THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

BASH
ORM
CRM
HYPOXIA
STRESS COMPARTMENTALIZATION
BLUE THREATS
BAD WEATHER
MIDAIR & NEAR MID-AIR
AIRFIELD ENVIRONMENT
COMPLACENCY
SLEEP DEPRIVATION

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Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous; the time to learn to do a job right is before combat starts.

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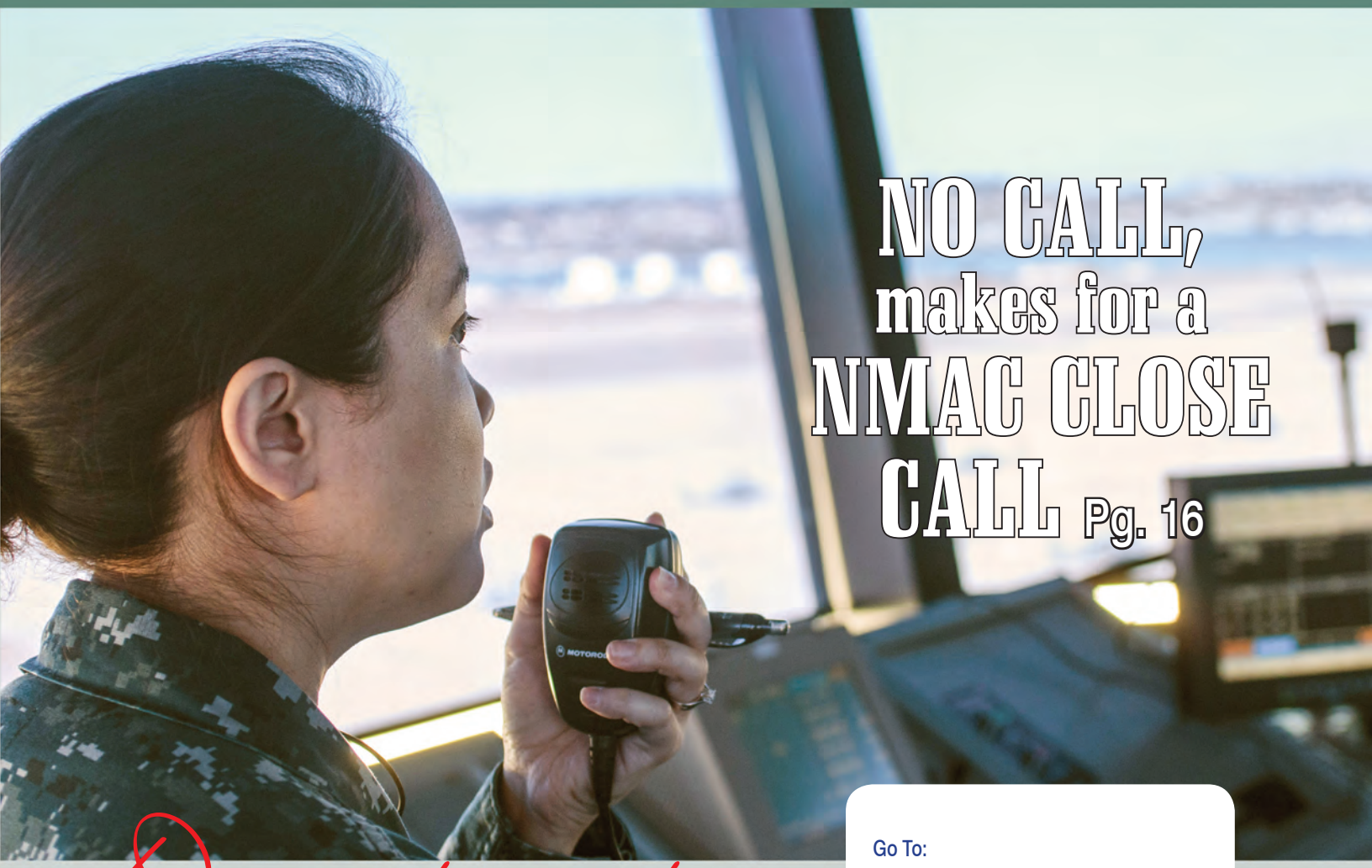

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Editorial

In 1955, the first issue of Approach was created to give a voice to the naval aviation community with a focus on safety and mishap prevention. For nearly 60 years, the publication has had a rich history of lessons learned and "there I was" tales from pilots who contributed by sharing their experiences.

In my short time at the Naval Safety Center, I've come to understand that this magazine's true value is in its contributors, their stories, and articles submitted with the intention that other people will learn from their mistakes and not repeat them.

I was nervous about becoming the first female editor of Approach. I'm not an aviator, but I am a former military journalist. Ensuring the magazine remains a success and of interest to the aviation community definitely lays the pressure on thick. However, it's a challenge I've happily taken on.

Speaking of challenges and pressure, this issue takes a look at stress. More specifically, this issue focuses on ways to handle stress and the negative effects of not compartmentalizing it. With the month of May being Mental Health Awareness Month, many organizations will look at ways to help people beat the challenges of life and the stress that comes with it.

Authors in this issue describe how they overcame stressful situations. From an instructor helping his student pilot maneuver his way out of his first deer strike, to a pilot who faces a near-miss with another aircraft, the stress is real, yet it's handled in ways that enabled them to share their stores instead of being the story.

The one thing our contributors have in common is they were able to turn a bad situation into a good one by using stress to their advantage. One of the original premises of Mental Health Awareness Month was to focus on ways people could deal with and compartmentalize stress so that it works for them. The goal shouldn't be to never face stress, but to know how to deal with it when tough times arise.

After reading this edition, I hope you'll consider the stressors in your life and think of positive ways you can overcome them before they overwhelm you.

As with every issue, we welcome your stories and submissions for the next issue via SAFE-Approach@navy.mil.

Nika Glover

Editor, Approach and Mech Magazine
Naval Safety Center

Command Excellence Through Safety

The Chief of Naval Operations and the Commander Naval Safety Center are proud to announce the winners of the CNO Aviation-Related Safety Awards for CY 2014.

CNO Aviation Safety Award

These award winners are recognized for their professionalism, commitment to excellence, solid leadership and competent risk management which resulted in safe and effective operations.

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VFA-87	VFA-31	VAW-124	HS-11	VFA-106
HSC-2	HSM-70	HSM-48	VP-30	

CNATRA

VT-6	VT-9	VT-10	VT-21
VT-27	VT-31	HT-8	

COMNAVAIRPAC

VFA-14	VAW-112	VAQ-132	HSC-12
VAQ-139	HSM-41	HSL-49	VQ-1
VAQ-134	HSM-73	HSC-25	VQ-3

COMMARFORPAC

VMM-265	VMGR-352	VMA-211	HMLA-369
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COMMARFORCOM

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VX- 31 FRC SOUTH EAST

MARINE CORPS INSTALLATIONS EAST

VMR-1

MARINE CORPS INSTALLATIONS WEST

H&HS MCAS Yuma

Naval Aviation Readiness Through Safety Award and the Adm. James S. Russell Naval Aviation Flight Safety Award

Presented annually to the controlling custodian that has contributed the most toward readiness and economy of operations through safety. The command selected must have an outstanding safety record, an aggressive safety program, and an improving three-year safety trend.

Winner: COMNAVAIRSYSCOM

Admiral Flatley Memorial Award

To recognize the CV/CVN and LHA/LHD ships with embarked CVW or MAGTF, which surpass all competitors in overall contributions to safety. These teams are selected based on operational readiness and excellence, and an exceptional safety program and record.

Winners: USS *George H.W. Bush* and CVW-8
USS *Bataan* and 22nd MEU

Runners-up: USS *George Washington* and CVW-5
USS *Boxer* and 13th MEU

Grampaw Pettibone Award

Presented annually to individuals and units that contributes the most toward aviation safety awareness through publications and media resources.

Unit award: Winner: HMLA-269
Media award: Winner: VAW-125
Individual award: Winner: LT Andrew Wing of VT-86

THE DANGER OF NOT COMPARTMENTALIZING STRESS

Feeling stressed, frustrated, or worried? Wrestling with personal issues? It's time to tell somebody.

BY LT KIRSTEN CARLSON

Aviators learn to operate sophisticated systems, often under profound stress. They've been purposely exposed to various forms of stress from the beginning of training. Only those who adequately respond to scenarios requiring split-second decisions are trusted with those tasks.

Pilots, NFOs and airctewmen are more likely to have certain characteristics relating to how well they handle stress. They are likely problem-focused, highly responsible, and able to use sound judgment in an emergency. Their capacity to handle short- and long-term stress is, for the most part, higher than the general population.

However, a threshold exists for every person, where the ability to cope is no match for what life throws their way. No one is immune to stress, and aviators aren't any less at risk for crossing this threshold. In fact, when chronic stress issues arise, aviators may not have the best methods to deal with them. Aviators may be more apt to use an avoidant, externalizing coping strategy – so-called "acting out". Signs of ineffective coping in aviators include denial, defensiveness, over-sensitivity to criticism, argumentativeness, arrogance and chronic interpersonal problems.

Aviators make mistakes, and 80 percent of mishaps are the direct result of human factors. Do you think you're more or less likely to make an error in the cockpit if you're rested versus exhausted or relaxed versus worried?

One study compared characteristics of aviators who were involved in a mishap with aviators who were not involved in a mishap. The "at-fault" group was more likely to have marital problems, problems with interpersonal relationships, recent trouble with supervisors, and recent trouble with peers.

