The Safety Sigma

Mission Readiness through Operational Safety

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

FROM THE DIRECTOR

In the book The ETTO Principle: Efficiency-Thoroughness Trade-Off, Erik Hollnagel discusses why rational people sometimes do things that are considered irrational. For leaders in Naval Aviation, I think we can use ETTO as a tool to understand why "people won't just do what they are told." This is relevant in light of the fact that there are a high number of aviation mishaps that are due to personnel doing or performing non-standard practices, or cutting corners.

When corners are cut, decisions were made to cut those corners. Those decisions could have resulted from intentional violations, just trying to get the job done, pressure from the chain of command, a creeping organizational deviation from standards, lack of training, or a number of other factors. For whatever reason, that aviator or maintainer made a decision that resulted in a non-standard act. So how do we make decisions? In the ETTO principle, Hollnagel states that "rational" decisions are made with relatively no time pressures, when brainstorming, gathering data, and analysis can be accomplished before the decision is made (5-step Deliberate ORM process!). That is not reality though, because time is always a factor. As the time available to make decisions decreases, our cognitive decision-making processes change and we need to be more cognitively efficient (TCRM). What I mean by this, to put it in an aviators perspective, is the "OODA Loop" attributed to Colonel John Byrd: Observe, Orient, Decide, Act. The Naval Safety Center also provides the ABCD tool to help us make those time-critical decisions.

Let's look at how we can apply the ETTO principle to risk management decision tools. Due to time restrictions, the thoroughness of the deliberate ORM is sacrificed for the efficiency of the TCRM, ABCD, and OODA models. If we break down the OODA model further you could say the part of the model that demonstrates thoroughness is the first half, Observe and Orient. As the loop gets tighter and tighter the time for deciding and acting is either fixed or unknown, thus the time utilized for Observing and Orienting is reduced. It is reduced in order to have time to complete the action, because if the action is not complete in time, the "process" will be out of control. Putting this in context of the ETTO principle, thoroughness is reduced for the benefit of efficiency. Restrictions on time often cause a lack of thoroughness in decision making, based on humans not wanting to be a "deer in head lights." Applying this to every-day life, there is always a trade-off between efficiency and thoroughness (E and T), or one could say a BALANCE between E and T. If the process is not balanced then the result could be a mistake (not enough thoroughness or OO) or failure to complete the task (not enough efficiency or DA). Sailors and Marines apply this principle every day to complete tasks and make critical decisions in order to complete the mission. Sailors and Marines will often define their own BALANCE between E and T based on their perceptions of the Commanders Intent and the direction of their supervisors.

That is one part of the ETTO principle. Another way to look at the ETTO principle is with parallels to the wild. First, let's look at birds. A bird on the ground feeding is an example of the ETTO principle in action; the bird has to find food and eat (efficiency) but also has to look out for predators by popping up and keeping his head on a swivel (thoroughness). If the bird keeps his head down too long, a hawk (blue threat) could sweep down and ruin the bird's day. If the bird does not eat enough (efficiency), he may eventually starve. So the bird is continually conducting ETTO based on the threat or perceived threat. Before a long migration, birds often have to stock up on energy and are often "head-down" more than normal (good time to be a hawk). The bird, however, makes a risk decision or changes the ETTO balance based on current mission requirements. Another example is to compare a gazelle in the wild to a cow in a pasture. A gazelle in the wild is again like the bird feeding on the ground, head-down to eat, then head-up on a swivel (**OVER**)

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In this issue:

Special points of interest:

* Awards, Promotions, Hails & Bails
* SAS on Facebook

looking for the threat. A cow in the pasture has no threat, or perceives no threat, so the cow keeps his head down until one of two things happens—he eats all the grass, or he gets full. There is no head on a swivel. Again, the cow is making decisions based on ETTO and based on the fact that the cow does not perceive a threat. Unfortunately for the cow, he didn't see the threat until he was eaten by the guy giving him food and water. Stupid cow. He is eating grass and doesn't even know that's exactly what makes him a predator's potential dinner. Moral to the story… there always is a threat, whether you perceive it or not.

