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THE HOUSE ARMED SERVICES COMMITTEE
TACTICAL AIR AND LAND FORCES
SUBCOMMITTEE

STATEMENT OF

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BEFORE THE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF DEFENSE AVIATION SAFETY MISHAP REVIEW AND OVERSIGHT PROCESS

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INTRODUCTION

Mr. Chairman, Ranking Member Tsongas, and distinguished members of the Subcommittee, thank you for the opportunity to testify before you today to discuss the aviation mishap review and oversight processes designed to keep mishaps from recurring. This is a crucial issue that effects the lethality of our Navy and Marine Corps team. While the Department of the Navy's goal is zero preventable mishaps, especially the most tragic ones that result in the death of a Sailor or Marine, it is critically important to have proven processes in place to rigorously investigate the mishaps that do occur. Once the investigation has been completed, the analysis of the causal factors will be used to enact effective controls to prevent recurrence. All available data must be used to proactively identify negative trends so that corrective measures can be put in place to prevent mishaps before they occur. Finally, the successful employment of clear and timely communication will ensure important risk information is provided up and down the chain of command. Risk management information derived from the most meticulously analyzed accident scene or deduced by PhD-level data studies is only useful for mishap prevention when it is disseminated and utilized by the entire chain of command, from senior leaders who plan multi-unit operations all the way down to the Sailors and Marines who perform maintenance or support in squadrons. The aviation mishap investigation, review, analysis, and communication of lessons learned processes are multifaceted but have the singular goal of preventing mishaps to save lives and preserve fleet combat readiness.

10-YEAR AVIATION MISHAP HISTORY

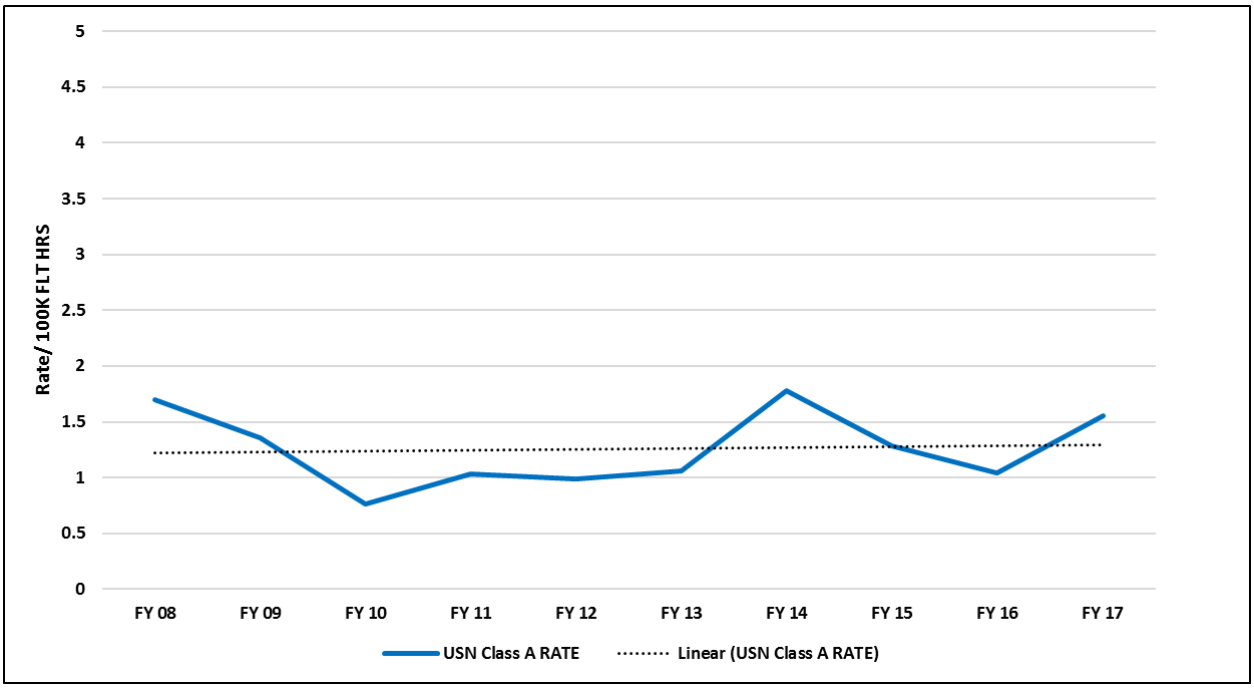
Class A

While Class A mishaps, those costing $2 million or more, a loss of life, or permanent total disability, are the rarest mishap type, they impact the Navy and Marine Corps tremendously in terms of human and materiel costs. From FY13 to FY17, Class A