Consider the following examples: a pilot with more than 6,000 hours was on a local proficiency flight. He had a lot of recent flight time. It was daylight, with ceilings unlimited, visibility 10 miles and wind calm. He was observed circling at 6,000 feet. He was next seen at 300 feet; gear up, full power and nose down. The mishap board concluded that the primary causal factor of the accident was pilot error, and the secondary factor was the "psychological state of the pilot due to a pending board of investigation."

In another case, a pilot on final approach lost sight of the aircraft ahead, landed high and hot, and collided with another plane on a runway. He blew both tires trying to brake to a stop. This mishap was chalked up to pilot error. What was the background story? This pilot had been grounded for an anxiety reaction several days before, after a narrow escape on join-up when a friend of his had crashed. He failed to explain his mental state when he was given his up-chit by a different doctor.

IF YOU TRIED TO FLY WITHOUT AN UP-CHIT or with overdue swim qualifications, you'd be quickly corrected. It's harder to know when psychological or emotional factors should keep you on the ground. A flight surgeon needs input from you. Likewise, the CO, XO, flight surgeon, AMSO, and operations officers are responsible for knowing their people and keeping an eye out for indicators that all is not well with one of their own. An established climate of non-punitive feedback from leadership is the key to ensuring those with concerns can come forward.

One CO put it this way: "During my introductory talk to future students, I define false pride and lack of a proper attitude. I encourage students to tell me, the ops officer, the flight safety officer and/or the flight surgeon about any personal or professional problems that may reduce their proficiency in flight as pilots. I want pilots under instruction to know that if they reveal a problem, it will be dealt with in confidence!"

It may not be you who's struggling. Nevertheless, your life could very well depend on your buddy getting help, whether that's in the form of rest, financial assistance, formal counseling, a substance-abuse intervention or a few visits to a chaplain.

An aviator's line of work almost guarantees that he or she will encounter stress. Most of the time, they'll be able to handle it sufficiently. If you find that you've hit a particularly rough patch, take advantage of your options. Seeing your flight surgeon when personal issues are closing in is a great step in the right direction.

LT CARLSON IS THE AEROSPACE EXPERIMENTAL PSYCHOLOGIST WITH THE AVIATION SAFETY PROGRAM AT THE NAVAL SAFETY CENTER.

STRESS: WHAT IS IT GOOD FOR?

REPRINT/ BY SHELLY WINTERS

How often do you hear people say they are "stressed out?" How often do you hear the word "stress" being associated with what you do, either in the military environment, or the aviation industry, or both?

The prevalence of the word stress, its connotations and the negative context in which it is usually applied often results in a degradation of the common understanding of stress. The resulting perception of stress consequently differs for most people, as does the response itself.

Perceptions fall on a continuum. At one end is a belief that stress is everywhere and, therefore, we should just get over it. At the other extreme is the idea that being affected by stress means you have some form of mental illness. The intention of this article is to dispel a few myths surrounding stress and to improve your individual response to stress in your life and the lives of those around you.

Why do you need to manage your stress levels? Think about the last time you goofed up at work or home because you were under a lot of stress.

MYTH NO.1: "I'M HAVING DIFFICULTY COPING WITH WORK AND HOME PRESSURES; THERE MUST BE SOMEHTING WRONG WITH ME."

FALSE. Stress is a protective and adaptive response for our body and mind to cope with continual changes and demand in our lives. You may have heard of it referred to as the fight or flight response.

We are constantly experiencing different levels of stress and need a certain level of stress to be able to perform sufficiently. It provides us with physical and psychological motivation to pursue our wants and needs, in conjunction to reacting to environmental changes. It also provides us with the ability to react to threats in our surroundings. Most of the time this response is beneficial to our performance, aiding us in our daily survival. However, at times the magnitude of demands can result in a prolonged or intensive period of stress response in our bodies. Although the response is adaptive when experienced in short bursts, in large quantities it can become detrimental. It is important to recognize change as a source of stress. We need to keep a monitor on how much stress we are experiencing at one time across different parts of our life, and how much stress we are experiencing over a period of time.

We are usually good at coping with our common stressors. We become accustomed to it, and we often do not notice our stress levels until our coping mechanisms are overloaded. In that case, the stress response becomes hazardous. We become tired and irritable. We make poor decisions. Our short term memories go out the window. We can't concentrate. We can only focus on one thing. We feel achy and become susceptible to bugs and flus. Basically, we feel stressed out.

It is important to remember that everyone differs in what they react to and how they react. What is consistent, however, is that everyone has an individual limit to the amount of stress they can cope with at one time. When the stressors outweigh the coping system, things can feel like they are getting out of control. You must learn to recognize your personal levels of okay stress and realize when your stress level is going to curb your performance, as opposed to enhancing it.

Think of aircraft limitations and the need to stay within these in order to operate it successfully. Your mind and body also need to be operated within its limitations. If your usual stress-management strategies are not working, it is important to seek advice from a friend or a professional.

MYTH 2 "STRESS IS BAD."

FALSE. Stress is always present in our lives in many shapes and forms. What is critical is how much stress you are experiencing at one time, and how much stress is accumulating. Most of the time stress has a good effect on what we do (for example, sports performance, flying ability, fast thinking under pressure, exams, and your motivation to pursue personal goals). By keeping your stress levels within your personal limits, you can use stress to your advantage, just as professional athletes do. We actually need a certain level of stress to be able to perform at all. If your work or home situation has remained constant for a long period of time, you may need to pursue some additional stress, to ensure you do not become complacent in what you do.

MYTH 3 "MOTIVATION WILL GET RID OF MY STRESS."

FALSE. Motivation is tied in closely with stress, but no matter how keen you are to push on through stress, you need to manage it. You need to do something about all the demands and changes going on in your environment to ensure you remain within your limits.

Your motivation to get through the stressful period needs to be directed toward some form of stress releases. Just wanting to get through a tough time will not get rid of stress. By the time people have reached their adult

years, most people know what works for them to release stress, such as physical activity, relaxation techniques or talking to someone about your stressors.

MYTH 4 "THE CAUSE OF MY STRESS IS OUT OF MY CONTROL."

FALSE. Although lifestyle routines (such as a balanced diet, exercise, relaxation techniques and communication) are all good methods of stress prevention and release, it can be just as important to remove or alter the source of stress itself. This is particularly important if the stress is detrimental or adding to other current stressors. Even when the source of stress appears to be out of your control, there is usually something that can be done. For example, in the work place it is important to make your supervisor aware if things are becoming too much. In your personal life, let others know how you are feeling. Stress in the work place is not just an individual responsibility. The organization has a responsibility to look after one of their biggest assets, so let your boss know if your work environment, workload or personal circumstances are resulting in high or low levels of stress.

MYTH 5 "I DO NOT EXPERIENCE SYMPTOMS OF STRESS."

FALSE. Life contains stress. If you have not experienced stress symptoms, it may be because you have always stayed within your comfort zone. However, you should have noticed your body and mind's reaction to situation and your environment even within your comfort zone. Think of the last time you watched and unpredictable sports game. The easiest stress sigs for you to pick up are the physical ones, such as increased heart rate and change in breathing patterns, whereas people around you will probably notice the change in mood and thinking patterns.

MYTH 6 "MY PERSONAL LIFE DOESN'T AFFECT MY WORK PERFOMANCE."

FALSE. As much as we consciously try to separate different areas of our life, we are limited by the fact that we only have one brain. Although we can put things aside when stress levels are manageable, stressors can accumulate to the point where it becomes too hard for your brain to cope. Just as importantly, stress is not confined to your work and home environments. Stress can come from anywhere. So even if the stressors in your life are small ones, if you have a lot of changes going on in several areas of your life, these will compound to produce an aggregate stress response.

Take the example of a young man with several things happening in his life at once. He is about to get married; he has reached national level in his squash tournament; he has just been promoted at work, and his father has been diagnosed with cancer. Although his father's diagnosis appears to be the "negative" stressor, the other aspects in his live all involve situations that will place new demands on the individual, in addition to several adjustments to his daily life. Change is a stressor in itself. Positive stress can accumulate with the negatives, to produce an overwhelming amount of stress that becomes difficult to manage.

KEY POINTS TO REMEMBER:

- Stress is a normal part of everyday life, at work, home and play.
- Stress can have both positive and negative effects on our performance in these settings.
- It has an effect on our physical health, our moods, and our thinking ability.
- It is important to use preventive stress management, especially maintaining established routines if you are going through other adjustments.
- You do have the ability to control the demands causing your stress.
- Ensure you balance your stressors with your ability to manage the stress.

Editor's note: This article appeared in the Fall/Winter 2011 issue of Insight Magazine.

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Not Seeing the Forest for the Trees

BY LT NATHAN RICE

Things were smooth during the fourth month of my HSL-49 Helicopter Aircraft Commander (HAC) cruise. It was a 4th Fleet Counter Transnational Organized Crime (CTOC) deployment embarked in USS Gary (FFG 51), and the detachment was running astonishingly well. Our officer in charge (OIC) had recently called everyone together for a few meetings about complacency. We hadn't run into any major problems, but we were in the stretch of cruise where we felt confident. Things were good.

Upon waking for my noon to 8 p.m. alert shift, I was informed that we would be launching to search for what might be a self-propelled semi-submersible (SPSS) in the area. Crown jewel or unicorn, it was a high value target that everyone was getting spooled up (including me, my co-pilot, our aircrewman and Coast Guard observer). We briefed, conducted a preflight check on our trusty SH-60B, spun up and requested green deck.

