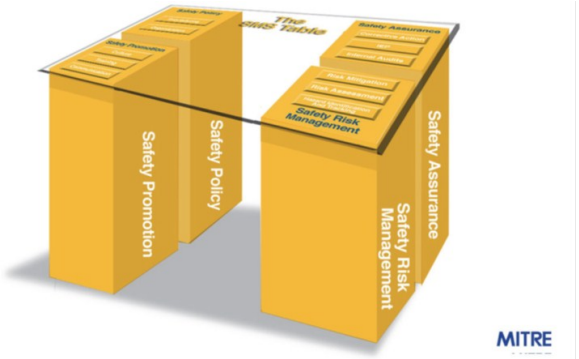
The Safety Sigma

Mission Readiness through Operational Safety

A PRODUCT OF THE U.S. NAVY SCHOOL OF AVIATION SAFETY

SMS FOR DUMMIES

The revised Naval Aviation Safety Program instruction will be hitting the streets soon, and it discusses the Safety Management System. In response to this change, the Safety Programs staff here at SAS, particularly LCDR Mike "Spock" Chenoweth (who is quoted below and has led the discussion on our Facebook page), has put together a quick overview on SMS.



"The Safety Management System, or SMS, concept is relatively new on the industrial landscape in general, and in the aviation world in particular. Transport Canada, Canada's Civil Air Authority (our FAA equivalent), introduced the first aviation SMS in 2005. ICAO followed by mandating SMS for all member countries that same year. The FAA also introduced SMS in 2006 via an Advisory Circular on a voluntary basis for air carriers. In 2010, Congress mandated rule-making action be completed by the FAA by August 2012 that would require SMS for all part 121 air carriers. The rule, 14 CFR Part 5, is making its way through the routing chain and at last update was at the Office of the Secretary of Transportation. DoD has directed the Naval Safety Center to implement SMS in aviation safety, and it will appear in the next version of 3750.6" It is in the final stages of review at OPNAV.

"According to the ICAO Safety Management Manual, an SMS is "an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures." In Advisory Circular 150/5200-37, released February 28, 2007, the FAA defined SMS as "the formal, top-down business-like approach to managing safety risk. It includes systematic procedures, practices, and policies for the management of safety (including safety risk management, safety policy, safety assurance, and safety promotion)." It can be thought of as a table top supported by four elements, or legs: risk management, policy, assurance, and promotion; these have become known as the "four pillars" of SMS. The Naval Aviation Safety Program incorporates many of the pieces (over)

VOLUME 4, ISSUE 2

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In this issue:

Also…..

* Awards, Promotions, Hails & Bails

(from previous page) that make up an SMS, so it looks a lot like one already! Coupling what we do now with the holistic, integrated approach can help us leverage the tools we already have in order to further reduce mishap rates and, in turn, enhance mission effectiveness."

"As Aviation Safety Officers, we are well aware of our governing document, the OPNAVINST 3750.6 series. Of course, there are quite a few more, including 3710.7 (NATOPS), 4790 (NAMP), and 3500.39 (ORM), just to name a few. Safety Policy, the first of the four pillars, is more than just the written instructions. ICAO's Safety Policy elements are management commitment and responsibility, safety accountabilities, appointment of key safety personnel, coordination of emergency response planning, and SMS documentation (ICAO Safety Management Manual). The FAA's slightly different spin transforms these into: importance of top management involvement, the roles, responsibilities, and relationships of safety management, procedures and controls, and the balance between safety and quality (FAA Advisory Circular 120-92A)." The Safety Policy Pillar is where your SMS starts. You will then implement, or promote it (Safety Promotion Pillar). You will implement methods of assuring the functionality of the SMS (Safety Assurance Pillar). Continuously you will manage risk in your squadron (Risk Management Pillar). You continuously "balance the tabletop" the pillars support. This is another way of saying, you continuously leverage the various components of your SMS as necessary to achieve safety in your squadron. The SMS/Four Pillars approach gives the ASO a framework to manage and leverage the program, and importantly, provides a language and reference that all participants in the SMS can quickly grasp and understand.

"A question arises: how does our existing ORM program mesh with Safety Risk Management (SRM) as it is defined by ICAO and the FAA? The ICAO Safety Management Manual states 'safety risk management is a generic term that encompasses the assessment and mitigation of the safety risks of the consequences of hazards that threaten the capabilities of an organization…' You could easily substitute 'mission effectiveness of a squadron' for 'capabilities of an organization.'"