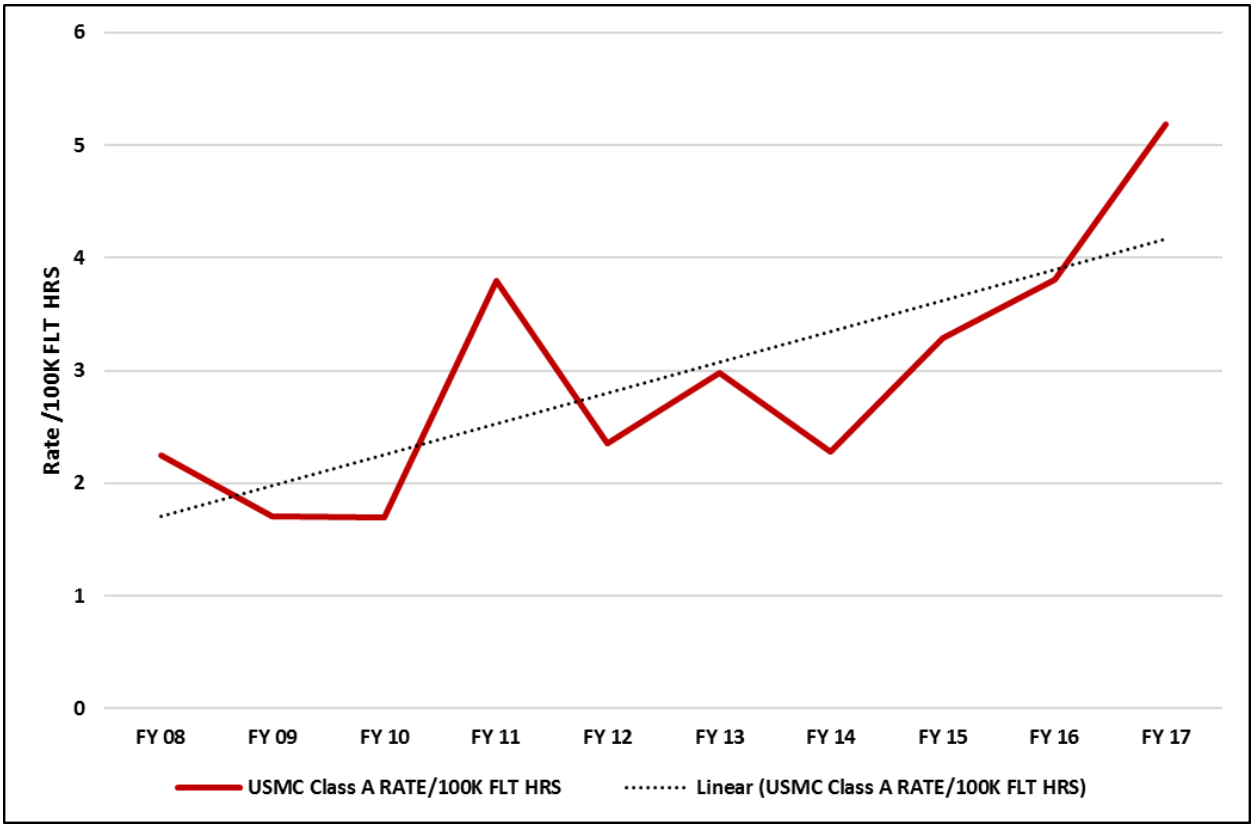
mishaps alone accounted for 94 percent of the $4.11 billion total cost of aviation mishaps and the tragic loss of 53 Navy (USN) and Marine Corps (USMC) aviators, aircrew, Sailors and Marines.

Aviation mishap rates for all classes are calculated per 100,000 flight hours. USN Class A rates have remained relatively constant during the last 10 years. There is no statistical significance in the fluctuation in the Class A mishap rate during the last 10 years. Total USN flight hours averaged 942,000 between FY08 and FY12, in the years before sequestration. In the last five years, flight hours have averaged about 90,000 less; however, this has not had a statistically significant impact on the Class A mishap rate.

The majority of both USN and USMC Class A mishaps occur during flight operations as opposed to flight related or aviation ground mishaps. USMC flight hours are about a third of the USN's, averaging 302,000 between FY08 and FY12. In the last five years, those averages have dropped by approximately 50,000 hours. USMC Class A rates are showing an increase over the last 10 years.



