

# Approach

GOOD JUDGMENT COMES  
FROM EXPERIENCE.  
GOOD EXPERIENCE COMES  
FROM SOMEONE ELSE'S  
BAD JUDGMENT—BUT,  
ONLY IF THE EXPERIENCE  
IS SHARED.



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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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# C O N



## Features

### Naval Aviation—100 Years

The Centennial of Naval Aviation is celebrated in 2011, and *Approach* magazine is presenting articles to commemorate our legacy. Peter Mersky's feature article discusses a critical growth period in early Naval Aviation as we entered World War I.

#### 3. U.S. Naval Aviation in World War I

By Peter Mersky

From the first powered flight of the Wright brothers, to the use of aircraft in World War I, Naval Aviation was brought into the warfighting arena. This era sees Navy and Marine Corps pilots enter the conflict with our European allies. A steep learning curve on flying skills and aircraft designs often came with a steep price, as man and machine evolved. From initial taskings of observation and reconnaissance, the role of warfighting, bombing and aerial combat began.

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By Lt. Rob Spann

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## July-August Thanks

Thanks for helping with this issue ...

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## From Capt. Mike Zamesnik, Director, Aviation Safety Programs

It's been nine months since the back slapping, hand shaking, high fivin' and cork popping celebrating FY10 as having the lowest mishap rate in Naval Aviation history. However, Naval Aviation is not an organization that can afford to rest on its laurels. Our operations and aircraft maintenance are too integral to the safety process for long reflection. As of this writing, the Naval Aviation mishap rate is about even with last year's statistics.

Both organizations are leading in the most important statistic of all: The preservation of our aircrew. Last year at this time, we had 14 fatalities, this year we have three. Although every life lost is a tragedy, we can take solace in this downward trend. The three lives lost, and five destroyed aircraft, are still far too many.

What is most disconcerting are the causes of these mishaps. Human error causal factors have historically accounted for 75 to 85 percent of all mishaps, with exclusively aircrew error somewhat less. However, FY11 seems to be exhibiting a reversal of the aircrew causal factor with a possible trend toward material failure and/or maintenance errors.

Having an effective organizational safety program is like pressing down on a bowl of Jello with your hand. To be successful, you must apply equal pressure across the entire surface. We are doing a great job in training, monitoring and equipping our aircrew to ensure their success. However, we also need to ask ourselves if we have let something slip by on the maintenance side of the equation. We need to widen our focus to include those who literally hold our lives in their tool boxes. Are your wrench-turners getting adequate "crew rest"? Are they being given the proper tools and material to do the job? Are they getting the same care and feeding as the flyers? Is your command's quantity and experience manning adequate?

As operational commitments continue to pull the aviation enterprise in many directions, we must increase our focus on the basics of a thorough scrub of the aircraft discrepancy book (ADB). Question what has been done on your machine. When you preflight, focus on looking not only at the aircraft, but the Sailor or Marine who is assisting in the launch cycle. Make maintainers part of your safety-of-flight team. He or she may well hold that final bit of insight into the health of your machine.

We are on track to achieve our mishap-reduction goals, but it will take an across the board team effort—an effort that values everyone's contribution and one where we have each other's back.

Remember, we didn't achieve the safest year in naval Aviation history by accident.

Keep the shiny side up,

Z-man sends

# U.S. Naval Aviation in World War I



The lineup of Curtiss flying boat trainers at Pensacola, 1918.

**BY PETER MERSKY**

**W**hen the Central Powers (Germany, Austria-Hungary, Bulgaria and Turkey) struck against the Allies (Great Britain, France, Italy, Russia and Japan) in late July 1914, beginning World War I, warfare as we came to know it during most of the 20th Century, had all its major implements. All that was left was to refine these tools and the organizations that used them.

The world had been at relative peace during the century following Napoleon's final defeat at Waterloo in June 1815. Taking advantage of this pause in international struggle, the society had made great advances in industry, medicine, and technology that set the tone for the next century. Among these wonders of the world was, of course, the airplane. Perhaps somewhat naively, the Wright Brothers, who had given the world powered flight that cold December day in 1903 on the wind-swept dunes of Kitty Hawk, believed that their invention would be used for peaceful endeavors such as the fast transport of people and cargo to far reaches of the planet.