"The FAA characterizes SRM as "a systematic, explicit, and comprehensive approach for managing safety risk at all levels…" and details a five phase approach: describe the system, identify the hazards, determine the risk, assess and analyze the risk, treat the risk (i.e., mitigate, monitor and track) (AC 150/5200-37). The words are a little different, but our five-step risk management process is there so it appears that our understanding of ORM resonates with the definitions found in other regulatory publications." The Navy-Marine Corps ORM program you know reconciles with the FAA publications!

"Although we call it the ORM Program, and within an SMS it is SRM, we don't restrict the process to an operational or safety bin. As leaders, we seek to influence and improve decision making both on-duty and off, in training and in operational scenarios. Whether the enemy has a vote, you are going out on a day VFR fam flight, or the Sailor or Marine is headed home for the weekend, effective risk management and, by virtue, good decision-making are crucial to executing the mission. When it comes to implementing SMS don't forget, "….the prescription is, MORE COWBELL!!"

—CAPT Jody "Caveman" Bridges, USN—Director; *jody.g.bridges@navy.mil*

1. Chenoweth, M. (2013), "Safety Management System", Parts 1 through 3 of a 5-part series, https://www.facebook.com/navysafetyschool.

MAN — "JUST CULTURE": PRINCIPLES FOR MITIGATING ORGANIZATIONAL ERRORS

Data derived from the Naval Safety Center, using the Human Factors Analysis and Classification System (HFACS), show that at least 39% of Class A mishaps involved an Organizational causal factor.

James Reason (1998), progenitor of the Swiss cheese model of human error, indicates that organization-level mishap causal factors can be mitigated. He states that a *safe culture* can be engineered, in part, by means of creating a *just culture*. (over)

MAN — "JUST CULTURE": PRINCIPLES FOR MITIGATING ORGANIZATIONAL ERRORS (CONT)

(from previous page) Reason's conception of a just culture includes the following:

A just culture is a reporting culture in which people are prepared to report errors and near-misses;

It is an informed culture demonstrated by those who manage the system with current knowledge of human, technical, organizational and environmental factors;

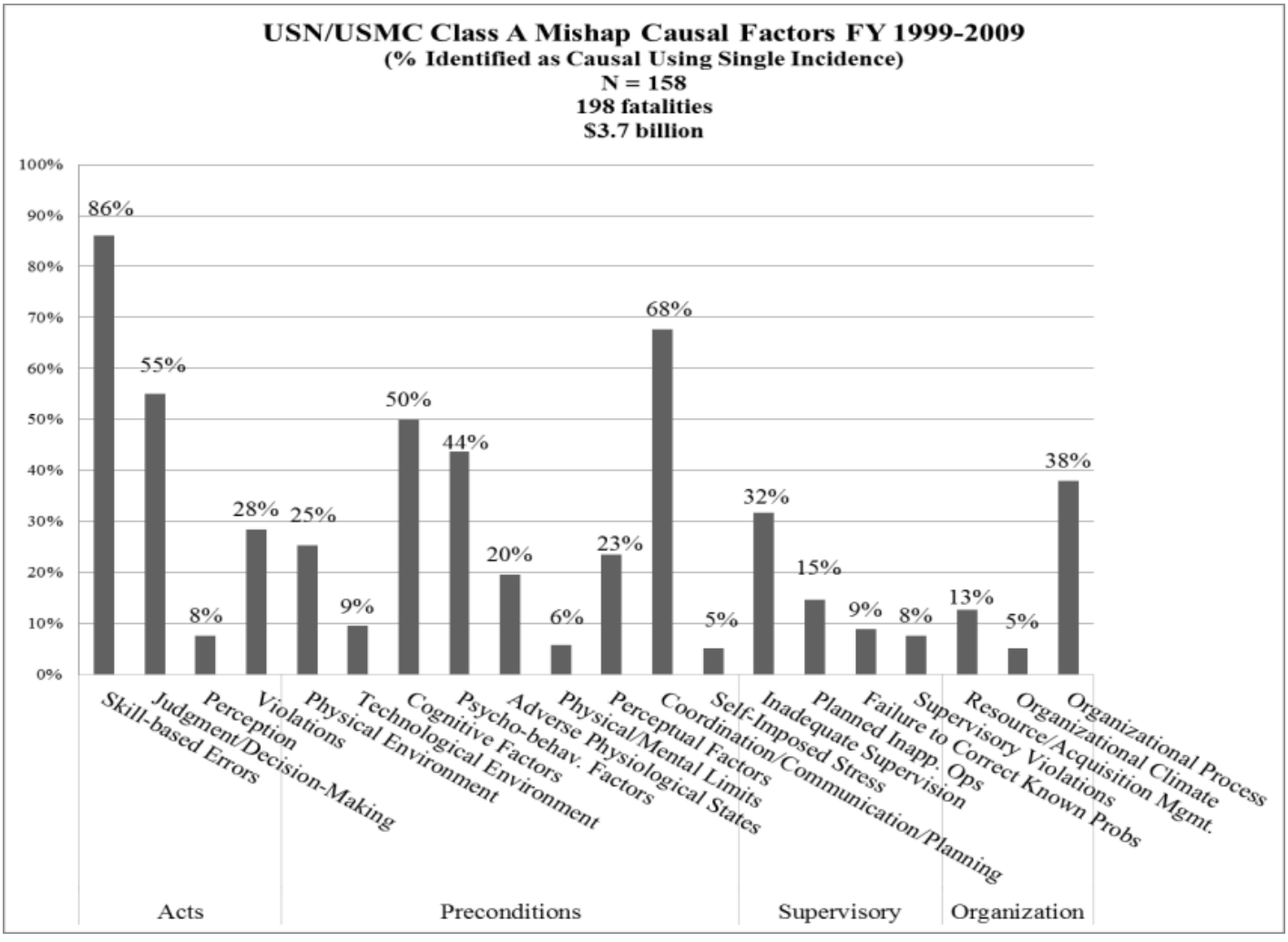
(from previous page)