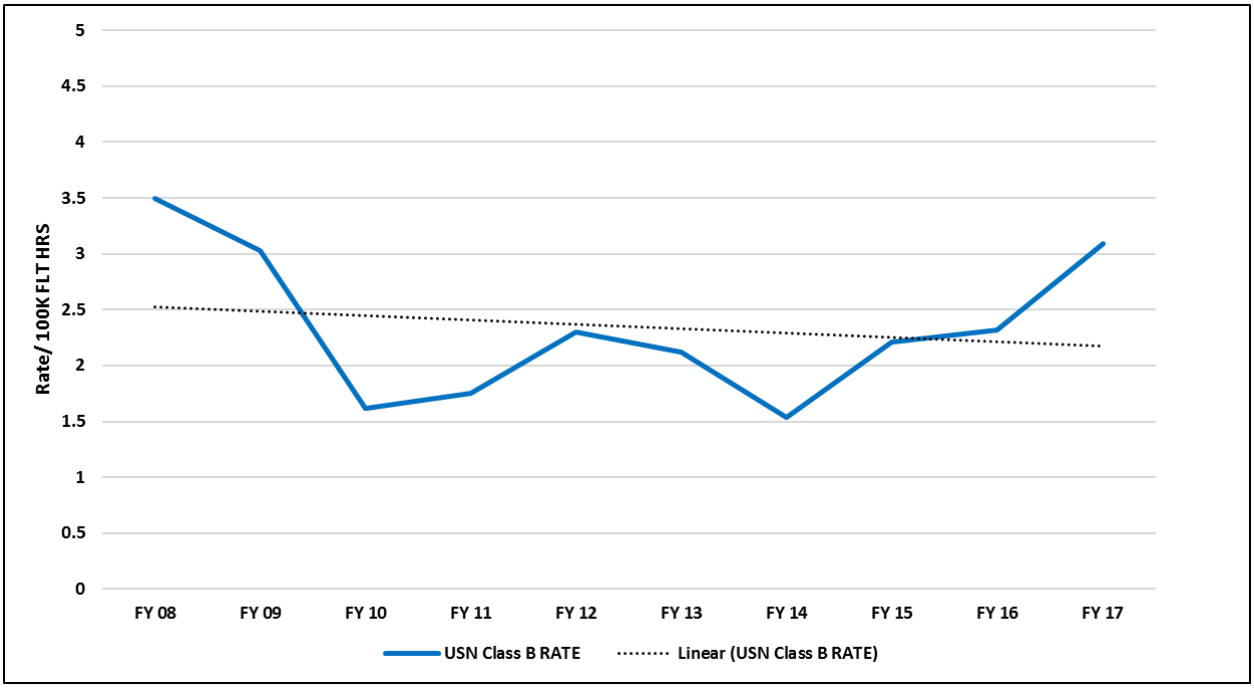
USN 10-Year Class A Aviation Mishap Rates



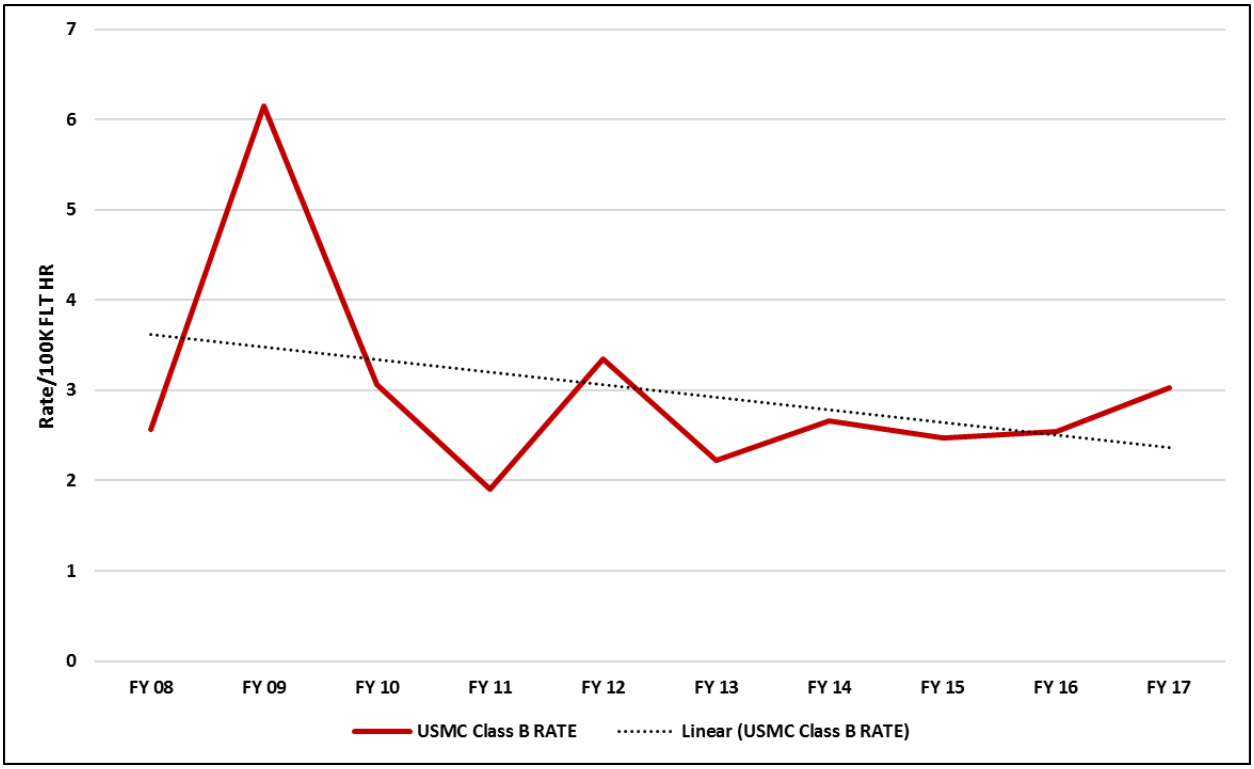
USMC 10-Year Class A Aviation Mishap Rates

