	Cause of engine fire unknown, Training, Design
APR 1996	HH65	At end of 5-hour mission, pilot and aircrewman were practicing hover maneuvers over taxiway. During third hover, aircraft entered left turn; pilot was unable to counter. Aircraft continued spinning left 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, on scene resources lost comms with aircraft. Crew of four did not egress and the helicopter sank in 8,500 feet of water.	Aircrew & Supervisory Error, Material, Design, Assignment, Trng, Policy/Procedures
AUG 1999	HU25	Rear compartment fire light illuminated during touch and go. Crew continued takeoff and called out boldface procedures. Fire light remained illuminated, emergency declared. Rear compartment fire light extinguished approx 10 sec after fire extinguisher activated. Hyd sys light illuminated during “before landing checks”. Acft landed, crew egressed and fire dept extinguished fire. Major fire damage.	Maintenance, QA, Procedures, Training, 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.	Mishap Investigation under review
JAN 2001	HH65	After fifth night shipboard landing, crew signaled for primary tiedowns. Prior to attachment of tiedowns, the helo rolled to the right. Main rotor blades impacted flight deck and the helo spun approx 140 degrees counter clockwise and came to rest on right side.	Mishap Investigation under review

Table 13

CLASS B MISHAP SUMMARY
FY92-FY02

DATE	ACFT	SUMMARY	CAUSE FACTORS
MAY 1992	HU25	Aircraft landed with left main landing gear 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	During live litter hoist from an RHI, litter cables failed, dropping the litter approximately 30 ft to the 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 system failure and secured #2 engine. Situation further aggravated by series of uncoordinated inputs by both pilots. FM recognized situation, advanced FFCL, allowing the 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.	Procedures, Darkness, Environment, Aircrew, CRM, 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 a 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	Returning along coast from training flight in VFR conditions, crew felt abnormal vibration. Vibrations were so severe, pilots had difficulty reading instruments and controlling aircraft. Aircraft landed immediately on boulder-strewn beach damaging the aircraft. MRB tipcap departed inflight.	Material Failure
JUL 1995	HH65	Deployed aircraft taxied into side of Navy hangar. Five navy personnel inside hangar received minor shrapnel injuries. Aircraft sustained sudden stoppage damage and shrapnel damage.	Aircrew & Supervisory Error, Procedures, CRM, Distractions, Judgement
AUG 1995	HH65	PAC was attempting to park aircraft between two aircraft. MRB struck chain link fence. Two other aircraft and several buildings sustained shrapnel damage.	Aircrew Error, Distractions, Situation, Awareness, CRM
DEC 1996	HH60 FltRel	Aircraft was diverted from a routine training flight to assist F/V reporting taking on water and sinking. Two PIW were hoisted using a basket recovery, third PIW was recovered using rescue swimmer direct deployment. The victim's survival suit was improperly donned and filled with water. The added weight caused the victim to slip through the strop. FM and RS encountered difficulties trying to bring the victim into the cabin. The victim slipped out of the strop and fell to the water.	Environment, Procedures, Design, Equipment,
JAN 1997	HH65 FltRel	Aircraft was launched on early morning SAR to assist a F/V aground and breaking up. First victim was located lying face down in debris. The unconscious, unresponsive victim had improperly donned a PFD. As the victim was being brought into the cabin, the victim began to slip out of the quick-strop. FM and RS tried to hold the victim, but he slipped out of the PFD and the quick-strop.	Procedures, aircrew, Training, Design
MAR 1998	HU25	Fan spinner departed in flight. Large section of fan spinner lodged in engine bellmouth, resulting in engine damage and damage to fuselage, wing and horizontal stabilizer.	Material, Design, Procedures, Aircrew

Table 14

DOD CLASS "A" MISHAP RATES COMPARISON

Class A mishap rates for the DOD Services are compared in Table 15. When reviewing the DOD rates and comparing them to the Coast Guard, we need to consider the effect that our limited flight hours has 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. For example the Air Force had the lowest Class A rate (1.16) for FY01, but reported the most Class A mishaps (24) and the Coast Guard had the least number of Class A mishaps (2) but had the highest Class A mishap rate (1.93). (NOTE: U.S. Navy data includes U.S. Marine Corps mishaps).