A just culture is one in which the employees work in an atmosphere of trust and are encouraged and rewarded for doing the right thing;

It is a flexible culture that can shift from hierarchal modes to flatter, yet empowered, organizational modes when required;

A just culture is a learning culture with the willingness and competence to draw the right conclusions from the system outputs and the determination to implement the reforms that are needed

Although not the answer to every safety question, the adoption and maintenance of a just culture can help to mitigate errors throughout your workplace.



—*LCDR Phil "Dr. Phil" Fatolitis, USN—Human Factors Instructor;* philip.fatolitis@navy.mil

1. Reason, J. (1998). Achieving a safe culture: Theory and practice. *Work & Stress, 12(3),* 293-306.

MEDIUM — EMPLOYING ORM & TCRM

When we are in combat, conducting humanitarian assistance and disaster relief or plucking someone out of the sea, we need the ability to execute most of our cockpit tasking without really thinking about it. That means we train, which consists of doing the same thing over and over until we get good at it. But what happens when something changes, and then we execute that same routine we've been practicing without thinking about it? Well, a few HAZREP examples reveal a close call between an E-2 and a fire truck during a night FCLP period, a T-6 wash rack crunch, a fuel truck running into an opposite direction Prowler under tow, and the very real possibility of losing an SH-60B during a landing descent due to control binding caused by an airframe mod. So if change is the mother of all risk, why didn't any of the changes preceding those HAZREPs trigger the ORM process?

In all four of the examples, some agency outside the squadron was involved, so how can your sailors and Marines, your aviators and aircrew, mitigate those hazards? If ORM is not a part of your squadron culture the answer is: they can't. Give them that tool, though, and make it a part of their routine and the way they think about their tasks on duty and at home, and you give them a chance. Not only that, but many of you will end up in post-command positions like base CO, NAVAIR, PMA and others where you will have a direct role in mitigating hazards at the organizational level.

Back to our examples – how could squadron personnel have mitigated these hazards? In the case of the E-2, the aircrew had secured the taxi light so as not to blind the Landing Signal Officers, crash crew or the other aircraft in the pattern. Did the benefit outweigh the risk? Perhaps the Time-critical Risk Management (TCRM) process would have yielded a different solution – stop the aircraft and secure the taxi light while the other aircraft is on final and once it lands turn the light back on and continue taxiing, for example. The T-6 was moved by a crew of two contractors familiar with the wash rack in question. Why are they not identifying hazards prior to each trip into the wash rack? If TCRM was a part of their routine, perhaps they would have noticed the newly installed hose reel and taken a closer look at the wingtip clearance. The Prowler squadron had recently arrived at its deployment location and was accustomed to all ground traffic being under positive control back at home field. The squadron also towed aircraft at night without the external aircraft lights energized because the lights required either engine or external power. While this is an aircraft systems limitation, as the CO clearly stated in the endorsement, it is not a valid reason not to comply with the airfield's requirement for external lighting during night tows. The HAZREP and the CO's endorsement also highlighted the role deliberate ORM, or lack thereof, played, both in operating at a new location and fully understanding the risks of a seemingly routine evolution. Finally, when your maintenance department installs an aircraft mod, do they have the risk management expertise and tools to recognize that installing a piece of gear in close proximity to flight controls might warrant notifying the squadron pilots of the hazard? For the SH-60B crew, they experienced collective binding during a critical phase of flight, caused by a cannon plug that powers a new kneeboard mounted display. Fortunately, they landed uneventfully after discovering and correcting the cause of the binding. Good TCRM, but why force our aircrew into that position? In this case, failed ORM at the organizational level (NAVAIR) and downstream created the holes in the Swiss cheese that nearly put the aircrew into extremis.