"Gauges green, cautions clean," I said when a final visual check of the cockpit looked exactly the same as the previous 96 days at sea. After the landing safety officer (LSO) released the beams of the rapid securing device (RSD) and gave us a green deck, I repeated, "Gauges green, cautions clean."

As my copilot picked us up into a hover, I noticed that our turbine gas temperature and gas generator turbine speed (TGT and Ng) both seemed higher than normal. They were still in the green range within the Vertical Instrument Display System (VIDS). Everything else looked good. As we came up and aft, away from the flight deck and out of ground effect, both TGT and Ng momentarily fluctuated into amber and then back to green several times.

I thought, "This is a bit high, but we're in limits. It's been over a week since I've flown Red Stinger 107, maybe she just burns hotter." We pedal turned into the

An SH-60B participates in a recovery assistance exercise aboard the guided-missile destroyer *USS Halsey* (DDG 97). Photo by MC3 Johans Chavarro

wind and completed our takeoff. Climbing to 500 feet, I took the controls while my helicopter second pilot (H2P) completed the post-takeoff checklist, including crunching the numbers for the engine health indicator test (HIT) checks.

A few moments later and heading in the direction that Gary wanted us to search, my H2P said the HIT checks were calculated within limits. "Good," I thought, "she's just burning hotter."

Twenty minutes into the flight and with no luck yet finding the SPSS, I glanced at the gauges to ensure things were going as well as they seemed. Everything was green and clean, but something was out of place. The No.1 and No.2 ENG ANTI-ICE ON advisory lights were both illuminated.

I remember thinking how weird that was. I could not ever remember seeing them during this phase of flight. I looked up to the overhead console and confirmed that both ENG ANTI-ICE switches were off and the DE-ICE MASTER switch was in manual.

I knew what NATOPS said about determining if there was a malfunctioning anti-ice/start bleed valve, so I figured I could simply pull power to above 94 percent Ng to see if the lights extinguished. However, both 94 percent and 95 percent were still on. There was no change to 96 percent. Puzzled, I reduced collective.

I asked my copilot if he had noticed anything I was missing, but he was just as puzzled. Then I told him to pull out the big NATOPS. He read aloud the section in Chapter 2 on how the valves operate and how to

determine if they were malfunctioning. As our troubleshooting progressed, we ensured circuit breakers were in and looked for a rise in TGT after manually selecting engine anti-ice ON for both engines. There was no rise in either engine.

The gauges were all green and well within limits. The HIT check numbers were in. All we had were two advisory lights that should not have been illuminated. I decided that it was very unlikely that both engine anti-ice/start bleed valves were malfunctioning simultaneously. Since the HIT checks were in, it was more than likely a wiring issue. "Maybe the harnesses aren't properly seated or a cannon plug is loose," I said.

Since we were not able to fix our dilemma, we did some time-critical ORM and discussed the issue at hand. Whether or not it was a wiring or indication problem, we had to assume the worst by figuring that the valves had somehow failed.

If they had failed in the open position, they would be robbing 18 percent of available torque from each engine. If they had failed in the closed position, we could flame out an engine during low-power settings, such as during practice auto rotations or quick-stops.

Because of the possible power loss, we talked about how we might drop rotor speed while getting into a power-required-exceeds-power-available situation during landing. To alleviate the problem, I said "I'll take the approach and landing." We also discussed that being lighter in fuel would help us. The most dangerous part of the flight with this power-loss malfunction would have been during the takeoff, when our fuel tanks had been full.

Concerned with the possible flame out during low power settings, we agreed that we would be cautious with the collective and not do anything aggressive, such as a quick-stop.

We continued the flight and found no sign of the elusive SPSS. Flight quarters was sounded, numbers passed, and my one approach and one landing happened without incident.

After our maintainers inspected the aircraft, they told us we would be shutting down and not relaunching. While in the maintenance shop to log the flight and write up the discrepancy, my copilot started to log the HIT check in the aircraft discrepancy book (ADB).

A minute later, he sheepishly broke the silence and admitted that he was wrong on his earlier HIT check calculations and that both engines were "way out". In the heat of the alert launch, he subtracted the reference engine temperature from the actual temperature instead of the other way around. I was frustrated with him but more so with me at the sudden realization that engine anti-ice was on for both engines during the entire flight.

Upon further maintenance troubleshooting, we discovered that inexplicably both engine anti-ice valves had failed in the open (or ON) position, regardless of the cockpit switch setting. I had flown nearly three hours as aircraft commander in a degraded aircraft, without ever appreciating what the degradation was.

Since we were not able to fix our dilemma, we did some time-critical ORM and discussed the issue at hand.

Even though we broke out the big NATOPS to read through Chapter 2 and used ORM to back ourselves up, I never considered looking in either Chapter 12 or in the pocket checklist. Had I looked in the emergency procedures section of either, we would have been given the answer we needed: land as soon as practical.

The aircraft had been flying fine. I had thought the HIT checks were good and I had never considered it an emergency, but because of the 18 percent power loss we very well could have drooped and lost tail-rotor authority on takeoff.

This was a sobering thought, but more sobering was the complacency I had shown. Ignoring what the aircraft was trying to tell me: "No.1 ENG ANTI-ICE ON" and "No. 2 ENG ANTI-ICE ON". I could not see the forest for the trees. Overall, it was a wake up call and a great lesson in complacency.

LT NATHAN RICE FLIES WITH HSL-49.

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The Risks of Not Communicating Your Limits

BY LT ANDREW GALVIN

It was an early 3 a.m. brief for a five-hour vertical replenishment (VERTREP) flight about seven months into a nine-month deployment. All the members of the crew had been on at least a couple of these flights and were excited to get started on the fastest way to pass time in a helicopter.

Due to operational requirements, the aircraft was configured with a single internal auxiliary fuel tank and external wings. In order to lower the starting gross weight of the aircraft, the fuel load was reduced to 2,800 pounds. In the brief, we discussed ORM aspects of the long flight and early start. Preflight calculations were reviewed by the entire crew and responsibilities for each crew station delineated.

Because of our fuel load and the high DA, the max external cargo load would be approximately 1,500 pounds. After a few minor maintenance issues on deck, we took off and completed the appropriate max power check and HIT check to ensure engine performance matched our calculations.

We achieved a max continuous torque of 120 percent. According to our squadron SOP, a no-go torque of 114 percent was established for our external cargo operations. There was another aircraft in the VERTREP pattern organic to the supply ship that did not have external wings or an internal aux tank installed and therefore could lift heavier loads.

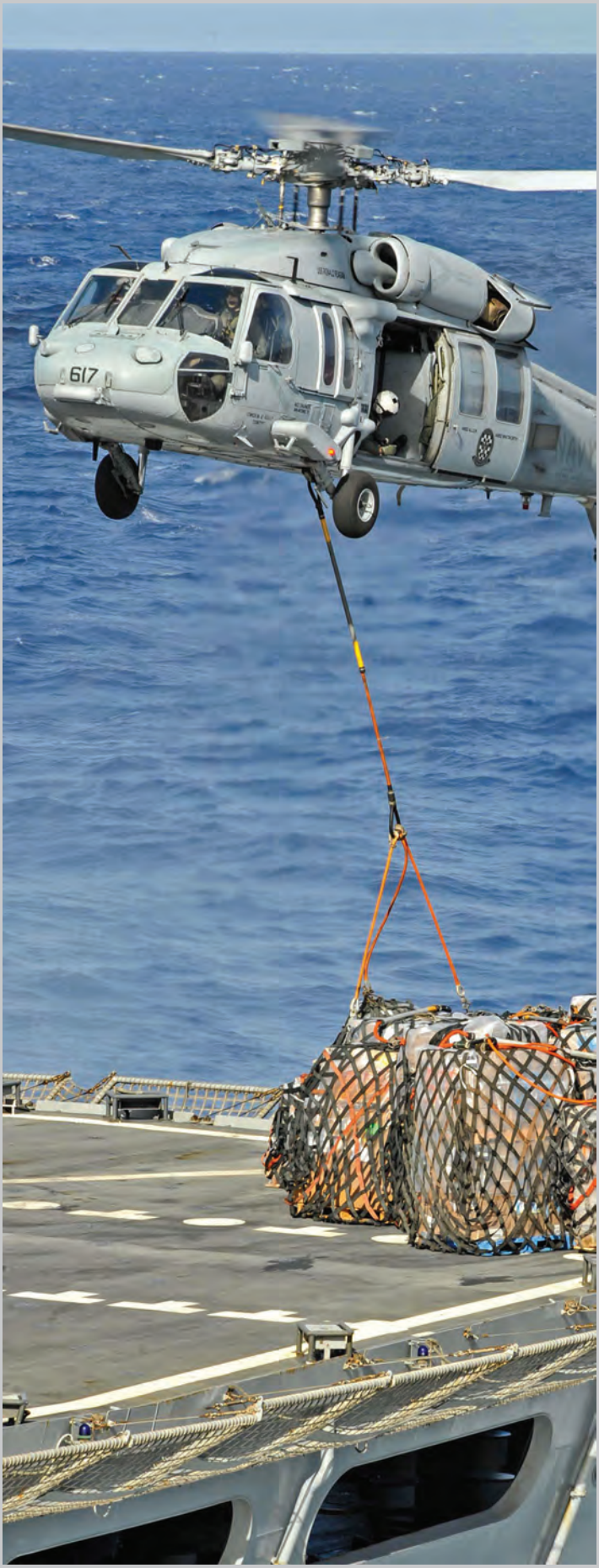
Our aircraft was brought in for the first pick from the aft-port corner of the flight deck on the supply ship. Tower called the winds off the bow of the ship, but the actual winds seemed to be more to the starboard side, about 20 degrees off the bow.

