Hornet Mishaps on the Rise: Institutional Change the Answer

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Hornet Mishaps on the Rise: Institutional Change the Answer

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## Introduction

The United States Marine Corps F/A-18 Hornet mishap rate has risen to an unacceptable level. In FY-04, there were a total of eight Class A[1] mishaps, accounting for almost half of the eighteen total Class A mishaps involving Marine Corps (USMC) aviation assets. This helped to make it the worst year for Marine aviation since 1990 with 5.20 mishaps occurring per every 100,000 hours flown.

**FY00-04 Navy Class A Flight Mishap Rates**[2]

| | Flight Hours | Number of Mishaps | Mishap Rate |
|---|---|---|---|
| FY00 | 1,118,529 | 20 | 1.79 |
| FY01 | 1,122,880 | 14 | 1.25 |
| FY02 | 1,191,703 | 21 | 1.76 |
| FY03 | 1,138,514 | 26 | 2.28 |
| FY04 | 1,060,794 | 12 | **1.14** |
| FY00-04 | 5,632,420 | 93 | 1.65 |

**FY00-04 Marine Class A Flight Mishap Rates**

| | Flight Hours | Number of Mishaps | Mishap Rate |
|---|---|---|---|
| FY00 | 341,474 | 9 | 2.64 |
| FY01 | 357,035 | 5 | 1.40 |
| FY02 | 385,640 | 15 | 3.89 |
| FY03 | 377,510 | 11 | 2.91 |
| FY04 | 342,558 | 18 | **5.20** |
| FY00-04 | 1,804,217 | 58 | 3.21 |

Further frustrating USMC leadership, the increase in accidents occurred despite a memo released on May 19, 2003 by Secretary Defense Rumsfeld[3] challenging the services to reduce mishap rates by 50% over the next two years.

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[1] Class A mishap defined per OPNAV 3750.6R as over one million dollars damage done to aircraft, aircrew fatality, or aircraft destroyed.
[2] Naval Safety Center, Aviation Tables, FY00-04 Marine Class A Flight Mishap Rates http://www.safetycenter.navy.mil/statistics/aviation/tables.htm.
[3] United States Department of Defense, "DOD Announces Mishap Reduction Initiative" May 23, 2003, News Release 367-03 http://www.defenselink.mil/releases/2003/b05232003_bt367-03.html.

Instead, in FY-04 the USMC managed to nearly double FY-03's mishap rate, while continuing to post higher mishap numbers than the Navy (USN). The Marine Corps must make a conscious and fundamental cultural change in the training for aircrew, the career path they follow, and the emphasis placed on safety to decrease the mishap rate.

## Overview

Conclusions drawn from the comparison of mishap rates can be inaccurate if what the numbers represent is not understood. To determine the mishap rate for a fiscal year, a service divides the number of Class A mishaps by the total number of hours flown regardless of airframe. The United States Air Force (USAF) for instance, has a large number of tanker aircraft that seldom experience mishaps and that log a massive number of hours. This is partially why the USAF posted a mishap rate of 1.07 for FY-04[4]. To understand the magnitude of the current problem in the Marine Corps, one must compare the mishap rates for only fighter/attack aircraft across the services. For FY-04, the USAF posted a mishap rate of 1.3[5], the Navy a rate of 2.06, and the Marine Corps a staggering 10.95[6].

[4]Robert Wall, "Safety Tally" *Aviation Week & Space Technology*, Oct 25,2004, 80. http://proquest.umi.com.
[5]Wall, "Safety Tally", 80.
[6]Naval Safety Center, Statistics Division, Aviation Daily Summary http://www.safetycenter.navy.mil/statistics/aviation/dailysummary.htm.

## Training

A new aviator in a Marine Hornet squadron doesn't possess the skills or the knowledge to deploy overseas. The process to train a combat qualified aircrew is governed by the Marine Air Weapons Training Squadron-1 (MAWTS-1) sponsored, Training and Education Command (TECOM) owned[7], Training and Readiness (T&R) Manual, and takes approximately eighteen months[8]. This syllabus governs the training of all aircrew in a squadron, regardless of experience and ability level, through numerous flight events described in exacting detail. New aircrew begin training to become combat qualified by flying basic T&R sorties. These sorties are grouped into mission specific areas such as air combat maneuvering (ACM), low altitude tactics (LAT), and air to ground employment. Once an aircrew has initially completed all of the basic T&R sorties grouped under ACM, he is considered core competent in ACM and ACM qualified.