So what does the ETTO principle mean to Naval Aviation leaders and how can we apply it? First, I would ask, who is your wingman? As leaders we often go heads-down, unable to see the threat. Though unlike birds, we can have a wingman. It's someone who backs us up and has their head on a swivel looking for the threat as we go heads down (i.e. similar to a phrase we are all familiar with…"Roger, you have the lead on the right, Brewton is 5 miles off the nose, I have the comms, switch button 12.") We often get caught up and become heads-down in "efficiency" by chasing numbers, flights hours, mission completion, RFT rates, cost-wise readiness, while forgetting about thoroughness. Who in your squadron is focused on thoroughness? If everybody is heads-down, there are plenty of blue threats (hawks) out there that can ruin your day. Your Safety Officer, ASO, NATOPS, QAO and QAS have to be your primary wingmen. Without them keeping the thoroughness in balance with your efficiency, all of your Sailors and Marines will be trading-off thoroughness for efficiency. They will not see the threat; they will not worry about thoroughness. They are trying to get the job done. So, in hi-tempo, dynamic environments, they will become even more "efficient" by cutting corners, and that should worry Naval Aviation leadership, because the blue threat will then enjoy a great day (a bad day for us).

Are you, as a leader, rewarding the end result and not paying attention to the processes that provided that result? In Charting a Course to Organizational Excellence, final outputs are based on the intermediate outputs of the Command's Attitudes and Values. Does your command value thoroughness? As always, don't forget to tell your wingmen…"I gotta have more cowbell (thoroughness)!!!"

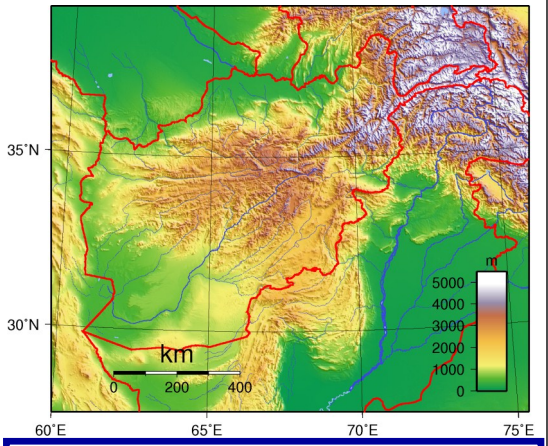
—CAPT Jody "Caveman" Bridges, USN—Director; *jody.g.bridges@navy.mil*

MAN — THINKING OUTSIDE OF THE LOX

Hypoxia is a serious threat to naval aviation because it impairs both cognitive and physical performance. Trying to predict at what altitude disturbances are likely to occur is difficult and the indolent manner in which symptoms may arise can result in them going unnoticed until it is too late to respond.

The TACAIR community typically has a good understanding of the science behind hypoxia, the associated risks, mitigating factors, administrative requirements and research and policy programs that have been put in place to lessen the number of these events. Nearly all aviators in this community know of hypoxic events and far too many have experienced their own.

What about the communities that either do not have oxygen systems in their aircraft or ones that use these systems so infrequently that their members may not view hypoxia as a significant threat? During the past year naval aviators in P-3s, C-9s, and C-12s experienced symptoms of hypoxia that required emergency action. What about rotary wing? The perceived risk of hypoxia in this community has long been negligible as flights above 10,000 ft. were nearly unheard of. That all changed with Afghanistan where mountains above 10,000 ft. run throughout most of the country. Knowing your limits as per NATOPS, particularly that certain flights involving operational necessity may be conducted up to 12,000 ft. for up to one hour, may allow flight along various routes that would otherwise be overlooked if sticking to the more commonly specified 10,000 ft. limit.