Class B

Class B mishaps also have significant effects on the fleet. Each costs at least $500,000 but less than $2 million, or results in a permanent partial disability to a service member or DON civilian. The USN Class B mishaps show a more even dispersion between flight, flight-related, and aviation ground mishaps than USN Class A mishaps. USMC Class B rates trended slightly down over 10 years, but not enough to be of statistical significance. USMC Class B mishaps are a nearly even split between flight and aviation ground mishaps.



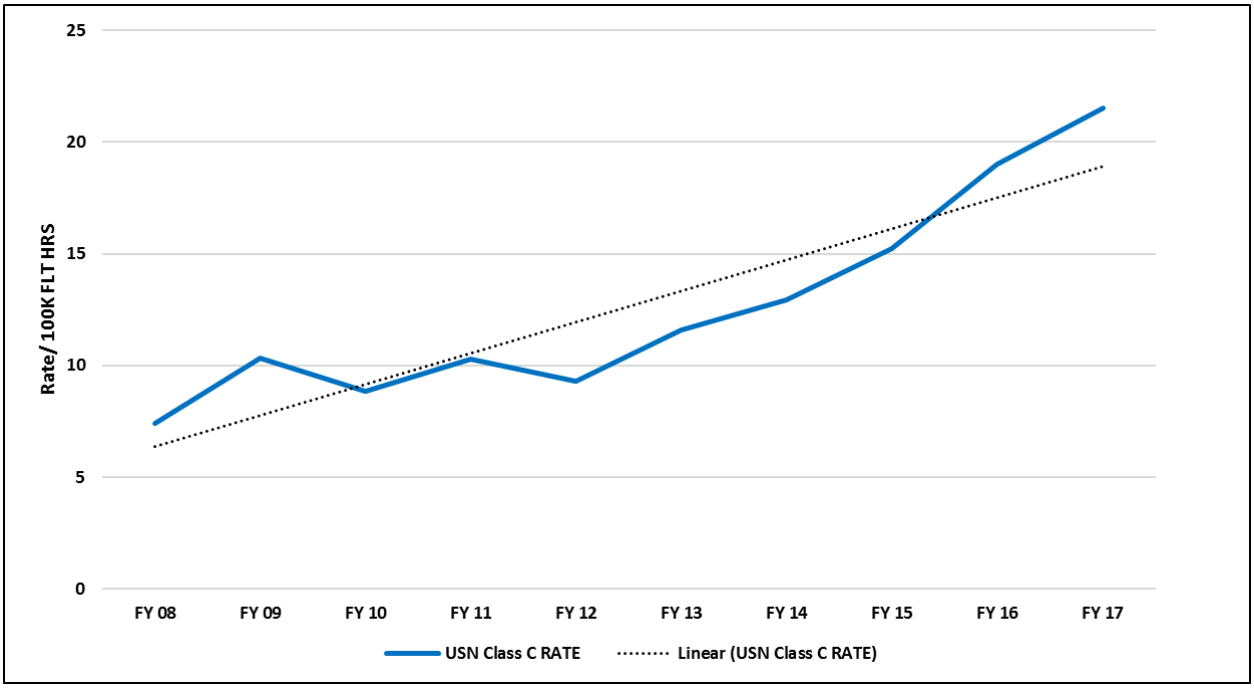
USN 10-Year Class B Aviation Mishap Rates