Wilbur died unexpectedly of typhoid in 1912, leaving Orville to watch in horror and disgust over the coming decades as the airplane, while definitely achieving their initial goals, was also molded into a weapon of mass destruction. By the time he died in 1948, Orville was bitter and angry at what he saw as the theft of his and his brother's dream for a major aid to mankind.

Once considered mainly a vehicle from which to observe troop movements and gain reconnaissance intelligence, the airplane soon became that weapon. It bombed and strafed troops and facilities on the ground while intercepting and destroying these same attackers as well as going against its opposite numbers on the other side. Aerial warfare had arrived and by 1917 was a major part of most of the combatants' order of battle.

The European powers had been quicker to grasp the growing importance

of the airplane in war. While America stood off on the sidelines, many of its young men, impatient to get into the fight, entered the service of other countries, mainly France and England, along with Italy (on the ground) and gained a wealth of experience—if they survived—that they passed on to U.S. troops that finally did come over when America declared war against the Central Powers on April 6, 1917.

Actually, American aircraft and crews had seen very limited combat in this hemisphere, fighting as reconnaissance platforms during the 1914 action



Curtiss trainers at Pensacola, 1918.

in Vera Cruz, Mexico as well as chasing Mexican bandits in 1916 with eight rather decrepit JN-3 Jennies that were more suited as trainers than front-line "attack aircraft." Their crews were on a punitive cross-the-border expedition to roust the often piratical, sometime nationalistic Pancho Villa, and stop him from entering the U.S., often with as many as 1,000 men. In March 1916 Villa had crossed the border and killed 17 American citizens in Columbus, New Mexico. President Woodrow Wilson then sent BGen John Pershing out to capture him.

Bad weather, terrible environmental conditions—heat, blowing sand—did not allow much success in even finding the wily bandito, much less luring him into a fight.

The campaign at Vera Cruz saw the first hits on American Navy aircraft when Lt. Patrick N.L. Bellinger's Curtiss and Ens. Richard C. Saufley's AH-3 was struck by ground fire on May 6th.

These young aviators and their friends were always setting performance records, pushing the envelope. On April 23, 1915, Bellinger flew a Burgess-Dunne to 10,000 feet to set a seaplane record. Then, Saufley flew a Curtiss floatplane to 11,975 feet on December 3.

The Navy had also tried out several aircraft for training purposes, but by mid-1916, the Curtiss N-9 floatplane seemed to have become the favorite type. Thirty were delivered between November 1916 and February 1917.

On July 18, 1916, SecNav signed off on flight clothing allowances that provided for helmets, goggles, and a safety jacket. Enlisted men on flight orders also received money for wool caps, gloves and boots. On April 6, 1917, the same day that the U.S. declared war on the Central Powers, thereby joining the Allies, SecNav approved a standard "kit" for aviators: a tan sheepskin long coat, short coat and trousers, moleskin hood, goggles, black leather

gloves, soft leather boots, wading boots (so many of the current aircraft were flown from the water), brogans and life belts.

Actually, U.S. naval aviation was not that ready to go to war. It had 43 officers and 239 enlisted men assigned, along with 54 aircraft of varying capabilities. However, the \$3.2 million allocated for aviation in August 1916 had yet to have a tangible effect. Aircraft manufacture and naval air station construction along the East Coast took a long time to start. By late 1916, some training and shipboard experiments had been accomplished. Of course, the cradle—NAS Pensacola—had opened in January 1914. Soon, naval air stations were established along the European coast and groups of eager young aviators were making their way "over there" to enter the fight.

It was a strange sequence that many of the American aviators undertook before they actually saw combat. Although most were, in fact, designated Naval Aviators, they still needed additional training before they could be sent to fly and fight alongside their Allied compatriots or against their German foes, a good portion of whom had been flying for nearly two years and had seen a lot of combat. Some Americans went off to Canada to train with the Royal Flying Corps, while many more landed in France after a long ocean voyage through submarine-infested seas, and headed for several French training aerodromes. There, handicapped by a foreign language and aggressive instructors who often railed at their American "eleves" (students) in salty French, these young men fine-tuned their skills with modified Bleriot monoplanes—nicknamed "penguins" because they couldn't fly, except for jumping off the ground for a few feet before returning to earth. The Bleriot gave them experience in taxiing and handling a French engine and controls, which were different from the Wright and Curtiss aircraft they had known in the States. It was an eye-opener for all concerned. Still, the young Americans persevered and soon received the French "brevet," and certificate that qualified them as aviators.