Mission specific aviation skills are very perishable. In order to maintain and build core proficiency, the T&R has assigned a re-fly window ranging from ninety days to lifetime for each event. Core competency tracks if an

[7] Major George B Rowell, e-mail message to author, January 8, 2005.
[8] Major Joseph A Craft, "Evaluating Marine Aviation Training Management to Increase Combat Readiness and Preserve Assets" (Master's diss., United States Marine Corps Command and Staff College, 2003) 29.

aircrew has had exposure to an event, while core proficiency tracks how recently the aircrew has been exposed. Squadrons are responsible for ensuring that all aircrew have attained core competency in basic mission areas, and ensure that aircrew maintain core proficiency by re-flying certain T&R sorties within the requisite windows. A re-fly of the event returns the aircrew to the start of the window. This system, based on the T&R, is used to train aircrew. Unfortunately, as noted by a former MAWTS-1 instructor, "the T&R is the most misunderstood of all documents we use in the Marine Corps."[9] The source of the confusion stems from a lack of training on the document, and lack of employment aids.

The training process is orchestrated by a squadron's operations department, overseen by the Operations Officer (OPS O), managed by the Pilot Training Officer[10] (PTO), and executed by the flight and schedule officers. The PTO is usually held responsible by the OPS O for flowing aircrew through the T&R syllabus, ensuring they are scheduled for the events they need, and rescheduled as appropriate to remain within the various re-fly windows. Ideally, the PTO is a second tour aviator, and has been trained by MAWTS-1

[9] Major George B. Rowell, e-mail message to author, January 8, 2005.
[10] As well as Weapon Sensors Officer (WSO) Training Officer in a two seat squadron.

as a Weapons Tactics Officer (WTO). Even with this training, he has had only one day of instruction on the T&R[11]. The OPS O, responsible to the Commanding Officer for training, may or may not be a WTO. He could very conceivably have zero training on the T&R for which he is responsible for understanding in depth. This general confusion on the T&R could easily be alleviated with the creation of a formal T&R course lasting anywhere from three to five days, and made mandatory for all training officers.

In addition to a near absence of training on the T&R, there is not a single computer program that is specifically designed to help correctly schedule T&R events at the appropriate time. The flight officer and the schedule officers work with a complicated program called Squadron Assistance/Risk Assessment (SARA) that they may or may not have been trained to use. A computer program built around the T&R events is needed to control aircrew scheduling. It would ensure aircrew are not haphazardly scheduled, currency windows are maintained, flight time is evenly distributed, and above all some level of efficiency is obtained. The databases for each squadron could be kept on the intranet allowing a Marine Air Group commander to stay better abreast of how many sorties a squadron needs a month

[11] Major George B. Rowell, e-mail message to author, January 8, 2005.

to train. This is absolutely critical as the Marine Aviation Campaign Plan 2002 sets a goal for each aircrew to fly between twelve to fifteen sorties a month[12]. However, as is emphasized by Lieutenant Colonel Craft in his masters dissertation, an aircrew needs nine sorties a month dedicated for his training[13]. There is no room for inefficiency, as subtracting from the goal of twelve to fifteen sorties a month are maintenance flights, instructor flights, training support flights, and Fleet support flights[14]. With almost no training on the T&R, and no tools available to optimize scheduling of events, skill-based errors are on the rise.

## Career Path

The Marine Aviation Campaign Plan 2002 provides another place where cultural change is needed to produce, and keep, trained aviators in the Fleet to reduce the mishap rate. The Plan, in conjunction with the Naval Aviator Production Process Improvement (NAPPI), attempts to get a newly commissioned Marine officer to his first Fleet squadron in two and a half to three years[15]. Once finally

[12] United States Marine Corps, Aviation Department, *Aviation Campaign Plan 2002*, 11 http://hqinet001.hqmc.usmc.mil/AVN.
[13] Craft, "Evaluating Marine Aviation Training Management to Increase Combat Readiness and Preserve Assets" 29-30.
[14] Craft, "Evaluating Marine Aviation Training Management to Increase Combat Readiness and Preserve Assets", 33-39.
[15]United States Marine Corps, Aviation Campaign Plan 2002, 9.

combat qualified, that aviator can only expect to remain in the squadron for another six months to eighteen months before being forced to move by the Marine Manpower Officer Assignments (MMOA) branch[16].