Topographical map of Afghanistan (above) courtesy of Wikimedia Commons, http://commons.wikimedia.org/wiki/File:Afghanistan_Topography.png

It is a misconception, though a commonly held belief that symptoms of hypoxia are exceedingly unlikely to occur below 10,000 ft. The 10,000 ft. level was derived at from studies involving healthy, relaxed individuals. The actual altitude at which hypoxia can present depends on more than just the amount of oxygen in the environment. Variables including air quality, nutrition, hydration, fatigue, mental and physical stress and cigarette use can contribute to symptoms of hypoxia presenting at altitudes below 10,000 ft. A published survey done in 2005 on Australian Army helicopter crews showed 60.9% of pilots and 86.6% of aft aircrew admitted to experiencing one or more symptoms of hypoxia while flying at less than 10,000 ft. (the mean altitude where symptoms occurred was 8462 ft.). Symptoms experienced by these aviators were likely related to one or more of these variables while the study authors attributed the higher percentages seen in the aft aircrew members as being related to their higher level of physical exertion during operations (1). Given these percentages, it is conceivable that hypoxia may be underreported in the USN rotary wing community and additional study remains forthcoming.

Hypoxia is not just something that needs to be considered by the TACAIR community. It can happen to any aviator in any community depending on certain variables. Look out for it.

Policy update: Members of the T-45 community should review the Naval Safety Center Website (Aeromedical Page) for new requirements and guidance on Physiological Episodes.

References: (1) Smith A. *Hypoxia symptoms reported during helicopter operations below 10,000 ft.: a retrospective survey*. Aviat Space Environ Med 2005; 76:794–8.

—CAPT Jack "Bags" Wyland, USN—Aeromedical Instructor; john.j.wyland@navy.mil

MEDIUM — MORE ON ETTO: IS YOUR SAFETY PROGRAM DOING WHAT IT'S SUPPOSED TO BE DOING?

Continuing the Director's thread on ETTO, let's talk about the relationship of this concept with professionalism within your locals safety program. Professionalism dictates that we dot every i and cross every t. We need to be thorough. We need to ensure that NATOPS jackets are properly annotated with qualifications and certifications. Lecture pages must be updated. We need to ensure that the squadron is up-to-date with respect to NATOPS unit evaluations, surveys, and safety reporting required to higher authority. Are Risk Assignment Worksheets being completed by aircrew, operations, or whomever does it in your squadron? Have you documented that you've walked through spaces to inventory potential hazards, and have you documented in the record that your ASC and ESC bodies have convened in accordance with instruction? Have you put a check next to every name you reviewed on the last HFC? A mark of professionalism is an ASO, Safety Department, and squadron that is on top of these things.

That was the thoroughness part – and it's important. The nice thing is, we know that as you documented all these things (consult the table in the 'Instructions Orders and Tools' chapter of your ASO Programs Textbooks) you are on the ball! You've made all deadlines, reports are complete, and all taskers are ticked off. With that good report card in hand, we now challenge you to look deep inside the heart and soul of your squadron. Look beyond the checks in the blocks on the reports and ask the question, "Is my safety program doing what its supposed to be doing?"

People walk the line at FOD walk-downs, but are they engaged in looking for loose concrete and other hazards? Did your quarterly safety stand-down stand out and create a memorable learning experience that heightened safety awareness in your squadron? Did the ASC and ESC talk about relevant issues and offer solutions to those issues? Are flight crews thoughtfully analyzing potential hazards along the route of flight, or did they rifle through the RAWS and check the boxes as quickly as they could? Did someone have a near miss and share the experience with the squadron to tune others in to the situation? As an ASO, be vigilant to see that the squadron is engaged, that personnel are not on "autopilot." This is the efficiency part. Are the programs working, or are they getting in the way. Are folks too heads-down in the metrics and reporting, or are they truly heads out of the cockpit looking for birds and maintaining a good scan?