Based on this relative wind direction and the supply ship being to the port of the carrier, we made a port-to-starboard approach with the left-seat pilot flying. The pilot placed the nose of the aircraft just forward of the starboard beam and pointed at the aft section of the carrier.

When the load was hooked up, the crewman calling the pick directed the left-seat pilot to come straight up. When he called, “Load off deck, check power,” the pilot glanced down to check the torque, saw 112 to 114 percent, and called, “Good power”. The pilot kept the controls for the departure and began to climb straight up to get clearance from the flight deck.

A few seconds later, the flying pilot noticed the flashing low rotor light and saw torque above 120 percent and Nr going below 94 percent. The pilot realized there was no way to use the left pedal (which requires more power than a right pedal application) to get the nose fully into the wind in the power-limited situation. So the flying pilot initiated a gradual right pedal turn and small descent off the back of the ship. This maneuver lowered the power required and swung the helicopter around approximately 270 degrees, getting into the wind with some forward airspeed.

The pilot verbalized the plan to the crew chief, who stood by to release the load if the descent continued past his comfort zone. The pilot monitored the gauges and maintained a level VSI at about 90 feet with 90 percent Nr and slightly over 120 percent torque.



An MH-60S Sea Hawk helicopter assigned to the Black Knights of Helicopter Sea Combat Squadron (HSC) 4 lifts supplies from the Military Sealift Command during a replenishment at sea (Photo by MCS Jonathan Nelson).
Editor's Note: This photo is for illustrative purposes only and does not depict the actual day of events.

Once the aircraft was into the wind with some forward airspeed, the collective was lowered and Nr regained. The pilot then initiated a climb back to 150 feet, responded to tower and reported the aircraft status as OK.

The drop was executed without incident on the flight deck of the carrier, although it was clear the load was heavier than expected. Once the load was on deck, we debriefed the incident and decided to continue with the mission after asking the supply ship tower to choose lighter loads for our aircraft. The delivery ship directed us to hold-off while the crew re-stacked the loads to conform to our power requirements.

IN RETROSPECT, THE COMBINATION of a loss of wind effect behind the superstructure and HIGE to HOGE transition contributed to a sudden increase in power required. Also, the power check over the deck was non-standard. It was called by the flying pilot instead of the non-flying pilot, who could have seen the full progression of torque increase as well as any torque fluctuations and directed the crew to set the load back down if the 114 percent limit was not the actual max torque pulled.

Before the flight, we should have informed the supply ship of the max loads desired by our helicopter, and the deck could have been stacked appropriately from the start. Good crew coordination, once the aircraft was in extremis, enabled each crew member to positively contribute to keeping the aircraft airborne and ready to jettison the load if it became necessary. This division of tasks allowed the successful execution of a difficult maneuver. We were confident that the mission could still be executed after this incident occurred early in the flight.

LT GALVIN FLIES WITH HSC-9.

FIRE OF UNKNOWN ORIGIN LEADS TO 3-ENGINE LANDING

BY LT RYAN MCFEELY

Low-altitude, antisubmarine warfare (ASW) missions are the most rewarding and exciting for P-3 Orion aircrews. The missions also present the most challenging and critical regime of flight when dealing with emergencies and malfunctions. Proximity to water (as close as 200 feet) and intricate crew interactions throughout the entire plane intensify a sudden emergency or malfunction.

As a community, we train for these situations. We tailor our regular training events and qualification syllabi so that we can handle complex scenarios during critical phases of flight. Pilots and flight engineers are introduced early on to complex scenarios that test their ability to prioritize aviating, navigating and communicating. This is done all the while conducting concise troubleshooting. In the back of the plane, NFOs and sensor operators are trained to quickly tackle emergencies that demand robust crew resource management.

The fire of unknown origin (FOUO) stands as the most challenging of these emergencies, especially when operating down low. The P-3 is a labyrinth of electronic racks with a multitude of buses and energized equipment. The key is quickly finding the source of the fire and securing power to it.

One day my crew, Combat Aircrew 3, was conducting an ASW training mission along the Gulf of Oman. We'd been on-station for 45 minutes, with the No. 1 engine secured for loiter. My TACCO (tactical coordinator, the senior NFO on board) saw fumes building in the tube and initiated the FOUO checklist. With two coalition helicopters working with us at a lower altitude, I initiated a climb to a safe altitude and instructed my copilot (2P) and flight engineer to don their smoke masks. Passing 2,000 feet and at an acceptable speed of 200 knots, I called for my flight engineer to restart the No. 1 engine.

The FOUO wasn't the only emergency we were going to be faced with. During the restart we observed an NTS INOP light, indicating that our negative-torque sensing system (which prevents the propeller from dangerously driving the engine) had failed in some capacity. In accordance with NATOPS, we secured the engine via the emergency-shutdown checklist. Smoke and fumes continued to build in the cabin, and our TACCO called for us to continue with the FOUO checklist. Our original FOUO was now combined with an emergency shutdown.

To make matters worse, the aging P-3 threw a curve ball into the scenario. After we had secured the No. 1 engine and continued to handle the FOUO, the next step on the checklist was securing main AC bus A. As my flight engineer secured it via its bus-monitoring switch, we lost our monitorable essential AC (MEAC) and start essential AC (SEAC) buses. We subsequently lost our heading indications, shaft horsepower (SHP) gauges and TIT gauges among numerous other items on those buses. We had lost more buses than we expected – something else was amiss in the plane.

We were still in our climb, heading towards the Strait of Hormuz for an RTB. With the loss of navigation equipment, I put the plane into an orbit and leveled off at 10,500 feet. The aircrew in the cabin continued to investigate the source of the smoke and fumes. They isolated them to the overhead section near the stations for the TACCO and the navigator-communicator, junior NFO (NAVCOM).

P-3s are known for complex and complicated systems that demand thorough systems knowledge to diagnose

Editor's Note: This photo is for illustrative purposes only and does not depict the actual day of actual events.

and troubleshoot inflight malfunctions and emergencies. Therefore, one must have extensive knowledge of the aircraft to understand what to do when something goes wrong. As I concentrated on the flying the aircraft and my copilot handled the checklists, the flight engineers quickly diagnosed the culprit behind the surprise losses of the buses. A stuck relay did not allow back-up power sources to energize once the primary source was secured. By resetting a few circuit breakers, they quickly got the relay to de-energize. We regained the lost buses and associated navigation equipment.

Our troubles weren't over. We were still flying with one engine secured and an unresolved FOUO. With main AC bus A secured, the crew in the cabin saw the smoke dissipating, so my TACCO called for the smoke-and-fume-elimination checklist followed by the restoring-electrical-power checklist. Shortly thereafter, smoke began building again, and we did the FOUO checklist once more. Smoke and fumes built and dissipated several times; our crew executed procedures. The source was finally identified as the HF1 cooling fan. All power was then secured to HF1, and we saw no more smoke or fumes for the duration of the flight.

The compound emergency scenario was under control. The aircraft was stable with the malfunctioning engine secured and the source of the cabin fire located and secured. We opted to re-energize the secured main AC bus A to regain the monitored systems with it secured. We returned to base and had no further trouble, executing an uneventful 3-engine landing.

In a span of just a few minutes, my crew had handled a complex scenario consisting of simultaneous and unrelated emergencies. We had executed the FOUO and subsequent checklists multiple times, and we had handled an emergency engine shutdown accompanied by unexpected bus losses all while initially operating at low altitude.

As the P-3 airframe continues to age, new and complex malfunctions appear, demanding effective CRM and training that ensures aircrews are as prepared as possible for complex emergency scenarios. This is why we train for worst case scenarios that make every pilot think, "This will never happen to me."

LT MCFEELY FLIES WITH VP-1

NO CALL, makes for a NMAC CLOSE CALL

BY ARMANDO DEGUZMAN

I'm comfortable flying in Class D airspace, knowing that air traffic controllers have my 6 o'clock covered in helping to avoid a midair collision with another aircraft. You should be comfortable, too. Air traffic controllers deliver a valuable service by monitoring aircraft to provide aviators with radio calls notifying them of aircraft traffic in the immediate vicinity. This increases the pilot's situational awareness.

Getting multiple helicopters and jet aircraft on the ground to sequence them into the GCA pattern is a challenge, especially at airbases where air traffic controllers receive their initial training and learn to sequence and maintain separation between dissimilar aircraft with different approach speeds in the GCA and landing pattern.

On one particular flight I didn't feel comfortable with our controllers. The weather was broken layers at 4,000 to 6,000 feet with visibility at 8 to 10 miles. I was on a proficiency flight with the squadron XO and was supposed to acquire annual instrument and PAR/ASR approach minimums. We were on final approach to decision height on my third approach when the GCA controller asked us to switch to tower.

With the aircraft at 100 feet AGL and 100 knots, I switched to the tower frequency. I notified the tower controller I was a GCA hand-off for a touch-and-go. The tower controller instructed me to fly runway heading. Then I was instructed to climb to 800 feet and at 2 DME, turn left to 240 degrees. After that, I was to climb to 1500 feet and contact departure control.

I read back the instructions to the tower controller. When I read, "Contact departure control," the tower controller said "Read it back correctly, and then contact departure." So I repeated it, switching to departure control. Upon departure contact, I notified the controller I was missed approach off the duty runway passing 500 feet for 800 feet. The departure controller acknowledged.