The distinct imbalance between time to train and time spent in a squadron as a combat qualified aircrew creates problems that directly contribute to the mishap rate. The revolving door of first tour aviators manifests, above all, a leadership and training problem. At just two years in the squadron an aviator may have around five to six hundred hours in the Hornet. In the models created by the Naval Safety Center, this coincides with the point at which the aviator leaves the high-risk zone for a mishap caused by pilot error. That aviator will not reach a high-risk zone again until over 2000 hours in model[17]. It also coincides with the point where an aviator begins to make the transition from squadron student to instructor. If an aviator is left for a minimum of three and a half years in a squadron there are several tangible benefits: a valuable core of combat qualified aviators, all out of the high-risk mishap zone, who could share instructor responsibilities,

[16] United States Marine Corps, Aviation Campaign Plan 2002, 7.
[17] Naval Safety Center , Statistics Division, Statistics Division Presentations, Flight Experience and Aircrew Factor Mishap Rates FY-94-02, Slide 3 and 4 http://www.safetycenter.navy.mil/presentations/statistics/flight.htm.

provide essential leadership airborne and on the ground, and enable an operations department to better move new aviators through the T&R syllabus.

Fatigue is rampant in the aviation community and significantly contributes to the mishap rate. With the war on terror underway it is common for an aviator to deploy three times in three years. Most aviators realize their post-first tour career enhancing choices are limited to a forward air controller (FAC) tour[18], or resident professional military education[19], as promotion boards are comprised mostly of non-aviators. It is conceivable for an aviator who has done a deploying FAC tour to return to the Fleet only to deploy again for the fifth time in as many years. This does not make for an aviator who has a healthy marriage, is interested in working the sixty-hour plus weeks demanded by squadron tempo, or is able to fully concentrate on any given flight. Instead, it produces an aviator who is burned out, and not motivated to tackle the duties of a training officer or department head. Never ending operational tempo will contribute significantly to a retention problem the aviation bonus can't fix. The result

[18] Almost all of which are currently deploying.
[19] Reinforcing this perception has been a push from the Marine Aircraft Wings that candidates for training at MAWTS-1 should be second tour aviators who have competed a FAC tour. Even candidates who were resident PME graduates needed a "waiver" to attend.

is a shortage of flight leadership and knowledge in the squadrons that will contribute directly to an increase in the already high mishap rate.

## Safety

For a renewed emphasis on safety, the Assistant Deputy Commandant for Aviation Brigadier General Helland testified in February of 2004 that, "The Marine Corps is taking the lead in reducing skill-based errors that account for the vast majority of mishaps by implementing Crew Resource Management and Military Flight Operations Quality Assurance programs. These programs focus on leadership, training, and readiness."[20] The first program mentioned, Crew Resource Management (CRM), is currently contained in OPNAVINST 3710.7S and is very similar to what aviators have been taught for years. The Military Flight Operations Quality Assurance (MFOQA) program is designed to collect raw data from flights to be used by maintenance and aircrew alike[21]. Maintenance can utilize the data to ensure the aircraft systems are operating properly, while the aircrew can use the data to analyze their performance. The

[20] Brigadier General Samuel T Helland, Military Aviation Safety Program, Testimony Before the United States House of Representatives Armed Services Committee, 11 Feb 2004, www.google/unclesam http://www.house.gov/hasc/openingstatementsandpressreleases/108thcongress/04-02-11helland.html.

[21] Vicky Falcón, "NAVAIR Set to Demonstrate New Operational Quality Assurance Program", Navy Newsstand, 31 May 2003, www.google/unclesam http://www.news.navy.mil/search/display.asp?story_id=7667.

requirements not mentioned are trained and experienced aircrew to interpret the MFOQA data, and use it for instruction. Regarding the use of the data to curb mishaps, the development of an entire infrastructure to analyze the data from all Marine Hornet flights to identify and correct dangerous trends would be both required and costly.

A mindset shift by all Marine aviators in the field of safety is necessary. The word “no” must be made acceptable in peacetime. There is a limit to what a squadron can support. Strong pressure exists to complete a given sortie to either progress an aircrew through the T&R syllabus, or be on station for Fleet support. All aircrew from the youngest aviator to the Commanding Officer need to be able to vocalize when limits are reached without fear of reprisal. This is where the Marine ethos actually contributes to the chain of events that result in a mishap. Leadership is the key for change, and commanding officers must foster an environment where it is acceptable to cancel a flight if the conditions so dictate (weather, crew day, maintenance problems, no SPINS for a frag, ect.), and stand behind their aircrew when they do cancel.

## Summary

The increase in mishaps is not a statistical accident. To permanently reduce the mishap rate there must be education on the T&R manual, as well as aids for its execution provided to the end users. Aircrew must be left longer in squadrons to develop necessary skills and provide flight leadership as they progress. Viable options providing rest and family time must be presented to all aviators. The word “no” must be made acceptable in peacetime. Unless these steps are taken the mishap rate will continue to rise.

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