THE STORY OF AMERICAN NAVAL AVIATORS in Europe at this time is very busy and quite complicated, mainly because everyone was trying to find a place for these new arrivals as they arrived from New York to England, and then usually over to the French coastal airfields that had been established earlier by the Allies as they developed their tactics and strategies in combatting the Central Powers. While some Americans flew British flying boats from airfields in England, many found their way to France. After finishing their French flight training, they took advantage of the several different flying boats the French made available.

However, there were also those American aviators who flew offensive missions in British aircraft like the De Havilland DH-4 and DH-9 bombers, as well as the legendary Sopwith Camel fighter. Usually, these missions were on brief exchange tours with British squadrons, all of which were now consolidated into the Royal Air Force, as of April 1, 1918. Before this date, the Royal Flying Corps and Royal Naval Air Service were separate, each contributing its own effort to



A group of ensign reservists in France stands by an HS-1 at Treguier, on the southwest Channel coast. Treguier, some 90 miles east of Brest, guarded the coast from German submarines. The young aviators model early precursors of the later Aviation Greens and show a wide variety of personal choice in their dress as well as their individual attitude toward safety. Note the man on the far right casually smoking!



A Curtiss R-6 in 1918. These popular trainers also served limited duty as ASW and maritime patrol aircraft. After the war, a few were equipped as early torpedo bombers.



This chunky two-place Curtiss HA-2 "fighter" was supposed to protect convoys in the English Channel. It never achieved production and only shows how far behind the European American designers were in 1918.



David Ingalls poses with two British friends. The man on his right wears a Royal Naval Air Service uniform, while the man on his left sports Royal Flying Corps dress. This was a time of transition as both British services were combined in April 1918 to form the Royal Air Force. Ingalls also shows his ubiquitous pipe. He was always writing home to beg for tobacco, which was evidently hard to come by in wartime France. (Ingalls Family Collection)



The French had several flying boat designs that they made available to their newly arrived American allies. The Donnet Denhaut DD.8 was powered by a 200 hp Hispano-Suiza engine, which gave a maximum speed of only 72 mph. The Navy used 56 of these "boats," including 25 at Dunkerque. Others were distributed to other U.S.-manned stations and were flown mainly in the ASW role, with some success. Ens. Julian F. Carson received the Croix de Guerre for sinking a German sub on August 13, 1918. Note the American Sailor just below the pusher engine.



The famous Sopwith Camel was used by many British squadrons, including 13 Naval/213 Squadron, the squadron David S. Ingalls flew with to obtain his six kills to become America's first and only naval ace of the war. The Camel's short-coupled design is well shown here and accounted for the Camel's legendary maneuverability as well as its equally legendary handling difficulties. (Fleet Air Arm Museum)



One of the stranger trainers at Pensacola in 1918 was the Gallaudet D.4. Its Liberty engine and propeller were mounted amidships! Max speed: 90 mph.

the war. But with the formation of the RAF, Britain lost its dedicated naval air arm, until the late 1930s.

One of these early young naval fighter pilots was Ltjg. David S. Ingalls. He had been a member of the First Yale Unit, which had been formed by Yale students in 1916. There was also a second unit, and a third was planned but eventually cancelled. A native of Cleveland, Ohio, Ingalls began flying from the station at Dunkirk in April 1918 after he had gone through the training in England. After a few maritime patrols, he flew with the RAF's No. 218 squadron, which flew DH-4s.

After putting through several requests, he got a tour with 213 Squadron, flying Camels. In August and September he flew a number of missions that put him in contact with the Germans, enabling him to score six kills. He, thus, became America's first and only naval ace of the war. He later served in World War II and retired as a rear admiral.