At 1 DME I thought I felt and heard a rumble on the right side of the aircraft. I figured that the aft cabin door had somehow opened and was vibrating in the wind stream. I asked the XO to take controls of the aircraft so I could turn around to check the door. When I turned, I saw the belly of a T-38 with about a 30-degree right bank. It turned away at about 150 feet and went into a wings-level climb.

U.S. Navy Air Traffic Controller 3rd Class Nichole Kitts surveys the airfield from the air traffic control tower at Naval Air Station North Island, Calif., Oct. 16, 2013. (Photo by MC3 Bradley J. Gee) *Editor's Note: This photo is for illustrative purposes only and does not depict the actual day of events.*

My copilot was more vocal about the near-midair collision with expletives I have no clue how to spell. I asked the departure controller if they had the aircraft that had just passed us on our starboard side. The controller mentioned that there was a radar signal about a mile ahead of our position, but that he wasn't in contact with the aircraft.

The XO took over communications and expressed to the controller he will call the tower supervisor when we landed. Further discussions revealed the T-38 aircraft was on tower frequency and was performing touch-and- go landings and had requested a departure to the training area. On his departure he was not made aware of the GCA traffic. The pilot fortunately made visual contact with our aircraft and immediately banked to the right to avoid collision.

The controller was under training and the tower supervisor acknowledged the event and ensured us training would be conducted with emphasis on communication and dissimilar aircraft spacing.

This could have been our last flight, a fatal midair collision with an aircraft coming from behind us. But it wasn't our last flight due to luck and, a superlative scan, quick thinking and reactive maneuvering of the T-38 pilot.

My advice to pilots: anytime you fly, (and especially when in the Class D airspace) keep your head on a swivel and scan the horizon to avoid a NO CALL, NMAC CLOSE CALL.

ARMANDO DEGUZMAN IS THE SAFETY MANAGER OF HX-21.

First Instructor Flight

BY LT JOHNATHAN BOSCH

After four months in the instructor training unit relearning to fly the T-34, I was ready to head out with students. As a new IP our first few instructional flights are instrument hops. My very first flight was an out-and-in to Victoria, Texas, municipal airport and I was looking forward to that "Big Sky burger." During the brief, the weather looked good for an instrument flight. There was no significant weather at takeoff, but ceilings were forecast to come down throughout the day.

For our return flight, the forecast called for 400-foot ceilings at Navy Corpus. This was better than the minimum 360-foot ceiling for a TACAN approach and 213 feet for the PAR with Corpus International calling no ceiling. We decided to go for it and monitor the weather for changes.

Departing Victoria on our return, we requested pilot's own navigation to BRASY to practice point to point navigation. ATC cleared it, and my student set up what appeared to be a direct course. A few minutes later ATC called and said, "Proceed direct to BRASY at this time." This was the first time I cross-checked the wet compass after takeoff and discovered a 30-degree error in our RMI. After confirming this with my student, we started a timed turn toward the appropriate heading using the wet compass. Once on heading, I tried to slave the RMI. It zipped past our heading and stabilized 130 degrees off.

I decided that the instructional portion of the flight was over. I reported to ATC that our RMI had failed and requested radar vectors to the PAR at Navy Corpus. They asked if I wanted to declare an emergency, which I declined. Approximately once a minute, while on vectors, ATC would direct me to turn left.

After a couple of these calls, my student mentioned that she didn't think the attitude gyro agreed with the turn needle. She was right. With the wings level on the attitude gyro, the turn needle displaced to the right. With the turn needle centered, the attitude gyro read about 15-degrees left-wing down.

My first flight as in instructor was officially interesting. We were in solid IMC with a bad RMI and a failing attitude gyro in an airframe with no backup. I was currently above the clouds, but I had no horizon and I felt like the attitude gyro was giving consistent but wrong information. I reasoned that if I maintained 15 to 20-degrees left wing down in a descent, I could keep the turn needle centered. I considered using the fast-erect button to correct it but had just seen the RMI slave fail.

Although I know these are different systems, I was rapidly developing a healthy skepticism of T-34 avionics. After considering my options, I decided it was time to declare an emergency. My plan hadn't changed. I still wanted the no gyro PAR into Navy Corpus, but the circumstances were now a little more pressing.

After declaring the emergency, I asked if there were PIREPs for Navy Corpus and Corpus International. I wasn't expecting the answer I got. The most recent PIREP for Navy Corpus was from a T-44; the pilot had reported breaking out of the clouds at 100 feet. There were no PIREPs for Corpus International, but their ATIS was reporting ceilings at 600 feet. Although the weather at Corpus International was better than the weather at Navy Corpus, there

LT Brett Stuhlman, left, and ENS Alex Beasley, both with Training Squadron (VT) 27, inspect the landing gear on a T-34 Turbomentor aircraft before a training flight. *(Photo by Richard Stewart). Editor's Note: This photo is for illustrative purposes only and does not depict the actual day of events.*

was no ground controlled approach. With a failed RMI, I had no way to execute a TACAN approach. My best option was to continue with the partial-panel, no-gyro PAR.

ATC continued to vector me towards home. When I was about 30 miles out, they asked me to descend to 1,600 feet. I requested to stay at 3,000 feet to maintain minimum bail-out altitude for night. In my mind, at any second the attitude gyro was going to roll upside down and I wanted that altitude. However, I knew that the only way this story would end happily was with a successful landing. About 15 miles out, I began my descent. That worked out well, because we didn't have to fly at 1,600 feet for long before we were on glideslope for the PAR. In order to keep my student engaged, I asked her to call out altitudes at 500-foot intervals until we hit 500 feet, and then every 100 feet after that.

We entered the clouds at about 1,500 feet. Even with minimal turbulence in the clouds, every bump we experienced caused the turn needle and attitude gyro to oscillate from side to side, making it hard to keep the airplane stabilized. After my student told me we were passing 500 feet, the final controller announced that I was right of course, going further right of course and asked me to confirm I was in a left turn. To the best of my knowledge, I was in a left turn but had no real way of confirming it.

At about 250 feet, the controller told me I was "too far right of course; execute missed approach if field not in sight." A light caught my eye off of the left wing tip. Although I was still in the clouds, I could start to make out the lights around the runway (it was the emergency lights). I told the final controller that I had the runway in sight and would continue the approach. We finally broke out of the clouds at 200 feet, about a quarter mile right of the runway heading approximately 45 degrees off of runway heading. The landing was uneventful.

Looking back on the flight, I can point to some things that went well and some other things that I could have tried. First, I should have caught the discrepancy between the turn needle and the attitude gyro. However, I got wrapped up in dealing with the RMI and trying to maintain wings level and failed to cross check my other instruments thoroughly. Second, although slaving my RMI was unsuccessful, I shouldn't have let that stop me from trying to fast-erect the gyro. I knew they were two separate systems, but I let the failure of one compound the failure of the second.

Lastly, I may have been able to add course situational awareness by using my GPS to lay out a final course line. However, with my task load and the student's lack of experience with the system, I'm not surprised I didn't think of it.

I'm glad that I was able to see the runway environment when the controller told me to go missed. I am not confident transitioning from a descent to a climb would have turned out well. The secondary systems in the T-34 worked "well enough" and the PAR at Navy was working. Also, I had a student who had a high enough level of situational awareness and assertiveness to recognize and call out the degraded attitude gyro. During this flight, sound CRM contributed to us landing safely.

Even with minimal turbulence in the clouds, every bump we experienced caused the turn needle and attitude gyro to oscillate from side to side, making it hard to keep the airplane stabilized.

Editor's Note: LT Jared Webster contributed to this article, which is one in a series solicited from the Wardroom/Family of VT-28. This year will see the final flight of the T-34C Turbo Mentor as a Navy training aircraft. As of Fiscal Year 2015 they are flying the last 203 students to the Fleet using 28 aircraft. For further information see the following website https://www.facebook.com/T34sundown.

LT WEBSTER IS THE ASSISTANT ADMIN OF VT-28.

DARK HORSE 33

Approximately 10 minutes after departure from Djibouti, Darkhorse 33 experienced an audible bang with associated yaw kick indicating a compressor stall. The pilot at the controls immediately began to slow down and the non-flying pilot scanned the gauges with the crew chief. Secondary indications included a No. 2 engine chip and rising engine temperature. The non-flying pilot secured the No. 2 engine per the NATOPS memory items with concurrence from the flying pilot and crew chief. As the engine was being secured, the flying pilot continued to slow to prevent hot exhaust backflow into the No. 2 engine compartment. During this time, the cabin began filling with smoke. During these procedures the flying pilot immediately turned back to Djibouti and declared an emergency with Djibouti tower. The No. 2 engine shutdown normally without further issue and the crew maintained level flight and proceeded to Djibouti to land as soon as practical per NATOPS. The flying pilot executed a dual engine landing per NATOPS without issue.