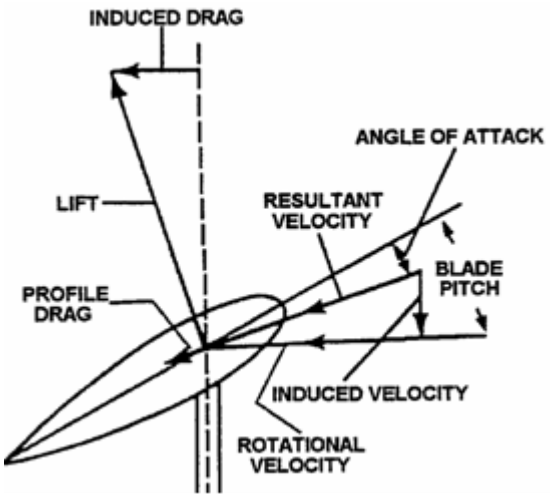
Rather than learning things the hard way, as in the examples above, ensure that ORM and TCRM are alive and well in your squadron. Every sailor and Marine should be using these tools to make the consistently good decisions we expect out of professional aviators, aircrew and maintainers.

—LCDR Mike "Spock" Chenoweth, USN—Programs Instructor; michael.chenoweth@navy.mil

MACHINE — TRANSLATIONAL LIFT

There are some portions of flight with rotary-wing lift and thrust production which are described by terms which fit neatly into one or two words, but which do not adequately explain all that is happening during the phenomena. I propose that one such term is "translational lift." All rotary-wing aviators are familiar with this term, but do we have a solid understanding of what is happening?

We all recognize that once we accelerate, or transition, from a hover to forward flight and pass through a short period of increased power required, our aircraft will begin to climb or accelerate if there is no change in power applied to the rotor (or even prop-rotor). Naturally, that climbing or accelerating motion could tend to be interpreted as "lift," more basically described as the forces opposing our weight and motion toward the surface. Sometimes this acceleration away from the deck isn't as important to us as is the reduction in power required to maintain a level or nearly-level flight path. Is the rotor system generating more lift in this phase of flight? Well, let's look at this from a different perspective…transitioning from higher speed flight to a hover. When experiencing translational lift in this case, are we generating less rotor thrust as we slow down? As with much of rotary-wing flight, the answers involve several perspectives and many variables.



Rotor systems develop the force we call thrust by accelerating a mass of air. As a rotorcraft moves through the air, the rotor continues to accelerate air through the rotor disk, but now the entire aircraft and rotor disk are also translating through the air mass and adding additional mass to the flow through the rotor system. Prouty (2009) explains how this additional inflow allows a change of induced velocity through the rotor (remember the blade-element diagram?) resulting in greater thrust (p. 147). As the total mass rate of change increases, the induced velocity decreases, thus increasing angle of attack and rotor thrust.

End of story? Well, not quite. As Leishman (2006) explains, the aforementioned change to induced velocity will also reduce induced drag (p. 100). Again referencing the blade element diagram, by reducing induced velocity we can see that the lift component of total aerodynamic force is brought closer to vertical, thus reducing induced drag. This results in less power required. Together, the greater thrust and reduced drag increase the excess power available to the aircrew.

There's one more aspect to all this which we should consider: this underlying movement of air mass through the rotor system. Recall that force is mass multiplied with acceleration (F=MA). This is the basis for the thrust which our rotor system produces. As density decreases, less mass of air is passing through the rotor. In order to achieve the same thrust in less dense air, the mass of air must be accelerated a greater amount. What does this mean to you, the fleet aviator? Yes, your collective rotor pitch will be higher, but also the airspeeds at which you are accustomed to encountering translational lift, whether transitioning from or to a hover, may be different when you operate in new locations or conditions. At higher density altitudes a higher velocity of air is required to enact the same mass flow rate. Recognize that some variations to your usual controls and power settings may exist and if the tactical situation allows, leave greater margins for error in your flight profile until you have gained better understanding of how your aircraft performs under these different conditions.