There were several personalities of note who also flew with the British. The Marines, who had been forming their own organization, also took advantage of the British exchange opportunities. (Remember, Marine Corps aviation will celebrate *its* centennial in 2012.)

The Navy's First Aeronautic Detachment began arriving in France in June 1917 aboard Navy ships, and within a few weeks had begun flight training at the Ecole d'Aviation Militaire at Tours. It wasn't long before the detachment suffered its first fatality when Thomas W. Barrett was killed in a crash, the first Navy man to be killed in France during the war. All sorts of related things were happening, ranging from uniform designations, khakis and aviation greens, to training syllabi and aircraft insignia.

At home, training was also taking a priority, including an ambitious program at the Massachusetts Institute of Technology in Cambridge. Ground school, preliminary flight instruction, followed by advanced training were part of the schedule. The Navy even formed its own aircraft factory in Philadelphia. The site was recommended because of the amount of available land and because of its proximity to the Delaware River. The factory was up and running by March 1918, and on March 27, the first Curtiss H-16 flying boat built at the NAF took to the air. Within a week two H-16s were shipped to England to join the war effort. By the summer, the factory was pumping out aircraft, including another Curtiss "boat," the F5L.

The tremendous effort in building and operating the Naval Aircraft Factory was one shining achievement for America's contribution. Yet, as soon as the armistice was signed and the war ended on November 11, 1918, orders were cancelled and the factory closed a year later.

U.S. Naval Aviators and their crews saw a lot of action flying from the various coastal bases. On April 23, 1918, Ens. K.R. Smith and QM1 (Quartermaster) R.H. Harrell were flying two French Donnet-Denhaut flying boats when they spotted a submarine on the surface. Smith attacked the sub, which they had determined to be German, and sunk it, thereby becoming the first American crew to kill a submarine. The French awarded Ensign Smith and his observer, Chief O.E. Williams, the Croix de Guerre with Palm.

One of the best known actions involving American Naval Aviators during

the war developed into the first awarding of the Medal of Honor to a Naval Aviator. Charles H. Hammann was a reserve quartermaster flying from Porto Corsini, Italy. The base CO was Lt. Willis B. Haviland, late of the famed Lafayette Escadrille. Although he gained only one kill during his time with the Lafayette, he did bring a lot of experience with him when the Navy commissioned him after the U.S. entry into the war.