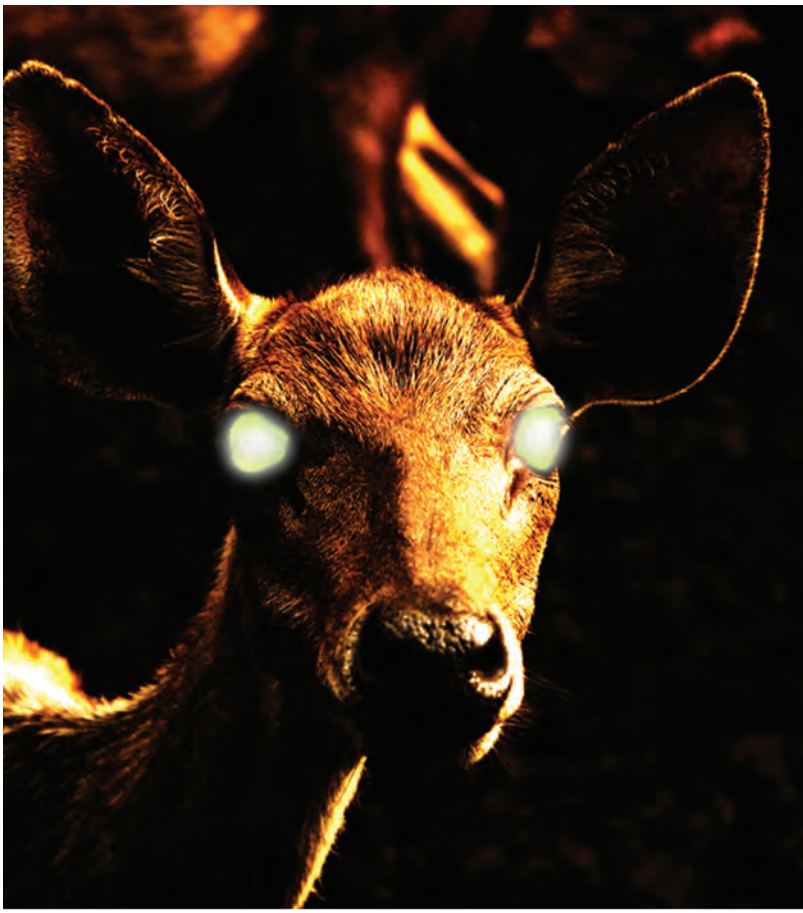
Left to right: GySgt. Richard Grimm, Sgt. Justin Milner, Capt. Jordan Dinola, Capt. Matthew Dineen, GySgt. Jonathan Bridges

Left to right: Capt. Christopher Driscoll, Sergeant Kevin Wilt, Capt. Jacob Noreen, Sgt. Kevin Peters, Sgt. Colton Patterson, Sgt. James Moore, Sgt. Cody Pensabene, GySgt. Jonathan Bridges

DARK HORSE 31

Darkhorse 31 was launched as part of a section from the USS Bataan for a general support mission. After departing the pattern, the landing gear malfunctioned when retracted causing an unsafe gear indication in the cockpit. After looking with the FLIR, it was determined the nose landing gear was not fully retracted. Capt. Driscoll, the Helicopter Aircraft Commander, Capt Noreen his copilot, Sgt. Wilt, Sgt. Patterson, and Sgt. Peters then attempted to extend the landing gear following the NATOPS checklist. After exhausting all troubleshooting steps, including the use of the emergency gear extension handle, the nose gear remained retracted. Capt. Driscoll coordinated with the air boss to make an approach to spot 9 and set the main landing gear on deck holding the nose of the aircraft in a hover. This allowed GySgt. Bridges, Sgt. Moore, and Sgt. Pensabene to maneuver under the hovering aircraft and pry the nose landing gear down. Capt. Driscoll confirmed he had positive "down and locked" indications in the cockpit and slowly lowered the collective bringing the nose wheel down until it safely landed on the LHD.

DEER IN THE LANDING LIGHTS



LT RYAN CULBERTSON

It was a dark and stormy night… Isn't that how most harrowing stories start? For me it was at least a dark night. A student and I were on our second event of the day: a night contact. This event introduces flight students to the night flying environment.

We had just completed a day aerobatic hop and enjoyed a nice dinner. Our plan was to do one or two touch-and-goes in Andalusia, Ala., move on to Monroe County, then to Bay Minette and finish up at North Whiting Field. The goal was for my student to see four very different runways and pattern environments. We took off and entered the pattern at Andalusia without incident and departed to the west toward Monroe County.

We contacted Monroe County on CTAF and determined there was no other traffic in the pattern. Because of the winds, we elected to touch-and-go on runway 3. The first pass was a takeoff flap landing and was not too bad. On the next pass, I directed my student to go to landing flaps on the downwind. He lowered the flaps, checked his position, and commenced the turn off the 180. I had no idea what was in store for us as we rolled out on final.

It's important to understand the cockpit arrangement in the T-6B. Typically, the instructor is in the back seat of the tandem set-up. Visibility is limited, because you have to try to look around the student's helmet to see what is happening directly in front of

the aircraft. As my student passed the threshold of the runway, I looked left and right around his head to check for lineup. This is when the fun began.

My student began the transition, pulled power to idle, and set the flare attitude for landing. A split second later, my student yelled an expletive and shoved the power control lever (PCL) to max power. Before I could ask what was going on, there was a sharp thud on the right side followed shortly by touchdown and take-off. I said, "What was that?" The student said a deer darted across the runway. I asked if we had hit it, and he said, "Yep." I immediately took the controls, raised the flaps, and commenced a gear-down climb to get away from terra-firma.

In any bird/animal strike situation, our procedures tell us to conduct a controllability check above the minimum uncontrollable ejection altitude of 6,000 feet AGL. I elected to climb to 9,500 feet to give us plenty of recovery time should we depart controlled flight. In the climb, I notified our FDO that we might have hit a deer and that we were conducting a controllability check with gear down and flaps up. I also notified Pensacola Approach and Jacksonville Center. We completed the check with no noticeable controllability issues and proceeded back to North Whiting Field.

I directed my student to back me up with altitudes, headings and airspeeds (we were limited to 150 knots with our gear down) while explaining what was likely to happen once we were back at home field. Pensacola Approach directed us to runway 5 at South Whiting field and we set up for a long, straight-in, low approach so that ground personnel could visually check our landing gear.

Over the runway, every crash and fire truck on the base spotlighted our gear. We got the report that our gear was down and locked, so we entered the downwind for a full-stop landing. I completed the before-landing checks and elected to do a no-flap landing because I was unsure of the condition of our flaps. We rolled out on final, leveled, idled, and flared and touched down in the first 1,000 feet of runway. As our ground speed slowed below 80 knots, I applied brake pressure to slow the aircraft. The right brake pedal went to the floor with no pressure.

I futilely tried releasing and reapplying the brakes. I colorfully informed my student that I had no right brake as I applied full right rudder and left brake pressure to keep the plane pointed straight down the runway. We passed the 1,000 feet remaining marker still traveling 65 knots, and I knew we would not stop before the pavement ended. Being a fleet helicopter pilot, I was familiar with South Whiting Field and knew that going off the runway to the side was better than going off the end downhill into the trees.

I pulled the PCL off, told my student to pull the firewall shutoff handle and locked up the left brake to slow down as much as I could. The left tire blew and pulled the plane sharply left toward the grass. We departed the pavement at 52 knots with less than 500 feet of runway remaining.

NATOPS states that pilots should consider ejecting if the aircraft departs a prepared surface at a high rate of speed. This is ambiguous, because each pilot has his or her own "high rate of speed" comfort bubble. I elected to ride it out, knowing it was a large grassy area with no berms or ditches. Nevertheless, my hands were on the ejection handle in case we started to roll. The aircraft came to a stop about 300 feet off the runway. We conducted an emergency ground egress as the crash and fire crews were approaching the aircraft.

We managed to avoid all ground obstacles (except for the deer), and we had avoided a prop strike and engine damage. A preliminary inspection showed that the deer had hit our right main outboard gear door and cracked our right brake line. Maintainers told us that the crack was small enough to allow the brakes to pressurize during the before landing checks. However, it was big enough to bleed all of the fluid out of the brake reservoir, resulting in no right-brake pressure. While we were being checked out by emergency crews, our FDO contacted the Monroe County sheriff and advised him that there might be a dead animal on the runway at his airport. We were later informed that he found the deer and our right main outboard gear door.

This event ended up as a HAZREP, and I'm glad that it wasn't worse. Knowing and performing procedures, good CRM, and knowledge of various airfields made what could have been a catastrophic event a learning experience for all involved.

LT CULBERTSON IS AN INSTRUCTOR PILOT WITH VT-6.

Survival of the Fittest:

A Look Back at How Survival Training Prepared Aviators for Tough Times

Editor's Note: The following article comes from the November 1958 issue of Approach. *It takes a look at what aviator survival training was like in the 50s and the benefits and consequences of being placed in a stressful situation. While stress is often looked at negatively, there is a positive side to knowing how to survive under great stress and pressure.*

The fine, cool rain, almost a mist that seemed to drift down between the gray windowed walls of San Francisco's buildings, settled on the gaily colored neon signs and the dull black lamp posts, giving them all a glossy, varnished appearance. The quick-stepped noonday crown filtered past LT Smith as he leisurely made his way toward a federal building to pick up his transportation orders at 1:30 p.m.

He stopped occasionally here and there to look at the displays and articles that filled the shop windows. Suddenly the sounds of the cop's shrill whistle, the buzzing street traffic and the staccato footsteps on the pavement were obliterated by the raucous music coming from a loudspeaker horn clamped to the striped awning of a music store. It was a song by the Chordette's singing *"Lollipop Lollipop Oh Lolli Lolli Lollipop."*

As he stood there on the Market Street sidewalk and listened ot the repetitious beat and sound of the record, LT Smith realized that it still has been only weeks since he had been released from the tortures of just such sounds.

There had been not one loud speaker but two — on opposite corners of the 12 inch barbed wire fence which enclosed the compound and separated his crew and him from freedom.