FY00/FY01 CLASS A AVIATION MISHAP RATES FOR ALL SERVICES

Class A Rates	FY00 USCG	FY00 USAF	FY00 USA	FY00 USN	FY01 USCG	FY01 USAF	FY01 USA	FY01 USN
Total Class A Rate	0.0	1.08	0.62	1.99	1.93	1.16	1.26	1.23
Fixed Wing	0.0	2.15	0.00	2.31	0.0	0.96	0.00	1.31
Rotary Wing	0.0	5.09	0.72	1.19	2.93	5.09	1.06	1.03
HC-130	0.0	0.37	N/A	0.0	0.00	0.73	N/A	0.00
HH-60	0.0	3.90	0.37	0.0	0.16	0.00	1.10	0.00

Table 15

PILOT FLIGHT TIME REVIEW

Table 16 displays the flight time for Pilots in Command (PIC) and Copilots (CP) involved in Class A and B mishaps for the last twenty years.

PILOT-IN-COMMAND/COPILOT (PIC/CP) EXPERIENCE (CLASS A & B MISHAPS FY82--FY01)

TOTAL FLIGHT TIME			TOTAL FLIGHT TIME IN MISHAP AIRCRAFT TYPE		
HOURS	PIC	CP	HOURS	PIC	CP
0-500	0	1	0-500	5	13
501-1000	2	5	501-1000	10	7
1001-1500	8	10	1001-1500	9	8
1501-2001	5	4	1501-2001	8	2
2001-3000	10	5	2001-3000	3	3
3001-4000	8	6	3001-4000	2	0
OVER 4001	6	4	OVER 4001	0	0
UNKNOWN	1	1	UNKNOWN	3	3
TOTAL MISHAPS	*40	*36	TOTAL MISHAPS	*40	*36

*Four mishaps involved single piloted mission.

Table 16

The term CP used on this page refers to the pilot-not-in-command. It does not refer to the designation "copilot".

PRIVILEGE

Change 5 to the Safety and Environmental Health Manual (COMDTINST M5100.47) of 27 June 2001 clarified many issues related to safety privilege. Enclosure (10) to the manual now clearly describes the various investigations convened following a mishap, sharing of information, the Safety Privilege Concept, and Grants of Confidentiality.

The "Witness Statement Offer of Confidentiality Advisory Form" (found on page 6 of Enclosure (2) to the Safety and Environmental Health Manual) **must be used to document all offers of confidentiality by safety personnel.** Old "assumptions" of safety privilege being applied to any statements made to the safety officer are no longer valid or legally defendable. If, during a unit mishap investigation, a witness requests safeguarding of his spoken or written statement, document with this form. If you are gathering statements immediately after a major mishap, awaiting arrival of the Commandant Mishap Board, employ this form with the mishap crew.

Consistent with DoD, the Coast Guard recently clarified its policy on release of cockpit voice recorder information. The actual recording of the crew's voices will always remain safeguarded by safety professionals due to privacy concerns (privacy of both the mishap crew and next of kin). However, if a transcript is made for safety purposed of any relevant portions (i.e. comments made by the crew directly related to the conduct of the flight), the transcript can be requested and released outside of the Safety Program.

The data captured by the flight data recorder is considered factual and is releasable. If an animation based on flight data incorporates safety investigator judgment or mishap board speculation, it is considered pre-decisional and is considered privileged. Any animation that

includes cockpit voice recording is safeguarded due to privacy concerns noted above.

FY01 -- FLIGHT SAFETY PROGRAM

To improve future aviation operational performance and safety, we are working on the following for FY01:

Training Courses

⇒ Traditional FSO training will continue with the Navy at NPGS Monterey, CA.

⇒ COs will continue to receive the Command Safety Course at NPGS Monterey, CA.

⇒ Advanced aviation safety training will be provided for selected FSO's as preparation for assignment to a Commandant convened mishap analysis board (MAB).