We believe that when folks are engaged, and truly doing the right thing, the reports and i-dotting and t-crossing will take care of themselves via the mechanism known as professionalism. Your enthusiastic leadership is necessary here. You have the vision of what a functional safety management system (SMS) should be doing in your squadron (especially if you are a recent ASO graduate). Look to see that it is truly functioning. Look to see that the various programs that make up your SMS are doing what they're supposed to be doing. Look for participation and engagement with the various safety programs. Finally, look for the balance in your squadron. As professionals we need to be thorough. As leaders we need to achieve efficiencies (operational effectiveness), and inspire the best efforts of all.

—Bob "Opus" Hahn—Programs Instructor; robert.g.hahn@navy.mil

LEFT: PACIFIC OCEAN (April 3, 2013) An F/A-18 Super Hornet assigned to Carrier Air Wing (CVW) 11 lands aboard the aircraft carrier USS Nimitz (CVN 68). (USN photo by Mass Communication Specialist 2nd Class Jacquelyn D. Childs/Released)

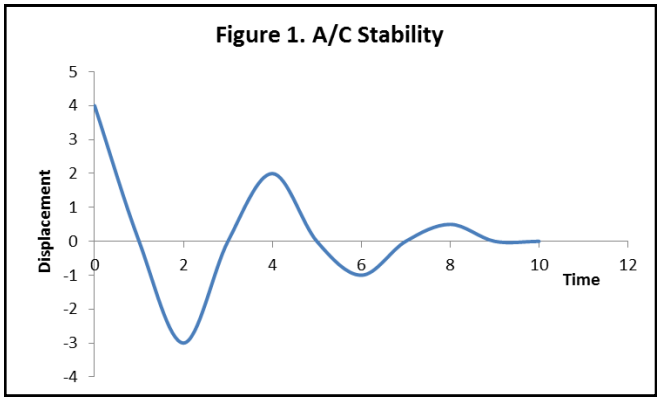
BELOW: MCAS MIRAMAR (Feb 28, 2013) - Landing support specialists working with HMH-466, "Wolfpack," connect a 6,200-pound load to the underside of a CH-53E Super Stallion. (USMC photo by Cpl Melissa Wenger)

MACHINE — *PILOT-INDUCED OSCILLATION*

PIO is a well known, routinely experienced aircraft control issue. Since the beginning of aviation PIO has been an important contributing factor to aircraft design and pilot training/awareness. It combines the design and natural aerodynamic tendencies of an aircraft with the pilot's reaction and ability to control that aircraft. Best case scenario, PIO can cause an uncomfortable situation and possible frustration. Worst case scenario, it can lead to loss of control and potential damage/harm to aircraft and aircrew.

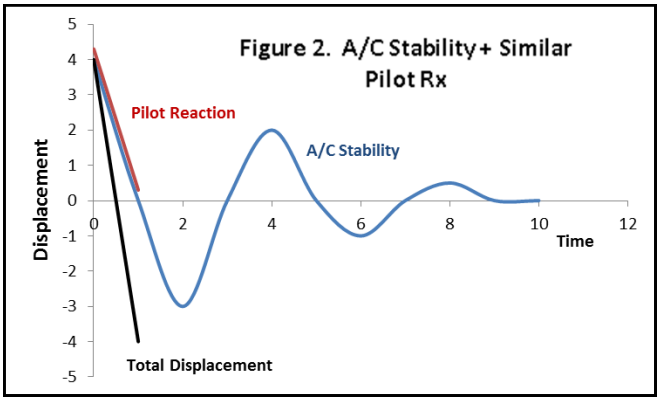
One common cause of PIO deals with the interaction of aircraft stability and pilot reaction. To best understand this we start with the basic definition of aircraft stability: a (positively) stable aircraft in trimmed flight, when displaced (due to a gust, etc.) will return to its initial, trimmed position. Stability has both a static (initial) tendency and a dynamic (over time) tendency.

When a trimmed aircraft experiences some type of displacement, whether it be due to a wind gust, control displacement, etc., an aircraft that is designed to be positively stable will react by returning to the trimmed condition. How rapid and extensive this response is depends on the design of that aircraft. Figure 1 shows a typical damped, stable aircraft response. Initially (at time = 0) the aircraft is displaced by some external force (gust, etc.). After some period of time the stability of the aircraft returns it to the initial trimmed condition in a damped oscillatory response.