All day long, at 90 decibels, their captors had played the Chordette's singing *"Lollipop Lollipop Oh Lolli Lolli Lollipop,"* over and over again, stopping only for "their" national anthem and gibberish of orders and commands which they read from their military manuals

A prisoner of war gives a drink to another POW at the Cabanatuan Camp in the Philippines during World War II. *(Illustration by Benjamin Charles Steele Courtesy of Wikimedia)*

even though they knew the captured airmen could not understand a single word.

As he stood on the busy street corner, pictures flashed through LT Smith's mind.

Black, inky midnight… a double column of tired men roped together at the ankles, led blindfolded into the prison compound… grim-faced guards, in strange uniforms, shouting commands, prodding the exhausted prisoners with burp guns, searching them and stripping them of everything but their flight suits, ponchos and shoes. There it was again, played the Chordette's singing "Lollipop Lollipop Oh Lolli Lolli Lollipop."

Shattering, nerve-tearing, insane noise… the artillery barrage fired off to explode the dozing prisoners back to consciousness… the blaring of the enemy's national anthem… the hammering on top of the wooden boxes into which prisoners were placed for "correction"… the screaming din as the guards banged on the sides metal bins to harass the prisoners shut up inside.

Again they played the Chordette's singing *"Lollipop Lollipop Oh Lolli Lolli Lollipop."*

Even now, weeks later, it seemed incredible that Exercise Tenderfoot had been only a training exercise — five days of escape, evasion and survival and five days in the prison compound. Long before the end, the 50 pilots were reacting and existing as prisoners of war — without thoughts of the beginning when they had stepped, neat, clean and unperturbed, off the bus at the training center or of the end they would recount their experiences to their squadron mates.

On Market Street the record player at the music store had switched to another tune, but LT Smith stood rooted to the spot… lost in thought.

How did it all start?

His mind went back to his selection to fill his squadron's quota for the 10-day course… exercise plans and preliminary briefings on what to take and what to expect… reporting to the training center with his 49 fellow trainees, some serious, others with the attitude of boys off for a stay at summer camp.

On their arrival at the training area, the pilots were organized into teams, each under the senior officer present. For the five-day survival training period, each team was assigned an experienced guide from the training force. Before the real training exercise began, the guides showed the pilots how to kill a live rabbit, a goat and a snake, and how to dress the meat and smoke it in a smokehouse made of parachute cloth. They built demonstration shelters, made fishnets from string and parachute line, and explained the training center's static displays of snakes and equipment.

LT Smith recalled being searched for unauthorized items at the start of the training period. The men were allowed to carry only a poncho, chute cloth and a cord, a knife and a pair of extra socks. Among the articles confiscated from the group, he remembered with a rueful smile, were 75 packages of dehydrated soup.

Each pilot was given a live rabbit to take along for food. On the first night of training, the men were permitted to go up into the hills and build campfires as large as they liked. Though this was their chance to kill their rabbits and smoke the meat for easy transport, many of the men chose to carry the animals along live. Some made pets of their rabbits which made it harder to kill them later. Several rabbits escaped.

LT Smith chuckled to himself as he remembered the next morning when the men ferried their poncho rafts across the lake into enemy territory. Riding in style high and dry atop one of the rafts, while the builder swam behind and pushed it, were three of the rabbits.

Once the men were in enemy territory, the evasion phase of the exercise began. Using their knives, the pilots hacked their way through thickets and swamp underbrush. Helicopters circled overhead to spot the men and drop propaganda leaflets.

I wonder how many miles we did hike those five days, LT Smith thought. He pulled his wallet out and looked at the card he'd been given at the exercise's end — it stated "member in good standing of the fleet".

Some of the men had arrived for the exercise in brand-new heel-blistering boots. Others had worn old shoes which soon developed into flapping soles. He, himself, had been one of the few who had the forethought to wear a pair of paratrooper boots. More than once during the 10 days he had had occasion to congratulate himself, especially at the prison compound when the guards took away the trainees shoestrings.

You can walk in boots without shoestrings, they had explained later at the critique, but you can't escape or run in them. Most of the traveling in the survival period was done after dark to evade the enemy. While crossing a bridge over part of the swamp, one team walked straight into aggressor ambush. When the enemy opened "fire" the men scattered and lost nearly all of their equipment. Two of this group was later hospitalized with cases of poison ivy picked up whey they crawled through it to escape. A third man drove off the bridge into a foot of water but, miraculously, suffered only very bad bruises.

LT Smith's thoughts turned to the men's problems in finding food. On the fourth night, a live goat was staked out to a tree near each team's night camp. The trainees could take it or leave it. Besides a menu of goat meat, there was always fern soup.

The first five days were pretty rough, LT Smith thought, but prison camp was rougher… captured at midnight — everything seemed to happen at midnight. Then being marched around blindfolded and hobbled for four hours… and all that infernal racket and searching and interrogation.

The men in good physical condition, the ones who had always kept in shape and hadn't overdone the elbow-bending, came through the best. The overweight boys, especially the ones who came to the exercise hoping to cut his weight down for his annual physical, had it the roughest. He cut his weight down alright, LT Smith thought.

Then there was the joker who was stronger than the rest and to prove it, he did 25 extra pushups in the compound one day. At the critique they said this was a foolish display of strength and chances are that in a real situation, he would have been given "special

treatment" and would have ended up as haggard and as beat as the weakest.

Depression among the prisoners had been a serious problem with constant interrogation and harassment taking their toll.

LT Smith recalled another remark from the critique session: "Motivation, character, moral fiber and intelligence training are a man's primary tools for resisting when he's faced with a capable interrogator hour after hour after hour… when he's tired, hungry and has had no sleep."

More training on the Code of Conduct and the Geneva Convention is in order at the squadron level, LT Smith thought. Some of those guys didn't have much idea of what was going on. They should know more about prisoner organization. We sure found out the hard way. Group action or things either planned or approved by the group, that's what it takes. You can't afford any arbitrary, foolish individual action in a set-up like that. One of the guys put his finger right on it — You can't go out there and play Mickey Mouse.

The record player at the music store had by now run through the stack. The machine clicked and once again the loudspeaker blared Chordette's singing *"Lollipop Lollipop Oh Lolli Lolli Lollipop."*

With a slight shudder and an expression that made several passersby turn to look back at him, LT Smith shook off his thoughts and started on his way again. As he went into a building, he had one last thought about Exercise Tenderfoot…

The guy who really summed the situation up was that Army captain at the critique who said, "When a pilot is up in his aircraft at subsonic and supersonic speeds, he is the most modern of men, but he never should forget that he is never more than minutes away from the most primitive existence."

To that, LT Smith thought, I'll say Amen.

Today's survival training varies a bit from LT Smith's experience in 1958. Service members and DoD civilians now attend different training schools that relate to the training necessary for their jobs. In many fields, survival training is a requirement, not an option. If you're interested in more information on Navy survival training, visit the Navy Medicine Operational Training Center's website at http://www.med.navy.mil/sites/nmotc/nsti/Pages/default.aspx.

If you'd like to get a better idea of what it was like to have crashed and survived during war-time there are many movies that depict the experience. One of the most noted and recent of such tales is the movie ***Unbroken*** (released in 2014) which follows the journey of US Olympian and athlete Louis "Louie" Zamperini, portrayed by Jack O'Connell. Zamperini survived in a raft for 47 days after his bomber was downed in World War II, then was sent to a series of grueling prisoner of war camps. The experience tests his limits and will to survive.

Louis Zamperini, left, makes broadcast to the United States after spending 28 months in a Japanese prison camp.

Hazreping HAZREP

How can we keep lessons learned from fading away?

BY CAPT NOLAN DEAN, USMC, AND LT JARED PATTON, USN, MC

During a pre-deployment safety stand-down, our squadron reviewed a squadron mishap that occurred about a decade prior during a pre-deployment exercise. The mishap involved an AV-8B that was forced to ditch. The mishap review was an excellent case study for the squadron as it addressed the importance of operational risk management and the dangers of shipboard operations. This review was timely because we were approaching our first at-sea workup.

This training would not have been conducted without the guidance from our commanding officer because no one else within the squadron knew about this mishap.

There are three problems with naval aviation's safety knowledge or memory: it is generational, fleeting and localized. These three issues can be corrected individually. However, they are often so intertwined that large collective gaps in safety knowledge form before they can be recognized and fixed.

All type/model/series (TMS) communities can identify with the generational nature of our safety culture. Issues are hot button topics for a few years, and then they simply go away. Even when the issues are mitigated by community diligence and workarounds, underlying problems can remain. As informed personnel depart the squadron, the knowledge they have goes with them, and what was important for a few years to a specific TMS is replaced and forgotten. In addition to knowledge of issues with the aircraft or tactics, each generation of aircrew is knowledgeable about a specific block of mishaps and hazreps.

Much like the loss of generational knowledge, mishap and hazrep information is also fleeting. Unless we refresh our knowledge of mishaps and hazreps at a regular interval, we will lose our knowledge of these incidents. My squadron experienced a Class C mishap where a CH-53 pilot window departed the aircraft and hit the main rotor. Knowledge of similar incidents was present amongst all of the CH-53 pilots in the detachment, but most of this "knowledge" was really nothing more than anecdotal stories.

Individuals were too far removed from the dates of the incident to remember all of the details. As we forget the specifics, or even the generalities of mishaps and hazreps, we impede one of the basic purposes of these reports – to prevent similar incidents.