—LtCol Stephen "Bender" Dickerson, USMC—Rotary-wing Aerodynamics Instructor; stephen.m.dickerson1@navy.mil

1. Prouty, R. W. (2009), *Helicopter Aerodynamics*, Lebanon, OH, Eagle Eye Solutions.
2. Leishman, J. G., (2006), *Principles of Helicopter Aerodynamics*, Cambridge, UK, Cambridge University Press.
3. Images from Naval Air Training Command. (2013), *Introduction to Helicopter Aerodynamics* (CNATRA P-401 Rev 02-13)

MISHAPS — CAUSAL FACTORS

The most difficult and most important aspect of the Safety Investigation Report (SIR) and a Hazard Report (HAZREP) is the identification and discussion of the causes of the Mishap or identifying the Hazards. During the investigation of a Hazard, Causal Factors are also identified and discussed but often times less effort is put forth because the causes of the Hazard did not result in a Mishap. The 3750 discusses the idea that Causal Factors and Hazards are the same thing. In Chapter one of the 3750 it states that "The word 'Hazard' may be used interchangeably with 'mishap causal factor'". In a HAZREP we identify a human or material factor that, if not risk-mitigated, will lead to damage or injury. In the case of a Mishap, causal factors are the hazards that caused an unacceptable level of damage and/or injury that must now be reported. For the purposes of this discussion we will use the term Causal Factor (CF), but as just discussed, it is the same as saying the Hazard.

When trying to identify the causes of a mishap the Aviation Mishap Board (AMB) must first have investigated the incident and looked at the evidence. Interviews, aircraft examination, aircraft data, and expert interviews will enable the board to see the factors that ultimately led to the damage and/or injury of the aircraft or personnel. Taking that evidence and articulating the findings in the report is the most difficult part of the Safety Investigation. Once the AMB has investigated the mishap it is best to begin by brainstorming possible CFs based on what the evidence has divulged. Let's begin with a mishap in which an aircraft crashed into the water. The first thing the board should do is investigate and find out as much about the incident as possible. Now the AMB must sit down together and start to come up with possible causes of the mishap by looking at the two types of CFs: Human Factors and Material Factors. Material Factors tend to be the easier to develop because the evidence is so physical and easy to study. The board must look into the mishap and say what material factor could have caused this aircraft to get to where it is. What system failure could have or did fail and how did that cause the aircraft to end up in the water. In a Mishap investigation the board must consider all possible CFs and accept or reject each one. This can be problematic because that can lead an AMB to go down paths that have nothing to do with the mishap but the AMB feels that it must rule it out. The best advice regarding what CF to examine is to say, "What would a reasonable person ask regarding the mishap?" If the aircraft ended up in the water, a reasonable person would ask if the engines failed. A path that might not be reasonable, better known as a "rabbit hole", might be all possible ways the engine could have failed. If during the investigation you do find that the engine failed and it failed because of a specific failure of a component, then the AMB would have to address the issue and explain what happened based on the evidence. If the AMB does not find that the engine failed then there is no reason to go down any other path to explain how the engine *could* have failed. Avoiding rabbit holes can be difficult, but try to rule out the larger factor and only go into the details if it is in fact a cause of the mishap.

Human Factors (HF) are the other type of factors that the board will have to develop. HF can be harder to develop because the AMB is discussing a person's decisions or performance and explaining why that person failed to perform or made an incorrect decision. An excellent tool to use when developing HFs is the Human Factors Analysis and Classification System (HFACS) model. It can be used to help the board peel back the onion regarding HF. If you look at the HFACS model, it begins with the act. The act is influenced by preconditions, the act and preconditions can be influenced by the supervisor and the supervisor, preconditions and act can be influenced by the organization. When you develop a HF the evidence will usually show you the act. If the pilot were to tell you in his interview that he looked at his HUD in flight and could not figure out which way was up and had to eject, then the board would write a HF of "Mishap Pilot failed to recover from an unusual attitude". The acts are usually very easy to find, but you must not stop there. Using the HFACS model the preconditions to the act might be their own CF. In this case the pilot was Spatially Disoriented, but why? Was the pilot fatigued? Was the pilot not physiologically fit for flight? These could also be causes of why the aircraft is in the water. Remember though, HFs must be in the "Who did what?" format. An example (over)

(from previous page) would be "MP failed to attain adequate rest" or "MP violated 3710 crew rest requirements." Now the AMB must also look up the HFACS model. What was the role of the supervisor in the act? Did the CO fail to mitigate the risk of the event? Did the CO fail to assess the proficiency of the pilot? Did the CO fail to train the pilot? These could be possible causes of the Spatial D. Finally we must look at the Organization. Did any of the decisions of the organization influence or affect the supervisor, preconditions or act. Did the organization cut flight hours? Did the organization reduce aircraft availability? This could be a cause of the Spatial D. As the AMB looks at the HF it must again avoid the rabbit holes and stick to what the evidence has revealed. There is no requirement to have a CF at every level, but the AMB must at least ask the question of what preconditions, supervisory, and organizational factors existed.