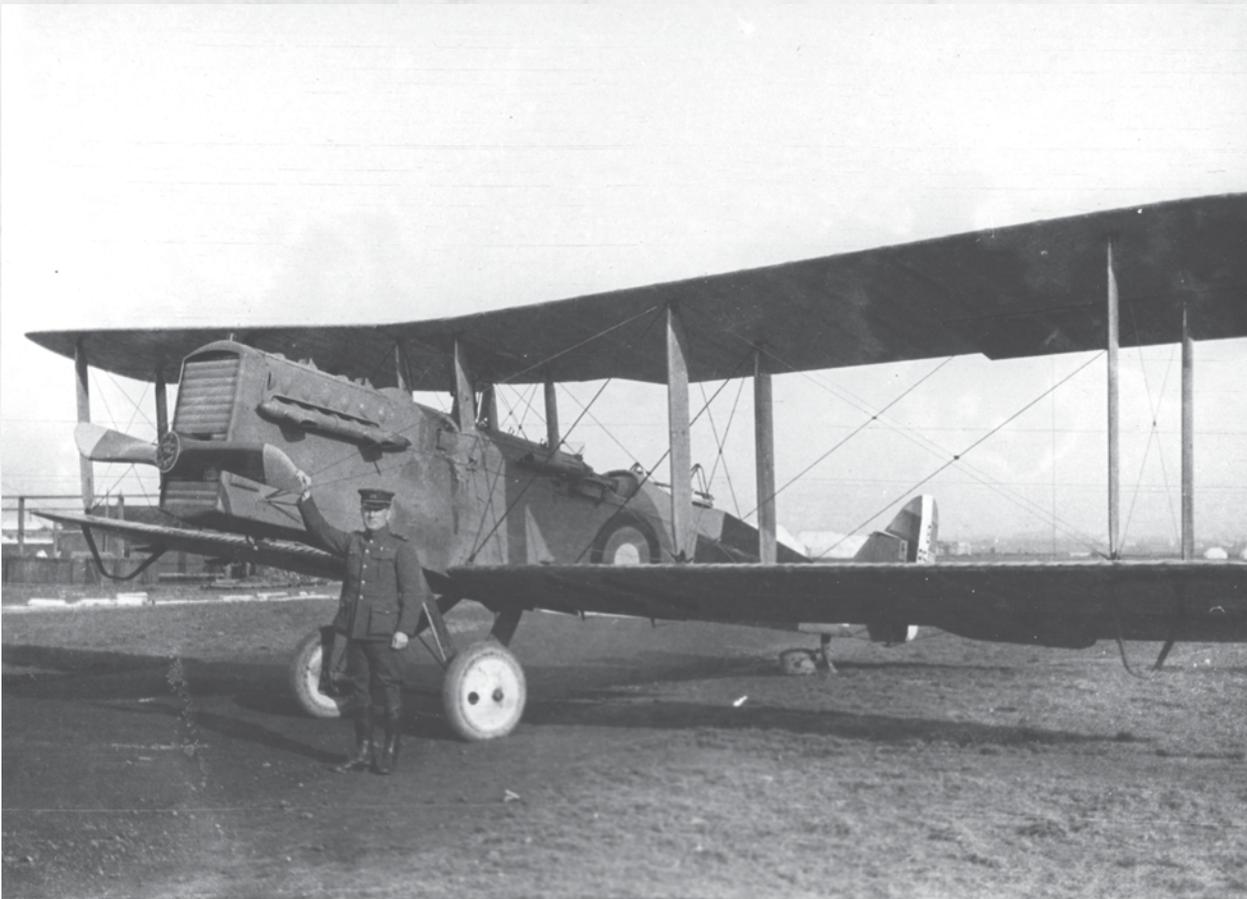
The main opponents of these Americans were Austrian aviators at Pola directly across from Porto Corsini, and they had already attacked the U.S. base to welcome their new enemy. Equipped with two different types of Macchi aircraft—single-seat M-5 fighters and two-seat M-8 bombers—the newcomers were soon in action against an experienced enemy.

On August 21, 1918, Hammann was part of a mission to drop propaganda leaflets on Austrian positions. Flying through flak, the Americans encountered four Austrian Albatros fighters. Ens. George Ludlow shot down one of the Austrians but was soon, himself, downed and ditched just three miles off Pola. Quartermaster Hammann put his little flying boat fighter down amidst very choppy seas to rescue Ludlow, who scrambled into the single-man cockpit. Hammann was able to barely take off and return to Porto Corsino, where he ditched his damaged fighter, which capsized as it hit the water. However, the two young aviators were able to get out safely and were rescued by station launches that had come out to get them. It was a stunning bit of bravery and skill that has since set the tone for all the generations of Naval Aviators that followed. Ensign Ludlow received the Navy Cross for his part in the mission.

Unfortunately, while he was commissioned following his Medal of Honor mission, now-Ensign Hammann was killed after the war in June 1919 in a flying mishap while at Langley Field, Hampton, Virginia. A destroyer was named for him, and it saw considerable action in the first six months of World War II. But DD-412 was sunk trying to protect the mortally wounded carrier, USS *Yorktown* (CV-5) in the final days of the Battle of Midway, on June 6, 1942.

In many intense combat SAR missions, safety sometimes seems to take a back seat. The drive to retrieve his squadron mate under heavy enemy fire so close to enemy positions made Charles Hammann place safety—which after all was a relatively new concern in the equally new arena of combat aviation—in the background. And who is to say he wouldn't do the same thing under similar conditions? Piloting skill and individual courage are sometimes all someone has at a specific point in time. Fortunately, it was what both young men needed at the specific time of this particular mission. Without radios to talk to senior officers, or dedicated SAR assets such as inbound helicopters and highly trained crewmen and swimmers, they had to make their own decisions based on what they perceived at the time.