⇒ FY01 FSO Annual Refresher/Re-evaluation Training will be held in March 02.

Safety Standardization Visits

⇒ The frequency of G-WKS-1 safety visit/program audits are determined by CO turnover (every three years for O-6 commands and every 2 years for O-5 commands).

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

⇒ The checklist used during the aviation Safety Stan Visits is available on the WKS-1 Website. (http://www.uscg.mil/hq/G-W/g-wk/g-wks/g-wks-1/wks1.htm)

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

CRM

⇒ Initial CRM training for Coast Guard aviation personnel is taught by ATC, ATTC, or by the USAF at Little Rock or CAE (contract C130 training support) for C130 aircrews.

⇒ Refresher training is required biannually and can be taught by unit FSO's, Stan Team members or during ATC or McCord AFB P-courses.

⇒ FSO's received CRM Refresher Course Certification Instructor training during the FSO Annual Training.

⇒ Curriculum for initial and refresher training is being expanded to include leadership, decision making and error management.

MRM

⇒ Initial introductory training was provided to FSO's at FY00 annual training.

⇒ Introductory briefings on Maintenance Resource Management (MRM) were presented during FY00 at various conferences.

⇒ Two trial courses were conducted at Airstas Savannah and North Bend during FY00.

⇒ G-WKS-1 is sponsoring an FY04 resource proposal for fleetwide MRM training and potential dedicated senior enlisted aviation safety billets.

⇒ January 2001 a Coast Guard MRM workgroup convened to address rising levels of maintenance error/recommend action.

⇒ April 2001 Coast Guard MRM course prototype was presented at Airsta Port Angeles.

⇒ September 2001, 52 senior enlisted aviators received initial "train the trainer" instruction at Airsta Elizabeth City to take Coast Guard MRM training to the fleet.

⇒ January 2002 MRM initial training in place at ATTC. All "A" school graduates receive MRM training.

⇒ April 2002, requirement for all Coast Guard aviation maintainers to have had initial MRM training.

⇒ All units shall report via message completion of 100% aviation enlisted training.

⇒ MRM codes are established in AMMIS for recording and tracking training.

Reverse Cycle OPS (RCO)

⇒ Reverse Cycle Operations are repeated night's tasking of a single crewmember from midnight to dawn.

⇒ Current Coast Guard Air Operations Manual (COMDTINST M3710.1) crew rest and scheduling guidelines rely on past assumptions of a one-in-three duty section limited to performing 24 hours of ready duty. These

guidelines are ill-suited for repeated "deep night" tasking of deployed rotary or fixed-wing crews.

⇒ G-WKS proposed RCO scheduling guidelines that were prototyped by air stations in LANT and PAC AREA (both ashore and afloat).

⇒ Final RCO doctrine and a strategic napping policy for the C-130 community have been included in the recent draft of the Air Ops Manual. It includes a prohibition on any third night tasking for a crew that has NOT been permitted sufficient period to "night adapt".

⇒ Pending release of the new Air Ops Manual, some units have incorporated the draft RCO doctrine into unit SOPs and pre-deployment letters. Copies of the proposed doctrine are available from WKS-1.

Crew Voice Recorders And Flight Data Recorders (CVR/FDR)

⇒ Installation of digital FDR in the C-130 involves significant engineering and labor intensive tasks as sensors and analog-to-digital converters will have to be installed on the aircraft.

⇒ Planned FY03 and beyond AC&I project: replaces existing CVR in the C-130 with a four-place digital CVR capable of recording 2 hours of voice; installs the same CVR capabilities in the HU-25; and possibly upgrades the FDR in HU-25 to draw more flight data off of the 1553 data bus.

⇒ As a refresher, here is a summary of the current rotary-wing, voice and data recorder (VADR) capabilities and use in Coast Guard Aviation:

- 100% of the Coast Guard helicopter fleet is outfitted with VADR.
- Computer animated simulation of mishaps and retrieval of voice/flight data from the recorders have greatly enhanced mishap investigation and loss control.
- VADR downloads with animation have been used in five mishap investigation.
- VADR animations have been used to complement CRM training.
- VADR downloads of flight data only have been used on twenty-seven occasions to assist FSOs and aeronautical engineering.
- Flight data information has proven invaluable as a maintenance troubleshooting tool.