Naval aviation is spread out over numerous ships, bases and stations all over the United States and overseas. This geographic separation can impede safety knowledge from being propagated to the rest of the fleet. Best practices or mishap lessons learned can even be contained to a specific flight line. As my squadron transited back to the United States from our Marine expeditionary unit deployment, a MV-22 Class A mishap occurred where we had just been operating. My squadron's only information about it was contained in the short, quickly disseminated initial notification from the Naval Safety Center. A few weeks later, one of my squadron's aircraft returned to the LHD from the area where this mishap had occurred, and the aircrew had more details pertaining to what had transpired.

My squadron experienced its own Class A CH-53 mishap, and while the safety investigation report will be thorough, our aircrew will have many, more specific details due to their firsthand experience.

Units that are directly influenced or adjacent to a unit directly influenced, by a mishap or hazrep have a greater understanding and knowledge of safety incidents. However, this will most likely not get spread outside of that local area. Squadrons and individuals are not solely responsible for gathering safety information. The Naval Safety Center sends out monthly summaries for each community that summarizes important information, TMS specific hazreps, and other safety trends. Those personnel with Web Enabled Safety System (WESS) accounts receive automatic notifications of mishaps, hazreps, endorsements and initial notifications. If an individual has knowledge of a specific mishap or hazrep but does not have a WESS account, the Naval Safety Center can provide a copy of the report.

Within WESS, Jasper reports allow you to search all safety reports in the Jasper reports database. However, these systems are not 100 percent effective at disseminating safety information, and it is possible for important reports to be missed. How can we combat the generational, fleeting, and localized gaps of our safety knowledge and the shortcomings of the current information-sharing system? We recommend a two-fold approach, improving how we maintain knowledge of our safety information and how we disseminate it.

The methods used to share safety information should be more comprehensive, centralized, and more easily accessible by all aircrew.

A comprehensive, cumulative list is needed in the event a report notification is missed so aircrew can still access the information. Something as simple as a common access card enabled website that hosts mishap and hazrep information in a spreadsheet format would enable easy access. This sounds a lot like Jasper reports, which could very well be the solution, if properly modified. Jasper, in its current format is not user-friendly, easily accessible or even commonly well-known.

A good example of a repository of data is the spreadsheet found on the Naval Safety Center website listing old articles of Approach Magazine. This interface makes it easy to find and reference old articles. To improve distribution and awareness of old mishaps and hazreps, we need a way to make the process just as easy. With access to vast amounts of old data, and as new reports are released; it is difficult to remain current on what issues are important. The monthly community email sent out by the Naval Safety Center, summarizing the previous month's reports, is a model upon which we can build and improve.

We need a central agency to prioritize and catalogue hazreps and mishaps, ensuring squadrons are made aware of critical information. This central agency should organize information to disseminate to appropriate squadrons, which would in turn help prevent aircrew from being overwhelmed by all of the reports that are available. They could prioritize what is important and keep information relevant until an issue is resolved. No list exists that is accessible to fleet units identifying enduring unresolved issues or recommendations. This agency would improve our current model by providing TMS-specific prioritization of information and ensuring that important topics remain relevant. The new model would keep monthly summaries from the Naval Safety Center as well as automated WESS emails.

An easily accessible website (controlled to protect the privileged nature of hazreps and mishaps) should be developed. This website should have a search engine with access to a database of all mishaps and hazreps. Users will be able to easily refine and categorize search results.

This website could contain a list of developing and enduring naval aviation and TMS-specific hazreps, issues, and concerns, as well as their final disposition. The lists could include reports that need to be briefed to aircrew. This would allow safety departments to keep their squadrons informed of all relevant issues and enable those outside of the normal safety reporting channels to have better access to safety reports. To better integrate the use of this website within naval aviation, a change in our culture is needed. The best way to effect this change is to start in flight school.

Student naval aviators (SNAs) and aircrew should be exposed to the user-friendly, easily accessible database of HAZREPS and mishaps as early as possible. They would be able to learn from the TMS mishaps and hazards identified by those who went before them. At each stage of flight school the SNAs would be exposed to information about a different TMS, further engraining the importance of reviewing your community's safety history and knowledge.

When these SNAs become winged aviators, they will take the habit pattern of hazrep and mishap review with them to the fleet. Programs should also be instituted for the fleet to indoctrinate current aircrew on the availability of this hazrep and mishap data and whatever type of read-and-initial system is established.

Overall, our goal should beto find a better means of storing and sharing safety information needed so that old mishaps are not forgotten and repeated. A cultural shift or better form of indoctrination early on in flight training addressing the importance of reviewing safety knowledge goes hand in hand with the improved access to information.

The desired end-state would be when the naval aviation community regards reviewing and retaining safety knowledge in the same manner that we regard reviewing emergency procedures and studying our NATOPS. This can only be facilitated if the information is readily available and easily accessible.

BY CAPT NOLAN DEAN, AND LT JARED PATTON VMM-263.

NAVSAFECEN recently hired Kevin Conroy as our first ever Lessons Learned Program Manager. We are aggressively pursuing more effective and efficient lessons learned analysis and dissemination, including some of the recommendations in this article. Please keep the good ideas coming. Also see Maj Rob Orr's related article, *"Mishaps–Avoiding Repeat Performances"* from the Fall 2013 Safety Sigma newsletter of the Naval School of Aviation Safety at *http://www.public.navy.mil/comnasafecen/Pages/aviation/SAS/newsletter_archive.aspx*.

Fighting FOD in a Combat Environment

BY LT JONATHAN LEE

Carrier Air Wing 17 (CVW-17) deployed aboard USS Carl Vinson (CVN 70) on August 22, 2014. After a two-month transit that consisted of unit-level training (ULT) missions and Operation Valiant Shield, CVW-17 began daily combat operations in support of Operation Inherent Resolve. The daily operational tempo consisted of 75 sorties, encompassing combat sorties, ULT and organic tankers. While the operational tempo was consistent with a standard deployment, the rate of engine foreign object damage (FOD) removals was disproportionally high. Leadership suspected that traditional FOD prevention measures were proving insufficient. Unconventional mitigations would be required to minimize the risks associated with FOD.

That's a lot of pockets, or so it may seem aboard the USS Carl Vinson. While pockets aren't something one normally thinks of, it became a topic of discussion during one foreign object debris (FOD) council meeting when they noticed a rise in FOD. The result of the meeting was a decision to have all flight deck personnel sew their pockets shut to prevent FOD from accidentally dropping out of pockets. Each year FOD contributes to millions in repair costs. *(Photo by MC2 James R. Evans)*

In roughly six months of the deployment, CVW-17 mechs had to remove 13 engines because of FOD: three from VFA-22, three from VFA-94, one from VFA-81 and six from VFA-113. Our air wing averaged 2.17 FOD removals per month (the average for a deployed air wing is 0.87). These engine removals cost the VFA squadrons and USS Carl Vinson valuable resources. VFA-22, VFA-94, VFA-81 and VFA-113 combined to incur a cost of $13 million to repair or replace these engines. In addition to the monetary loss, these engine removals and repairs imposed 2,728.4 man-hours of work on the squadrons and Aircraft Intermediate Maintenance Department (AIMD). The loss of man-hours was detrimental to operational squadrons. Rather than focusing on the maintenance of fully mission capable (FMC) jets, squadrons were replacing and rebuilding engines to simply get airborne.

Only two of the 13 removals had an identified cause. One engine was removed after ingesting a blown tire during a recovery. Another was removed due to the ingestion of an in-flight-refueling (IFR) probe. The remaining eleven events were caused by unknown sources.

CVW-17 and CVN 70 leadership imposed a proactive plan that resulted in a drastic reduction of engine FOD removals. The first step was establishing a quarterly FOD council, comprised of both CVW-17 and CVN 70 leadership and focused on methods to eliminate the challenge of detecting foreign debris. When the first council convened, engines were being removed at a rate of three per month. After innovative control measure were put in place, the removals decreased to a rate of 1.33 engines per month.

The quarterly council initially summarized and revealed photos of the type of FOD discovered during the previous three months. Once the main sources of FOD were localized, the FOD council brainstormed new control measures to eradicate the threat. After the first meeting of the FOD Council, all flight deck personnel were required to sew their pockets closed. In addition, both CVW-17 and CVN 70 personnel were required to inventory all personal protective equipment (PPE), including cranials, float coats and auto-inflator assemblies. Any infraction resulted in the engagement of the chain of command and, most importantly, a forced exit from the flight deck.

The most unconventional proposal was the implementation of a nightly FOD walk-down. It is hard to find small pieces of FOD at night, but larger items were periodically discovered: several wrenches, CO2 cartridges and an entire float coat auto-inflator assembly. Prior to the night FOD walk-down, these items would have threatened the air wing assets until the following morning.

Each of these control measures decreased the amount of FOD present during flight operations. Collectively, they increased FOD awareness for all personnel on board. In order to truly combat FOD, each person must understand the importance of by-the-book maintenance. The efforts made by CVW-17/CVN 70 chains of command instituted a policy that created that climate. FOD prevention became a priority and the diminished amount of engine FOD removals directly illustrates an increase in FOD awareness.

Through unconventional control measures, leadership directly addressed the challenges of FOD and drastically reduced the number of engine removals caused by FOD. While potential methods for improvement remain, these non-traditional ideas provided a solution and allowed our aircraft to successfully support Operation Inherent Resolve.

LT LEE FLIES WITH VFA-22.

An aviator's line of work almost guarantees that he or she will encounter stress. Most of the time, they'll be able to handle it sufficiently. If you find that you've hit a particularly rough patch, take advantage of your options. Seeing your flight surgeon when personal issues are closing in is a great step in the right direction.

LT Kirsten Carlson
Aerospace Experimental Psychologist with the
aviation safety program at the Naval Safety Center