Military aviation during World War I was a combination of adventure, development, courage and hard facts that had to be faced and dealt with. Throughout 1918, new naval air stations at home and in Europe were commissioned and opened, the better to train and to fight the enemy that still had lots of stamina after four hard years of bloody war. Occasionally, but rarely, the war came home to the U.S. NAS Chatham was opened in January. Sitting right on the elbow of Cape Cod, the station had an open view of the Atlantic. On



This De Havilland DH-9A is part of one of the Marine Corps squadrons serving in October 1918. The Navy warrant officer seems somewhat out of place by the large biplane bomber. (David Ingalls)

July 21, two Chatham flying boats attacked a marauding German sub that had been shelling a tugboat. The aircraft dropped two bombs but the sub escaped.

Closer to the war, on March 19, a division of flying boats on a long-range reconnaissance along the German coast was attacked by German floatplane fighters. Ens. Stephen Potter managed to shoot down one of them, becoming the first U.S. Naval Aviator to score against these dangerous planes.

Administrative developments included a new national insignia that replaced the white star in general use. The new design, as of February 8, was a cockade of three circles, similar to the French and British insignia, except for the order of the colors, which were red (outer ring) then blue and white center. Aircraft rudders were striped with red at the post, trailing back to white then blue.

American aircraft design was very much behind its European compatriots. A hulking two-seater floatplane, loosely referred to as the “Dunkirk fighter,” and a very outmoded triplane also on floats from Curtiss made their first flights on March 21 and March 30, respectively. But they never saw service.

As the summer of 1918 wore on, the addition of American assets began to make itself felt. In the aviation lineup, the Northern Bombing Group (NBG)—a combination of Navy and Marine Corps units—was getting ready to assume its place in the order of battle. On August 15, the Navy unit began independent operations with a night raid on German submarine repair facili-

ties at Ostend, an important Belgian port on the North Sea up the coast from Calais. The Navy crews flew Italian-made Caproni bombers, large biplanes with three 600-hp engines. (New York City’s colorful mayor Fiorello La Guardia saw action as an Army Air Service aviator also flying Capronis.)

Aircraft delivery had been a problem in getting the NBG ready. Finally, the Capronis arrived, and DH-4s originally intended for the RAF were given to the eager Marine squadrons, which quickly began a limited bombing campaign. Eventually, the Marines acquired a mix of DH-4s and DH-9As, a development of the DH-4, incorporating cockpits that were closer together than in the DH-4. The Marines were flying missions by September and in October two DH-4 Marines received the first Medals of Honor given to Marine aviators.

By the time an armistice was signed on November 11, 1918, American Navy and Marine Corps groups were a major portion of the U.S. aviation effort. While specific things changed after the war, the Navy and Marine Corps had made great inroads that would eventually serve them well in the coming decades, and especially during the next world war. 

MR. MERSKY IS A FORMER APPROACH EDITOR AND AUTHOR OF SEVERAL BOOKS ON NAVAL AVIATION.

*Thanks to Capt. R. Rausa, USNR (Ret) and Mr. Tony Holmes for help with photo research.*

# Our Greatest Danger

BY LT JOSEPH BURNS

**M**uch of what we do in Naval Aviation is based upon habit patterns and feel. We spend years in flight school developing good habits and instinctual responses because one day, when we find ourselves in extremis or task saturated, our mission and survival may depend on those automatic responses. However, the same reliance on habit and past experience that can be our saving grace can also be our greatest danger if we allow routine to turn into complacency.

I almost fell into this trap on one of the busiest days of our predeployment workups. After a week of cyclic operations, we had settled into a comfortable—albeit extremely busy—routine. Multiple flights a day were normal, and crew rest, crew day, and man-ups were being managed right up to the limits so the squadron could meet sortie requirements.

My flight lead was an experienced aviator with more than 2,000 hours in the FA-18, and we were scheduled for a day, good-deal bombing flight. Rhinos can carry bombs on three weapons stations per wing (inboard, midboard, and outboard). Our jets were configured with external fuel tanks on the centerline and right inboard wing station—a configuration known as “goofy gas”—with inert Mk-84 bombs (2,000 pounds each) loaded on wing weapon stations. The flight lead assumed, for briefing purposes, that the bombs would be symmetrically loaded on the midboard wing stations. However, they actually were loaded asymmetrically, with the left side bomb loaded on the inboard station.