⇒ Msg DTG 232036ZNOV98 establishes procedures for using the HH60J/HH65A VADRs for non-mishap situations. (posted on the WKS-1 website).

⇒ VADR Download Process Guide can be found on the following website: http;//cgweb.eisd.arsc.uscg.mil/avi/vfdr/vfdrindex.html.

⇒ Requests for VADR downloads are made through AR&SC in consultation with G-WKS-1.

⇒ A review of the protected nature of VADR data can be found in the Privilege section of this report.

⇒ The goal of the CVR/FDR upgrade for the fixed-wing community is to achieve mishap investigation and aircraft health monitoring capabilities on par with the HH-65 & HH-60 VADR capabilities. These capabilities have enabled us to develop effective loss control and error management strategies, and enhance the evaluation and management of component lifecycles.

WKS-1.COM

⇒ The WKS Website (http://www.uscg.mil/hq/G-W/g-wk/g-wks/g-wks-1/wks1.htm) went on line in May 2001.

⇒ Some of the information available on this website include:

- Safety and Health Manuals and Instructions, including the latest changes. (NOTE: most Coast Guard manuals/Instructions are now available only electronically).
- Current safety-related messages.
- Presentations from FSO, CO and other workshops.
- Anthropometric Measurements and related information.
- Aviation Safety PowerPoints, Safety Standdowns and training ideas.
- ORM, CRM and MRM Information.
- Mishap Investigation and Reporting requirements.
- Cockpit Voice and Flight Data Recorders Information.
- Unit photographs of mishap.
- Information on the Safety Stand Visit Program.
- Past Aviation Safety Annual Reports.

- Links to other military and civilian aviation sites.

COMDTINST M5100.47 (CH5 & 6)

⇒ Change 5 to the Safety and Environmental Health Manual (COMDTINST M5110.47) was released on 27 JUN 01. Changes included:
- Chapter 3, deals with mishap response, investigation and reporting.
- Enclosure (2) describes the mishap analysis report format and routing.
- Enclosure (4) covers mishap board appointment, composition and procedures.
- Enclosure (5) sets the format and direction for aviation mishap messages.
- Enclosure (9) outlines the shore mishap message format.
- Enclosure (10) describes limitations on the use and disclosure of mishap investigations and reports has been materially updated (safety privilege and confidentiality).

⇒ Other changes resulting from Change 5 include:
- Class C mishap dollar threshold increased to $20,000.
- Class E mishap category added for aviation engine damage only mishaps.
- The mishap investigation and reporting process has been updated.

NOTE: For consistency of reporting, this report used the categories and dollar thresholds that were in place on 01 October 2001. The new categories and dollar thresholds will be used for all mishap reporting after 1 October 2002.

⇒ Change 6, which will update Chapter 1 (Coast Guard Safety and Environmental Health Program) and Chapter 2 (Aviation Safety Program) should "hit the streets" by the end of FEB 2002.

⇒ The current Safety and Environmental Health Manual (all changes entered) is available on the G-WKS website at: http://www.uscg.mil/hq/g-w/g-wk/g-wks/WksP.htm.

AVIation Accident TRacking System (AVIATRS)

⇒ Change 5 to the Safety and Environmental Health Manual (COMDTINST M5100.47) makes the aviation mishap message format and the aviation safety database (***AVIATRS***) official.

⇒ ***AVIATRS*** captures all the information in the aviation mishap message. All information reported in the message can be searched and retrieved.

⇒ Contact G-WKS-1 for data searches and aviation mishap summaries from ***AVIATRS.***

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Hail and Farewell: WKS-1 said farewell to LCDR Kalita in May of 01 and welcomed LCDR Rick Christoffersen to the staff in September 2001. This spring we will say farewell to CDR Dan Abel and expect Cdr Strangfeld (currently acting San Diego Ops) to report aboard Summer 2002.