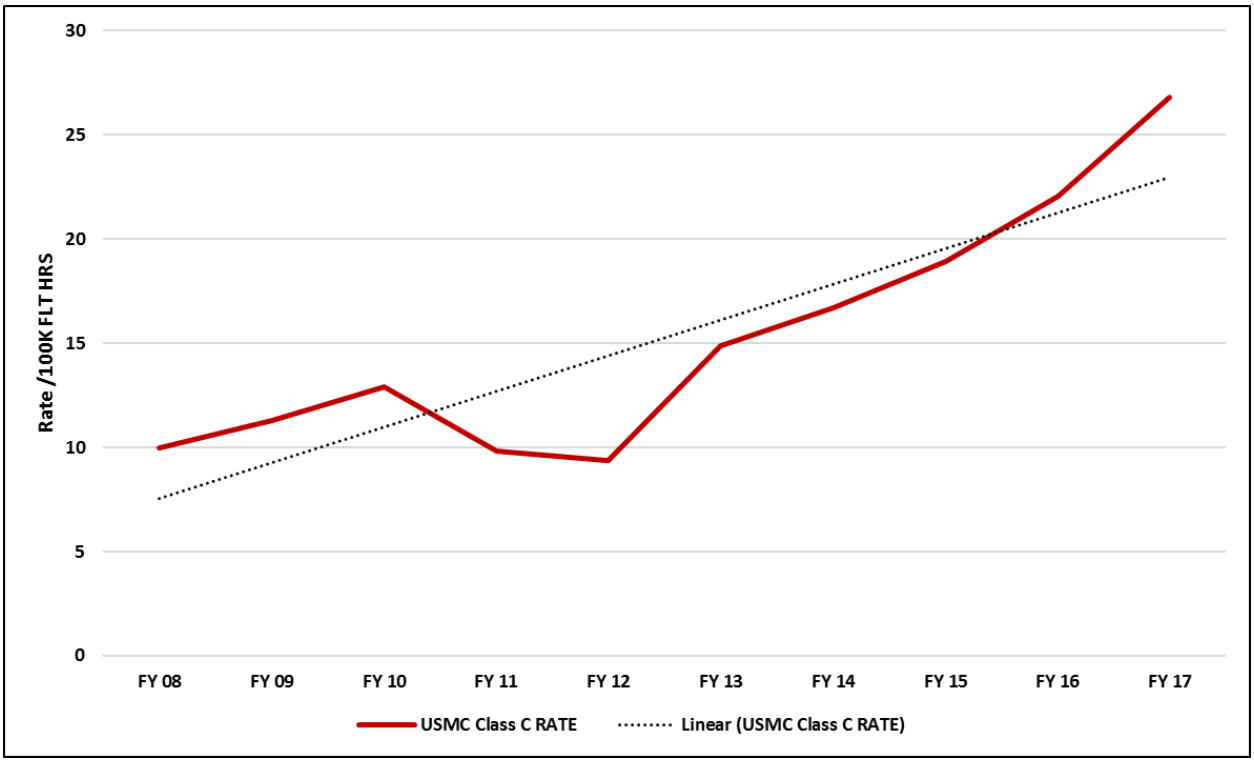
USMC 10-Year Class B Aviation Mishap Rates

Class C

The naval enterprise is currently investing a great deal of its analytical efforts to understand the recent rise in Class C mishaps, those costing the government between $50,000 and $500,000 or nonfatal injuries or illnesses that result in one or more days away from work. This rise is affecting both the USN and the USMC. Additionally, the majority of these mishaps are aviation ground mishaps, rather than flight or flight-related mishaps. The bulk of these mishaps occur during maintenance evolutions and involve aircraft striking or being struck by other objects. Multiple discrete studies from numerous sources point to inexperience in the E-5 and E-6 maintainer rates as a significant contributing factor. A recent USN study showed that F/A-18 and MH-60 squadrons, the largest aviation communities in terms of density of squadrons and aircraft, are experiencing the largest numbers of these mishaps. Human factors analysis studies point to breakdowns in organizational teamwork, an analysis category defined as the interaction among individuals, crews and teams involved in the preparation or execution of a task that resulted in human error or an unsafe situation. This breakdown could be related to the E-5 and E-6 inexperience issues previously noted. A similar study on USMC Class C aviation mishaps showed the same type of performance-based errors, and suggested applying the largest effort to the MV-22 and F/A-18 communities.



USN 10-Year Class C Aviation Mishap Rates



USMC 10-Year Class C Aviation Mishap Numbers and Rates

DEPARTMENT OF THE NAVY AVIATION SAFETY MISHAP GOVERNANCE, OVERSIGHT, INVESTIGATION, AND REVIEW PROCESS

Notification and Reporting Process

The mishap notification and reporting process is governed by OPNAV Instruction 3750.6 series, Naval Aviation Safety Management System, which outlines responsibilities, timelines, reporting, and safety investigation requirements for each type of mishap. When a mishap occurs, the first step is for the mishap unit to execute its pre-mishap plan, which describes the actions to be taken and delineates responsibilities following a mishap. One of the first actions within the pre-mishap plan is a required notification phone call to the Naval Safety Center within one hour of a Class A mishap. Additionally, the initial notification of a mishap must be made in the Web-Enabled Safety System (WESS) which is the online mishap reporting tool used by the Navy and Marine Corps. This must be done within four hours for Class A and B mishaps and within 24 hours for Class C mishaps. As more detailed information becomes available, complete mishap reports are required to be submitted via WESS.