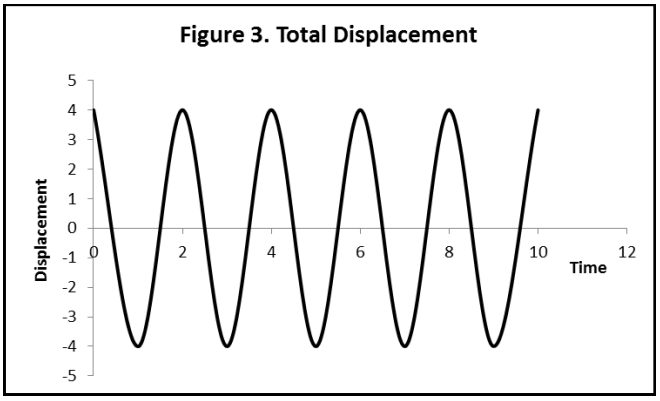
The trouble comes when the reaction time of the aircraft stability is close to the human reaction time to recognize the displacement, react, and apply corrective control inputs. If these two reactions occur simultaneously the result can be a large overshoot of the desired aircraft response, which when repeated continuously causes PIO.

The initial response is to return to the trimmed condition (which is zero on the vertical axis), with some overshoot (oscillation), which eventually is damped out over time. If, however, following the initial displacement (at time = 0) the pilot inputs a similar response the result is illustrated in Figure 2.



In this case the response of the aircraft combined with the response of the pilot actually double the force or displacement applied to restore that aircraft to its trimmed condition. With this new total displacement the stability of the aircraft now responds just as it did initially (essentially removing the damped condition) and, if the pilot responds again accordingly, the same over-deflection will occur. This undamped oscillation is shown in Figure 3 and is the resulting PIO.

Oftentimes the combination of the pilot response and aircraft stability response can not only cause an undamped condition but will become negatively damped, where the displacement rapidly increases over time. Also, most often the frequency of oscillation is very high – essentially meaning the displacement can increase very rapidly.



So what is the best way to combat PIO? In this case the best thing to do is for the pilot to just let go of the controls and let the aircraft's natural stability return the aircraft to the trimmed condition. This is a simple answer, but somewhat difficult to do. As a pilot it is difficult to stop attempting to control the aircraft when it feels out of control. However, eliminating the additional displacement (due to pilot reaction) allows the aircraft to respond as it should.

When are we most susceptible to this type of PIO? The most common cause of this type of situation is an inexperienced pilot – specific to that airframe. Each aircraft is going to handle differently and has a different inherent automatic response dependent on the stability and control design of that aircraft. The more familiar a pilot is with the aircraft, typically the less likely a PIO event like this will occur.

—LT Mark "Milk" Demann—Fixed-wing Aerodynamics Instructor; mark.demann@navy.mil

MISHAPS — *THE ASO AND SAFETY AWARENESS*

One of the ASO's responsibilities, IAW 3750.6R, is to "Maintain appropriate aviation safety records and mishap statistics." How does an ASO maintain this information and use it to raise awareness in his or her squadron? There are several places to go to look for and discover the trends that are occurring in your communities and fleet-wide. This information can then be used to help raise awareness in your squadron and community and prevent mishaps from occurring (our ultimate goal).

The first place to go may be the most obvious for current ASOs, but also may be the most time-consuming. ASOs need to read the HAZREPs and Safety Investigation Reports (SIRs) that are coming to them in WESS! The information is right there in your inbox and if you are reading the reports you will start to see trends forming. Look critically at these reports and ask yourself if the same thing could happen in your squadron. What do the recommendations say and would those recommendations help mitigate risk in your squadron as well? If so, do something about it!

Another place to go for information is the NSC and the T/M/S representative for your community. These community representatives have recently begun distributing monthly emails to the fleet with a wrap up of what is going on in the community. Give them a call (the number is in Approach magazine) and get on the distribution lists. This info can be valuable to pass along to your squadron and help identify issues within the community.