Dive-bombing deliveries were planned using approved software, which indicated valid loads for all combinations of midboard and inboard bomb loading. The mission-planning software usually generates errors for loads that exceed NATOPS limits, but not in this case. The software had an error and did not flag our actual load as out of limits (this software has since been

fixed). In this case, both aircraft were loaded with more than 33,000 foot-pounds of asymmetry with a NATOPS limit of 29,000.

During preflight preparation, we also checked the load with the squadron ordnance officer (“gunner”) who confirmed that it was valid. Unfortunately, neither aircrew knew that loads deemed valid from an ordnance perspective might still be out of NATOPS flight limits. The term “valid load” only applies to whether a load is authorized to be carried and released based on the store combinations. It does not take into account any NATOPS limit and instead focuses solely on making sure the bombs fall away from the jet freely without bouncing off other stores. Gunner accurately stated that the load was valid.

An additional check is in place to make sure someone else would catch our mistake. Months before, in preparation for months at sea and eventual deployment, I was tasked with creating a spreadsheet to automatically generate catapult weight chits. Those weight chits take into account asymmetry and gross weight to inform the catapult launch officer, known as the shooter, how strong of a shot is needed to get the required end-speed for a given configuration. I knew the spreadsheet would pop a warning for any configuration that violated NATOPS limitations. If we had a bad load, the squadron duty officer (SDO), who is respon-



sible for the weight chits, would catch it when he generated the weight chits.

As we sat down to brief, content that administrative matters like NATOPS limitations were well in hand, we focused on the tactical portion of our flight. The brief was thorough with respect to routine administrative items, tactical admin and tactics, but did not focus enough on contingencies we should have foreseen.

First, Mk-84s, inert or otherwise, are not something we routinely carry, and they

**...both aircraft were loaded with more than 33,000 foot-pounds of asymmetry with a NATOPS limit of 29,000.**

weigh significantly more than most other ordnance. Also, goofy-gas configured FA-18s are near asymmetric launch limits without ordnance. These two facts should have raised our attentiveness during mission planning and the brief to considerations such as asymmetry, trim, max-trap fuel, hung ordnance or unexpended ordnance and jettison—none of which were briefed in adequate detail.

Most importantly, what happens to total aircraft asymmetry if the bombs are asymmetrically loaded? This question dawned on the flight



lead during the brief. He queried the SDO and asked for the information to be provided before the crews walked to their aircraft.

**A**fter crunching the numbers, the SDO noticed our load was out of asymmetry limitations; the warning I knew would pop, had popped. He called gunner to double-check that the load was valid. Gunner told the SDO that he had confirmed the load with my flight lead, used weaponeering software, and checked it in the appropriate manual. The SDO, still unsure, but not wanting to doubt gunner, decided to discuss the matter with my flight lead after we had finished briefing. Unfortunately, we managed to walk from our brief while the SDO was conducting a turnover with his relief. We never followed-up with him and left the ready room unclear on our precarious load-out.

Preflight, man-up, and start were without incident. After running my initial flight-control-system test, I set trim for takeoff. I couldn't remember the correct trim settings from the weight chit, mainly because I had not bothered to look. No need to worry, it's usually about six degrees away from the wing with the wing tank. My checklist page was up, showing me about 33,000-foot-pounds, right wing-down asymmetry. But, I did not take time to reference my pocket

checklist for the setting. Had I done so, I would have realized that I was out of limits. But again, I let complacency and experience lull me into a false sense of security. I felt suitcased for the catapult shot and the bombing flight to follow.

As a nugget I still found it necessary to verbalize to myself that I needed to make my clearing turn off of cat 2 to the right. I taxied into the shuttle, went into tension, and promptly suspended myself because I was not getting the afterburner signal from the shooter that I expected. Meanwhile, my lead had noticed that our bombs were loaded asymmetrically and was double-checking total asymmetry and limitations using his pocket checklist. As he looked at the numbers, the hair on his neck raised. Unsure of the numbers and in a time crunch, he briefly queried me over the radio, but I was in tension for the second time and told him to stand by.

Lead called out, "Suspend" on the tower frequency at about the same time that the shooter launched me off the bow.