Mishap information is regularly reported to the office of the Undersecretary of Defense (Personnel and Readiness) for entry into the Force Risk Reduction (FR2) application. This provides a centralized database for Department of Defense (DoD) personnel to review, evaluate, and monitor high risk areas such as mishaps. The Naval Safety Center updates FR2 monthly with all mishap information and at least weekly with current Class A data, and more often if there is a new Class A event.

Mishap Investigation Initiation

After all proper notifications are accomplished, the Aviation Mishap Board is convened. All aviation mishaps, regardless of severity, are investigated. Class A mishap boards are convened by the controlling custodian, the Navy or Marine Corps Flag or General Officer who is responsible for achieving readiness and safety standards while

optimizing total resource requirements. There may be a standing mishap board at the squadron level or one may be appointed. Board membership, at a minimum, consists of a senior member, who is a Naval Aviator or Naval Flight Officer. For a Class A mishap, the senior member must be an O-5 or above and external to the mishap unit. For all classes of mishaps, the senior member must be senior to the pilot in command and the mission commander. The board also consists of a formally trained Aviation Safety Officer, Flight Surgeon, operations representative, maintenance representative, and any other specialties and technical support as required. Class A and B mishaps, in addition to all Class C mishaps involving more than 10 lost work days, require investigation by a full mishap board. Class D mishaps and Class C mishaps involving anything less than 10 lost work days may be investigated by one officer or civil service employee filling an Aviation Safety Officer billet, at the discretion of the unit Commanding Officer.
At the request of the mishap board, a trained Naval Safety Center investigator will provide on-scene assistance, and will usually travel to the scene of the mishap within 24 hours. Naval Safety Center investigators assist most Class A flight mishap safety investigations and others as requested. The investigator serves as an advisor to the Aviation Mishap Board. The initial actions of the mishap board are to gather evidence and gain situational awareness. The mishap scene must be secured so evidence can be preserved.

Once all relevant evidence has been collected, the mishap board initiates the analysis and deliberation phase. This involves reviewing the three types of evidence: People (witnesses, survivors), Physical (wreckage, tools and equipment, facilities), and Documentation (records and logbooks, photos and video, electronic media). The deliberative process of the board focuses on discovering the mishap causal factors and making recommendations to prevent it from happening again.

There is no standard aviation mishap safety investigation timeline. These investigations vary based on factors such as the severity of the mishap, whether or not the aircraft wreckage can be recovered or reconstructed, and whether there were survivors to

make statements. However, on average, the first 48 hours following a mishap is spent in initial response, the next two weeks are spent gathering evidence, followed by a week of board deliberations, and another week to write the investigation report and release it. The report is due 30 days from the date of the mishap, but extensions are often requested and approved due to the length of some engineering investigations and other extenuating circumstances.

The sole purpose of a mishap safety investigation is to determine the causal factors of the mishap and develop recommendations to prevent recurrence. As such, parts of mishap safety investigations are covered by safety privilege. Safety privilege is not granted to other types of investigations such as Judge Advocate General or Naval Criminal Investigative Services investigations which are designed to assign responsibility or fault. Safety privilege protections have been upheld by the Supreme Court and are based on a national defense need for rapid and accurate assessment of the causes of mishaps to prevent a recurrence and maintain mission readiness. This privilege creates restrictions on handling and releasing information in mishap investigation reports. The purpose of safety privilege is to overcome a witness' reluctance to reveal complete and candid information to investigators. It also encourages mishap boards and safety investigation report endorsers to provide complete, open and forthright information, opinions, and recommendations about a mishap. Safety privilege protects witnesses, boards, and endorsers from the fear of retribution, the use of the information for disciplinary purposes, or adverse administrative actions. The specific parts of a mishap safety investigation covered by safety privilege include witness statements offered under a promise of confidentiality, board deliberations and analysis, and certain portions of the mishap safety investigation report and endorsements, to include mishap recommendations until those actions are complete.

Post Investigation Processes and Procedures

Once the mishap safety investigation is complete, the board will produce a report detailing whether each causal factor is accepted or rejected. The endorsers of the report, in turn, have an opportunity to concur or non-concur on every accepted and rejected causal factor and the associated mishap recommendations. The endorsement chain is determined by the aircraft controlling custodian. Any endorser who determines that a safety investigation is incomplete or that the report is inadequate may direct the reconvening of the mishap board and require resubmission of the report, addressing specific areas of concern. Acting as the Chief of Naval Operations' Special Assistant for Safety Matters, Commander, Naval Safety Center is the final endorser for all Class A mishap investigation reports. For Class B and C mishaps, the final endorser is the commander who can affect the closeout of the mishap recommendations.