A great source of information regarding aircraft, aviation life-support systems (ALSS) development, and hazards is your aircraft Program Manager AIR (PMA). Contact your NAVAIR PMA representative and find out what safety initiatives they are working on for your aircraft. Ask if what your squadron understands as hazards are the same as what your PMA sees as hazards. Knowing the initiatives and thoughts of your PMA representatives will aide in your communication with your CO and squadron about the hazards being seen and how they are being addressed.

A few other sources of information on trends are right in your squadron. Stay in contact with your QAO (a member of your squadron safety team) and QA department to look for trends in both maintenance procedures and material parts failures. Use the ASAP system to help track repeat issues that occur at your squadron. The bottom line is the information is out there, but ASOs need to look for it. This is a necessary requirement for each ASO to prevent mishaps in their squadrons by raising safety awareness.

—CDR Jeremy "Ricky Bobby" Niles—Reporting Instructor; jeremy.niles@navy.mil

CRM — *NOT JUST FOR AVIATORS ANYMORE*

As aviators, we sometimes think of CRM (Crew Resource Management) only as one of the annual obstacles that we have to hurdle. CRM goes hand-in-hand with our NATOPS (Naval Air Training and Operating Procedures Standardization) check, instrument check, ground schools, and yearly flight physical. Since its inception, CRM has been ingrained in every aviator from the very beginning of API training. Each year the "Seven Skills" get hammered home with enough force that CRM has become part of the very culture of aviation. The success of CRM's inclusion in aviation and its overall improvement of mission effectiveness begs the question, "Since CRM is so good for aviation why isn't everyone else doing it?"

While it's difficult to trace CRM's origins to one specific incident, the discovery of the influence of human error on several aviation mishaps in the 1970's, including a major air disaster that killed 583 people on the Atlantic island of Tenerife, led NASA to form a working group that pioneered research into human factors and performance. Following NASA's lead, the airlines developed CRM as a process that could combat that human error. Since human error is prevalent well outside of aviation, CRM principles apply to a great many professional and personal endeavors.

Many other industries have recently begun to see the value in CRM and have started to incorporate it into their planning and operations. The U.S. Navy's Surface and Sub-Surface Fleets, as well as some of our NATO partners, are embracing BRM (Bridge Resource Management) as a primary operating system, proving that the 7 skills of CRM (DAMCLAS) are truly applicable well outside aviation. As the CRM-I program and the School of Aviation Safety realign with the Naval Safety Center, we are exploring the applicability of new curricula to other civilian and military communities.

The Veterans Health Administration has taken the CRM principles and applied them to Medical Team Training (MTT). This has allowed them to develop intensive care unit (ICU) teams, patient-centered multidisciplinary rounds, surgical team preoperative briefings and debriefings, an entire operating room (OR) unit's adoption of "Rules of Conduct" for expected staff behavior, and an ICU team's use of the model for daily administrative briefings. This program was successfully implemented into 43 VA medical centers between 2003-2007.

The firefighting community has created textbooks to assist in the training of their firefighting officers. They have taken the 7 skills and applied it to their community in 6 steps:

Using inquiry to evaluate procedure
Using advocacy to respectfully question authority
Using conflict resolution techniques to learn from errors
Using strong leadership to make group decisions
Observing and critiquing team decisions to meet mission goals
Fostering an open and accepting team environment, where members discuss options for the team.