Now that the AMB has developed the CF based on the evidence it has found, it must now write the CF and use the evidence to either accept or reject the factor. Human Factors are written in the format "WHO did WHAT" and material factors are written in the format "COMPONENT and MODE". An example of a HF would be "Mishap Pilot failed to recover from an unusual attitude." An example of a material factor would be "Engine Failed" or "Right Engine 5th stage compressor failed". When writing material factors try to be specific regarding the component if it was causal and use structural engineering failure modes to explain how it broke. Now that the AMB has written the CF it is time to take the evidence and support a rejection or an acceptance of the CF. It is very important that the AMB not speculate. The board takes the evidence and concludes or determines if the CF is accepted or rejected. Do not use phrases like "The AMB believes" or "The AMB feels". Use the terms "The AMB concludes' or "The AMB determined" in support of the CF. These terms drive the AMB to use facts to support the argument of acceptance or rejection of a CF. The facts that the board will use originate from the evidence directly. In the case of the CF "MP failed to recover from an unusual attitude" the AMB would look at the aircraft data to see how the pilot operated the aircraft. They would also interview the MP and use his/her statement as evidence. The AMB would also want to define Spatial Disorientation and then show how the pilot meets that definition. After the board has presented the evidence to the audience, they will need to accept or reject the CF based on the findings.

Causal Factors are the essence of the Safety Investigation Report and the HAZREP. If the AMB does not investigate all of the causes then the potential for the mishap to reoccur is more likely. The investigation will show the board the causes of the mishap. The AMB must then take that information and present it to the fleet in the format provided in the 3750. The AMB's job is not to speculate. It is to present the facts and conclude and determine the causes of the mishap or hazard.

—LCDR Kurt "POTY" Uhlmann, USN—Reporting Instructor; kurt.uhlmann@navy.mil

BRIDGEPORT, CA (June 19, 2013) USMC CH-53E's on the expeditionary airfield at the Mountain Warfare Training Center (USMC Combat Camera/Released).

CRM — BEST PRACTICES

Is CRM working effectively in all platforms? We have the results of data analysis from the last ten years that indicate it is…. A very high percentage, if not all personnel in aviation have grown up using CRM. The basic tenets of the program have been thoroughly inculcated into every aspect of the way we do business. Although most of us in Naval Aviation already know CRM has deep roots in commercial aviation, there are some that don't know its current state outside of military aviation.

CRM continues to evolve as technology advances and as the understanding of human factors and behavior improves. Thirty years ago, commercial CRM was thought to be solved. Many people lost their lives proving that to be false. Case in point… The "Big 5 in 5." -Five major mishaps within five years that cited human error and human factors, not maintenance or the aircraft itself, as causal. As a direct result, CRM Program materials and information aim to maintain our top 3 curriculum tenets: Currency, Credibility, and Relevance.

There have been many advances in CRM throughout the years, since its inception. Commercial aviation is currently on the 7th generation of CRM. The 1st generation was created in the 1970s after a major commercial mishap at Tenerife. In order to keep Navy CRM on the cutting edge, the Instructional Model Managers (IMMs) at NAS Pensacola attend commercial aviation symposia that cover HFACS and CRM. IMMs learn the latest information, ideas, and topics focusing on the future of CRM. Various concepts from outside the military are used in the Naval Aviation CRM program and curriculum to everyone's benefit.

One example from commercial aviation is the concept of "best practices." The goal of this concept within aviation is to identify and define the best practices used in any CRM program. During our assist visits to aviation commands, we acknowledge the various Type/Model/Series (T/M/S) programs that go above and beyond the minimum requirements. Prior to this program, verbal or written pass down inside the T/M/S were only available to a limited number of personnel. But now, through better recording and dissemination, everyone can benefit and implement those best practices.