The endorsement process can be lengthy because it must be deliberate, thorough, and accurate. There are typically four endorsers for a Class A mishap. The reporting command and the immediate superior in command each have 15 days to review the report, concur or non-concur on accepted or rejected causal factors, and make any additional recommendations. The controlling custodian then has 28 days to review and endorse the report before it is forwarded to the Naval Safety Center for final endorsement. Extensions are often granted. Based on the safety investigation timelines and typical endorsement chain, the average report is scheduled to be completed in 157 days. However, due to issues like wreckage recovery, engineering investigations, and endorsement chain extensions, finalization times vary. For this reason, it is crucial for critical safety information to be released to the fleet as soon as it is discovered and often well before the mishap investigation report is finalized.

When a hazard is discovered during the safety investigation or at any point in the process, a non-privileged hazard report (HAZREP) is released by the mishap board to provide timely notification to the fleet and program managers. These HAZREPS allow the air worthiness authority (Naval Air Systems Command) to decide if groundings,

inspections, or other mitigation actions are necessary before the continued employment of the type of aircraft or equipment involved is permitted. There have been several examples where a hazard has prompted the release of a HAZREP which resulted in an operational safety pause, conditional inspections, and even groundings long before the investigation report was released.

Within 10 days of the release of any Aviation Class A mishap report, a representative from the Naval Safety Center's Aviation Safety Programs Directorate develops two products for fleet use and distribution. These products are the Mishap Executive Summary and Safety Officer Training Presentation. The Mishap Executive Summary is a two to three-page review of the event's mishap safety investigation report and is designed to be routed to the endorsing chain of command to facilitate briefing of Class A mishaps to higher echelon leadership. The Safety Officer Training Presentation is distributed to same or similar community unit safety departments with the intent of providing a training tool at the squadron level.

The Naval Safety Center continuously looks for cost-effective ways to create relevant lessons-learned products. One such recent innovation is a sanitized mishap safety investigation report that is distributed as a lessons-learned awareness product. This product is an abbreviated version of the original mishap investigation report with elements of privileged information and PII redacted to enable the report to be more readily disseminated and used for fleet training. The sanitized report remains a "For Official Use Only" (FOUO) document and is required to be handled accordingly.

The Naval Safety Center aviation platform subject matter experts also produce periodic Safety Gram messages for their community safety representatives. Safety Grams are sent via email and provide community safety trends, contain relevant and recent mishap investigation and hazard reports, and distribute type/model/series community lessons learned and best practices across all stakeholders.

The analysis of data collected from mishap safety investigations is key to understanding and communicating mishap information. However, the Naval Safety

Center is working to get ahead of mishaps with preventive mishap data analysis and informed risk identification through strategic partnerships. These collaborative efforts include the Navy and Marine Corps Public Health Center, the Digital Warfare Office, the Center for Naval Analysis, the Naval Post-Graduate School, and other organizations. All of these organizations are equipped to perform in-depth studies to gain a better understanding of the human and materiel factors that lead to mishaps so mitigations can be developed to stop a mishap before it happens. The Naval Safety Center is also increasing its organic analytical capabilities by acquiring enhanced technology and additional specialized manpower devoted to this effort.

While the Naval Safety Center is the authoritative source for mishap data, deeper analysis requires a holistic approach where data scientists can leverage readiness, manning, and other information to assess the overall health of a unit and the safety posture of the Navy and Marine Corps as a whole. The Naval Safety Center is working with the Fleet and Type Commanders to develop mutually beneficial data sharing agreements that will allow for improvements in risk and hazard identification and analysis. This "deep dive" analysis should eventually allow for the identification of risk trends that become a predictive and preventative tool. The Naval Safety Center has been tasked with expanding its analytical workforce. This will include hiring contracted data scientists who will assist in the development of sophisticated risk models using these new data streams in addition to growing organic capabilities and capacity. Understanding the importance of working jointly, the Naval Safety Center and other Navy organizations have partnered with the Army Analytics Group for data aggregation and complex data analysis.

MISHAP RECOMMENDATIONS AND LESSONS LEARNED

The primary purpose of the aviation mishap review and oversight process is to prevent recurrence. Recommendations from mishap safety investigations, hazard reports, and lessons learned are most useful when they are clearly communicated and successfully implemented. After a mishap investigation is finalized, every causal factor is required to have at least one corrective action or recommendation with which it is associated. Recommendations are assigned to action agents throughout the naval enterprise who are responsible for completing the assigned action unless relieved by higher authority. Mishap recommendations vary, but common examples include changes to aircraft operating procedures and modifications to aircraft equipment. In some cases, if a widespread threat is identified, a REDSTRIPE might be issued to ground a fleet for an inspection or maintenance action related to an identified hazard or component failure. The Naval Safety Center tracks all open mishap recommendations and hazard recommendations assigned a risk assessment code of one or two (the two most serious categories based on probability and severity out of a scale of five).