The expanding acceptance and realization of CRM has allowed non-traditional fields to embrace the 7 skills. With these new players in the CRM world, the CRM School will be able to stay ahead of an ever-changing world and provide the best product possible not only to our aviation customers, but to an expanding list of clients. *—LCDR Larry "Screwtops" Cooper—CRM Instructor; larry.cooper1@navy.mil*

SEMPER PARATUS — *OPERATIONAL GAIN MANAGEMENT*

The first Sector Commander I met in the Coast Guard told me that we should "perform our searches as if we're looking for a family member." I thought that was an excellent notion to keep in the back of my mind, especially when faced with the less certain missions (the uncorrelated MAYDAYs, rogue flare sightings, etc.) or any other where motivation might not be as high as when you know for sure you are going to hoist someone. The problem is, we are not always looking for a family member, and we know it. If we were, the gain (or benefit) would always be high for every mission, and it isn't. Exaggerating the gain can naturally lead to the assumption of too much risk. It's imperative for SAR controllers and Air Stations to strive for a clear picture of the gain on every mission, especially since reporting sources can be so uncertain, if the ORM process is going to work properly.

COMDTINST 3500.3 (Operational Risk Management) has a lot to say about "risk"; the word is used 227 times in the publication. "Gain" and "benefit" are only mentioned a combined 19 times in the 13-page document. The fact that this is an old document (dated 1999) is no excuse. The Navy's analogous document (dated 2010) deals with risk and gain in approximately the same proportions. The ORM principles are similar, as are the process steps. Risk is discussed subjectively and objectively. Though few have probably done it, you can even use a little math to assess risk: RISK = SEVERITY * PROBABILITY * EXPOSURE. Suffice it to say, we have plenty of tools to aid us with the risk side of the decision. The Hazard Inventory Tool (HIT) and the Hazard Assessment Tool (HAT), created at CG-113 and being tested at operational units right now, have the potential to further build our situational awareness regarding hazards. But how do we get better at assessing the gain?

The new 3710 provides guidance (**NEXT PAGE**) regarding "warranted risk" for specific Coast Guard missions. Captain Harman, USPHS, ATC Mobile, has briefed many units on ORM in aeromedical transport or MEDEVAC, a mission our service flies almost 1200 times per year. He has taught Coast Guard flight surgeons of ways to objectively validate the gain of a MEDEVAC, understanding that flight crews and controllers have the need to specifically understand the gain, as not all MEDEVACs are as high of a gain as some may think. There may be no way to avoid the flights where only "potential gain" exists, but the Coast Guard Office of Search and Rescue is campaigning to reduce the 200+ hoaxes and 1000s of unsubstantiated flare sightings we fly on each year through education. Education on the costs and penalties of hoaxes and tips for assessing and reporting flare sightings should help to somewhat lessen the volume of these incidents. It will never be zero, though, and we will continue to launch on cases that are either hoaxes or for some other reason, not urgent SAR. As simple as it sounds, aircrews need to outwardly discuss just how low the gain is on the typical training, ferry and FCF flight, etc. Historically few of our service's Class A mishap flights were likely briefed as urgent, life or death missions from the beginning, but some involved a significant amount of accepted risk.

I think that our challenge in assessing and managing gain is a lot more difficult than what the Navy and Marine Corps might encounter. Speaking very generally, a crew from one of the naval services likely doesn't have to fly *as if* they're searching for, or supporting, a "family member." On the contrary, they very often *know* they are flying in support of a family member: brother Marines in an infantry unit, a sister ship in the Amphibious Ready Group, an allied unit or a pilot who ejected. Perhaps that's why their ORM instruction can rightfully devote much more text to risk assessment than gain assessment. When you're generally supporting the same folks you went to OCS, boot camp, The Basic School, ROTC, or flight school with, you probably aren't dealing with as many hoaxes or false alarms. Not so with your typical Coast Guard call for help. The calls our SAR controllers receive via phone or Channel 16 can come from virtually anywhere. Some are anonymous, some are not. Some correlate with other credible sources and some do not. All are treated seriously and some amount of gain must be assumed.

We may never create a whizz-bang tool for assessing the gain of a mission so that it can appropriately be balanced against our assessment of risk. What we always need to have, though, are the principles and leadership characteristics that have earned us much success in the past: crews empowered to take disciplined initiative and leaders who press for a more focused picture of the gain in the critical minutes after the alarm sounds. I once heard a Coast Guard operations officer sternly tell a SAR controller, "You don't send a dump truck to work in a sand box," when one of our assets was requested for an unsuitable mission. It takes knowledge, experience, and guts to make that call. Not launching isn't always the answer, but we need to see both risk AND gain on the same page to know what the correct answer is. There will never be a suitable substitute for sound judgment like this.