An excellent example of a best practice is a Maritime-squadron-developed CRM-F course that closely resembles the four day CRM-I course taught in NAS Pensacola. All required topics are thoroughly covered during the span of three days. This course is part of the comprehensive IUT curriculum resulting in the CRM-F qualification at the Fleet Replacement Squadron (FRS). It is a best practice for two reasons. One, a formalized course and curriculum ensures training consistency. Two, every instructor is qualified as a CRM-F allowing for event flexibility and syllabus consistency.

Multiple squadrons have developed a local CRM SOP or instruction. This is a best practice, whether promulgated from the FRS or the wing. Although the new CNAF CRM instruction has done a lot to remove some of the ambiguity in the previous instruction, there are still some items left to the T/M/S Curriculum Model Manager (CMM) to determine. For example, CNAFINST 7.f.(3) establishes minimum aviation experience requirements for Instructors, Unit Level Managers, and Facilitators within their T/M/S. This allows for qualification consistency across all squadrons under the CMM purview.

Through assist visits, IMMs are often discovering more thorough and complete Program Manager Turnover binders—essential for the continued success of any community's CRM program. If there were an unexpected Program Manager opening, any qualified individual should be able to continue the program with little to no noticeable impact to CRM training. This would be especially true if there were a Community Assistant Program Manager or Assistant/Alternate Unit Level Manager. This type of approach and attention-to-detail provides for a seamless CRM training program.

Throughout aviation training and careers, CRM experience levels change. A recently identified training best practice specifically addresses the various experience levels encountered. The training is tailored to specific audiences (students v. instructors) and not designed as one-size-fits-all initial and refresher training. It includes specific CRM topics based on what phase of training the student was currently in. This allows for a more diverse curriculum within the student syllabus and addresses the multitude of CRM challenges facing the students. (over)

CRM — BEST PRACTICES (CONT)

(from previous page) We are constantly conducting research and trying to make worthwhile CRM changes and contributions to the fleet. In part, your questions, suggestions, input, and feedback helps us to direct our efforts where you want them. We will always welcome any and all input the fleet has to offer and contribute to "OUR" CRM program. I say "OUR" because we are all working together to make CRM better.

—LT Chad "Old Bones" Paulus, USN—CRM Instructor; chad.paulus@navy.mil

SEMPER PARATUS — BUILDING A LEGACY

The Coast Guard's annual, week-long Flight Safety Officer (FSO) Standardization Course was in-session just a month ago. Each year this course brings newly selected FSOs together with sitting FSOs, the CG-1131 staff, the heads of Coast Guard aviation forces and aeronautical engineering, and other "players" in Coast Guard aviation safety. It's a highly worthwhile event involving education, relationship building, and the sharing of best practices. It's a best practice in and of itself; I'm not sure other military services do anything quite like this. For those of us who've attended many of these yearly courses, it's exciting to see how well the FSO board-selection process works. The new crowd is sharp and motivated, and coupled with the existing crowd make a group of aviation professionals who, in short, "get it." They want to make Coast Guard aviation better both locally and service-wide. In a service as small as ours, a single FSO can have a very broad impact. The time in the job is limited (2-3 years) so the window to positively affect our people, equipment and programs is limited. We can merely fulfill the "duties" of our billets or contribute to the building of a legacy.

Before we talk about details, let's first look at what the Safety and Environmental Health Manual [SEHM] (COMDTINST 5100) has to say about the Coast Guard Aviation Safety Program. "The goal of the aviation safety program is to improve and support the operational readiness of aviation units by **CONSERVING HUMAN RESOURCES, EQUIPMENT AND OTHER RESOURCES** through a reduction in aviation mishaps" (SEH, p. 2-1). Conservation suggests preserving and protecting resources for the future. The future includes both the SAR case that one of our crews launches on a minute from now and the people, equipment, and programs that remain in place after an FSO's tour, a CO's tour, and our collective retirements from service. All hands have a role in conserving our people and assets for the future. We are talking about building legacies—all the good things that will outlive our billets, tours, and military careers. We need a focus like this because the fruits of our labors as safety professionals are seldom immediately apparent. While I'm not just writing to the FSOs, let's consider them specifically for a moment. A safety officer can write whatever he or she wants on an annual evaluation report (OER), but the fact is some of the data that proves an FSO's efforts to be successful might not even be available and obvious until well after the FSO leaves the job and/or the air station. Looking at this a different way, your air station may enjoy years of phenomenally low mishap rates and a sound safety culture that is due in large part to people you've never even met! My point is, we can feel free to celebrate the near-term, visible successes, but we have to focus most on the long-term where things words like "culture" and "legacy" live. Like I mentioned earlier, improving and conserving our people, equipment, and programs involves all-hands. Let's look at some specifics:

PEOPLE: They are both our greatest assets and the largest contributors to our mishaps. When I think of the development of our aviation professionals, I think of the foundations that are laid at ATC Mobile (officers) and ATTC (enlisted) and reinforced during recurrent training. I think of how important it is to sometimes write sound recommendations for these commands based on the mishaps we experience, so their instructors can continue to improve how and what they teach our people. I also think of our local air stations. I think of aircraft commanders who recognize their roles as teachers and mentors, chiefs who demand high standards and by-the-book maintenance, and a command cadre that gets in the cockpit regularly and leads by example regardless of all the non-aviation demands of their positions. Over all, I think of our need to reinforce our Coast Guard core values as they apply to our day-to-day jobs in aviation so we never lose sight of true north when guidance is unclear. (over)

SEMPER PARATUS — BUILDING A LEGACY (CONT)

EQUIPMENT: Depot maintenance, acquisitions, and local maintenance all have significant roles in maintaining a legacy of excellence and have as much to learn from the analysis of mishaps as any other aviation entity. Our aircrews have a role here as well. Knowing all operating limits and reporting exceedences, even the seemingly inconsequential ones, is the only way to respect the aircraft and future crews who attempt to fly them. We all understand the long-term, cumulative nature of creep on engine turbines or stress on airframes and don't want to contribute to failures years down the road. Our aircraft are expensive and our people are priceless and both need to last us a while.

PROGRAMS: The best time to plant a tree was yesterday, as was the best time to start working on a plan to improve the safety culture at your unit. The growth and fruits of both take time. Yesterday is also the best time to know about a hazard, or a troubled pilot or aircrewman. Modes of non-punitive reporting must be so well-known, obvious, and easy-to-access that no one will have an excuse not to report hazards or mishaps. Human Factors Councils are taking root at more and more of our air stations. They meet the urgent need for decision-makers to better understand the people who fix and operate our aircraft. Whether focusing on a new program like this, or existing ones like CRM or ORM, ensure the program lives in an appropriate command-endorsed document. That can be the local organizational manual, an Airsta SOP, or a Commandant instruction depending on your authority and the reach of your program. Where programs cannot reside are in "all-pilots" emails, read-and-initial binders (which will one day be purged), kneeboard cards, or simply in our minds. Nothing stored in these places has any chance of being permanent part of your safety department's and command's legacy.

Careers are short and tours are shorter and we all want to positively affect our service's legacy. From wherever we serve, we must figure out how to we can make our people, equipment, and programs better for those who follow us.

—LT Jim "Pugsly" Bates, USCG—Coast Guard Instructor; james.a.bates3@navy.mil

HOUSTON, TX (July 25, 2013) A USCG Airsta Houston crew practices hoisting techniques for a dewatering pump aboard an MH-65D Dolphin. (USCG photo by Petty Officer 1st Class Kendrick/Released)

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Also, if you would like to be removed from future emails, please email LT Bates (info above) with name and approximate dates of your class attendance.

CORAL SEA (July 25, 2013) An MH-60S from HSC-12 operates with the Royal Australian Navy frigate HMAS Sydney in support of exercise Talisman Saber 2013. (USN photo by Mass Communication Specialist 3rd Class Ricardo R. Guzman/Released)

SPECIAL POINTS OF INTEREST

"DOC" BANK MEMORIAL DISTINCTION: STUDENT RECIPIENTS

The *Milt "Doc" Bank Memorial Distinction*, recognizes the student or students in each graduating ASO class who best exemplify the characteristics of the late, great Milt "Doc" Bank, PhD: motivation, intelligence, imagination and aptitude as a potential future ASO Instructor. The recipient of this award for ASO Class 13-4 was LCDR Pinckney from VFA-32. The recipient for ASO Class 13-5 was LCDR Perkins from HS-14. Congratulations to all!

HAILS AND BAILS

The SAS staff would like to congratulate two of its most beloved faculty as they retire from their respective services. We wish "fair winds and following seas" to CDR Dave "Ivan" Ivezic (Associate Director & Programs Instructor), USN and Maj Matt "Throb" Robinson (Investigations Instructor), USMC. Captain Tom "Francis" Key (CRM), USMC departed from the CRM staff and has been replaced by Captain Hall who joins us from MCAS Cherry Point, NC. LtCol Stephen "Bender" Dickerson (Rotary-wing Aero Instructor), USMC has assumed the role of Associate Director. Joining us as our new investigations instructor is Maj Rob "Tattoo" Orr, USMC.

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