Completed mitigations from mishap and hazard recommendations are having a positive effect. With regard to physiological episodes, the number one safety concern in the aviation community right now, the Naval Safety Center provides support to the Physiological Event Action Team (PEAT). As a collaborative effort, specific Naval safety policies and procedures have been developed for the investigating and reporting of physiological events. The quality and accuracy of engineering, maintenance, and medical data collected is enabling engineering and "big data" teams to find solutions to mitigate physiological events. As a result of these efforts, the Navy is currently integrating an Automatic Backup Oxygen System (ABOS) into T-45s to improve overall oxygen system performance. The Naval Safety Center and PEAT are collaborating with DoD, NASA, TYCOMS, SYSCOMS, and industry partners to expand upon current research and

further recommendations regarding improvements to the Environmental Control System in the F/A-18 aircraft.

Other safety mitigations implemented based on mishap recommendations include improvements to the MH-60 gunner's seat funded in POM-19 and a Dual Function Display Knob in the AH-1Z that was a cockpit foreign object damage (FOD) hazard. A structural modification was made to the AH-1Z cockpit and the hazard was taken off the System Safety Working Group's Top Ten List this year. These are just a few examples of the many improvements made possible by a methodical and rigorous mishap investigative process.

The Naval Safety Center has centralized and strengthened its lessons learned program office with the sole focus of developing products aimed at various fleet audiences. These products provide units with unique approaches to mishap and hazard education and training in order to increase safety awareness and appropriate mitigation strategies for all levels of leadership. A typical lessons learned product is a two-page document capturing the highlights of a mishap or significant hazard event and the key strategies to mitigate the risks in the future. The format and content, however, is tailored to fit the intended audience and specific requirement. A recent example includes a lesson learned product about maintainers in different squadrons working on different aircraft platforms using the wrong engine oil. The use of the incorrect oil led to multiple Class A mishaps and several HAZREPs. Sharing this type of information across communities is essential, because the true extent of many safety problems go well beyond just one squadron or aircraft platform.

RELATIONSHIP WITH OSD OVERSIGHT AGENCIES

RELATIONSHIP WITH OTHER SERVICES SAFETY CENTERS AND JOINT WORKING GROUPS

Joint Service Safety Council

The Joint Service Safety Council (JSSC) is the primary forum where Service Safety Chiefs meet to discuss mishap and safety concerns having joint applicability. The Flag and General Officers of the Naval Safety Center, Army Combat Readiness Center, Air Force Safety Center, U.S. Coast Guard Health, Safety and Work-Life Directorate, and the head of HQMC Safety Division meet in person twice per year, and have staff discussions via teleconference more frequently through the year as necessary.
Two years ago, the JSSC endorsed the formation of the Joint Service Safety Lessons Learned Forum, a working-group level council with representatives from each of the services that also meets twice per year to develop and address lessons learned with joint applicability. There are two working groups that deal with issues of importance to the aviation community and support the JSSC. The Human Factors Working Group (HFWG) explores human factors issues including data collection, sharing, analysis, research, and reporting. The HFWG focuses upon prioritization of the most significant hazard exposure categories with the highest potential to reduce risks that are common across the DoD and Coast Guard. The HFWG is also responsible for the standardization of the DoD Human Factors Analysis and Classification System (HFACS) across the Services.

The Aviation Safety Working Group (ASWG) serves as a forum for collaboration among DoD safety stakeholders to identify data-informed, benefit-focused safety policies, programs, strategies, and initiatives designed to reduce the risk inherent in aviation operations across the DoD and the U.S. Coast Guard. The ASWG supports both the JSSC and the DoD 3-Star Safety and Occupational Health Steering Group and is chartered by the Director, Environment, Safety and Occupational Health Office of the

Under Secretary of Defense (AT&L) and the Director, Personnel Risk Reduction Office of the Under Secretary of Defense (Personnel and Readiness).

Joint Mishap Investigations

In mishaps involving more than one service, the Naval Safety Center works in close coordination with other service safety centers. The DoDI 6055.07, *Mishap Notification, Investigation, Reporting, and Record Keeping,* outlines specific requirements for coordination between services for the conduct of safety investigations involving more than one service. The DoDI specifies the coordination, composition and conduct of a Joint Safety Investigation Board, the sharing of reports, accountability for the mishap, and the completion of recommendations to prevent recurrence. Additionally, the Service Safety Chiefs, including the U.S. Coast Guard, signed a Joint Memorandum of Understanding on 10 April, 2006 that provides additional detail.

Service safety investigators take advantage of each others' safety schools to cross-pollinate investigative techniques, procedures, and best practices. Analysts have the ability to request and gain access to the other services mishap databases.