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

A Royal Canadian Air Force crew (left) watches as a U.S. Coast Guard rescue swimmer from Air Station Savannah, Ga., is lowered during hoist training, Friday, Feb. 22, 2013. (U.S. Coast Guard photo by Petty Officer 1st Class Lauren Jorgensen)

D.2.a. Warranted Risk for National Defense	Risk of damage to or sacrifice of the aircraft and crew is acceptable if the gain is the defense of the United States, its citizens, and/or installations. Accepting this risk for national defense applies to flight activities performed during certain operational Defense Readiness missions and certain operational PWCS missions.
D.2.b. Warranted Risk for Search and Rescue	Crews carrying out SAR missions or any other evolving mission in which circumstances dictate a rescue effort of persons or property, shall apply the following guidance in making risk vs. gain decisions.
D.2.b.(1). Saving Human Life	If a mission is likely to save human life, it warrants a maximum effort. When no suitable alternatives exist and the mission has a reasonable chance of success, the risk of damage to or abuse of the aircraft is acceptable, even though such damage or abuse may render the aircraft unrecoverable. Probable loss of the aircrew is not an acceptable risk.
D.2.b.(2). Preventing or Relieving Pain or Suffering	If a mission is likely to prevent or relieve intense pain or suffering, or if it may result in the possibility of saving human life, it warrants the risk of damage to or abuse of the aircraft if recovering the aircraft can be reasonably expected.
D.2.b.(3). Saving Property	If a mission is likely to save property of the United States or its citizens, it warrants the risk of damage to the aircraft if the value of the property to be saved is unquestionably greater than the cost of aircraft damage and the aircraft is fully expected to be recoverable.
D.2.c. Warranted Risk for Missions Involving Law Enforcement and Evidence Recovery	The possibility of recovering evidence and interdicting or apprehending alleged violators of federal law does not warrant probable damage to or abuse of the aircraft. This guidance applies to flight activities performed during missions such as: Drug and Migrant Interdiction, routine PWCS, routine Defense Readiness, Marine Environmental Protection, Living Marine Resources, and other Law Enforcement missions.
D.2.d. Warranted Risk for Logistics and Other Missions	Logistics or other missions having little or no urgency shall not be prosecuted if they expose the aircraft to hazards greater than those encountered during the course of routine training missions. This guidance applies to flight activities performed during missions such as: Marine Safety, Ice Operations, ATON, and Waterways Management missions.

Excerpts from Coast Guard Missions Warranted Risk Guidance, COMDTINST 3710.1G (CG Air Operations Manual), p. 1-7/8.

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Day 1 of a recent ASO class (above) featured a much roomier ASC classroom as the wall between it and the conference room was removed. The "Relevant", "Current", and "Credible" signs on the wall are constant reminders of our goal to provide a dynamic and living curriculum.

The Safety Sigma is published quarterly by the Naval School of Aviation Safety located at NAS Pensacola, Florida. If you have a question for the staff, or are interested in attending Aviation Safety Officer, Aviation Safety Command, or Crew Resource Management Instructor training, please visit our website at https://www.netc.navy.mil/nascweb/sas/index.htm or call (850) 452-3181. **If you would like to submit** a short article for publication, please contact LT Jim "Pugsly" Bates at james.a.bates3@navy.mil

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.

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 13-2 was LCDR Edwin Dupont from VFC-111. The recipient for ASO Class 13-3 was LCDR Scott Johnson from VFA-143. Congratulations to all!

PROMOTIONS

The SAS staff would like to congratulate its very own Captain Jack "Bags" Wyland, USN, aeromedical instructor, and Commander Jeremy "Ricky Bobby" Niles, USN, reporting instructor, for earning promotions to their present ranks.

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