The right clearing turn I had previously pipped myself to remember happened automatically. In fact, with 33,000-foot-pounds of asymmetry pulling down my right wing, the jet was rolling abruptly to the right as soon as I broke free of the deck. Catapult shots in the Rhino are taken with the hand off the control stick, so



I already had rolled through 45 degrees angle of bank before I got control of the aircraft. I stopped the roll at about 60 degrees angle of bank and 100 feet above the water with full left stick and rudder.

Flight lead called, “How was that cat shot?”

Thinking he was referring to the end speed, I responded, “It felt pretty strong, sir.”

My successful catapult shot assuaged his doubts, and with some other non-safety-of-flight related considerations clouding his judgment, he launched shortly after me.

**WE BOTH NOTICED DEGRADED AIRCRAFT** performance. Full lateral trim was insufficient to hold the aircraft straight and level. During my G-awareness maneuver en route to the briefed rendezvous point, I immediately was alpha limited and found myself bleeding airspeed and altitude well outside the jet’s normal performance. Despite the abnormal performance, my flight lead and I decided to press with the mission, delivering our bombs without incident. The rest of the flight and recovery were normal as all asymmetry issues subsided the moment we pickled the bombs.

After the flight we sat down and went through the numerous things we had done wrong. As aircraft commanders we each took a jet flying that was in violation of NATOPS limits. We got to that point by being com-

placent. We took for granted that the Rhino could carry nearly anything, and if it couldn’t, surely the mission-planning software and our internal checks and balances would flag it for us. We had continued to press with the tactical portion even though something obviously was abnormal about our configuration, to the point of degrading the aircraft’s performance.

The big issue for me was that our brief glossed over critical considerations for the flight. For my flight lead, in the critical seconds prelaunch, he allowed thoughts such as sortie counts and possible embarrassment to overcome what should have been an automatic decision to suspend his wingman’s launch, and to take both aircraft out of the launch sequence until the safety-of-flight question was resolved.

At the end of the day, no permanent damage was done, the jets weren’t broken, the bombs hit the target, and all is well that ends well. However, our complacency put us and our aircraft in a precarious situation. All the tactical proficiency and focus in the world does us no good if we do not first safely take off, rendezvous, navigate and recover our aircraft. Sound habit patterns and past experience, no matter how much or how little you may have, are not the substitute for always being attentive to the critical phases of mission planning, the brief and flight. 

LT BURNS FLIES FOR VFA-137.

# Backing Into Corners

**BY LT ROB SPANN**

**I**t was a cool, brisk morning in February. I was carrier flying the T-45A, southwest of San Diego and off the coast of Mexico. I had just finished my first breakfast on board an aircraft carrier and was headed out for my initial carrier qualifications (CQs) on USS *Ronald Reagan* (CVN 76). So far, I had completed two of my four touch-and-goes and five of my 10 required traps to earn my wings of gold. I was one of the priority students to finish because my fleet replacement squadron (FRS) needed me in three weeks to fill a spot in the upcoming class.

I completed my preflight and stowed my bingo bag in the small battery compartment in the belly of the plane. I was parked behind the junkyard, so by the time I taxied I had to wait in the conga line. When I finally

got to the catapult, I was ready and excited to finish up my CQ and head back to San Diego to enjoy the rest of the detachment.

I finally made it airborne, found my interval and turned downwind. The boss told me, "Hook up for two," and I rogered, "261."

After completing my two touch-and-goes, I was told hook down, so I lowered my hook and completed the landing checklist. I glanced again at my fuel gauge, so I knew what to call on the ball. As soon as you take off in a T-45, you're already worried about fuel. At max endurance, you have maybe two hours of flight time before you're bingo fuel. My gas showed about 2.6k pounds remaining of a 3.0k capacity. Hold down was 1.8k, so I would have plenty of gas for at least three more passes



*The weight-board operator showed me a 10,500 pound weight board. I needed 12,500 and gave him the appropriate signal of lifting my palm to raise the weight setting. He mistook that signal for a thumbs up ...*

before reaching hold down. Once into the groove, I called the ball and trapped.

Four traps to go. Fortunately, only two jets were ahead of me in the conga line, so I figured to get one more trap, sideline for gas, get my last three traps and be sent to the beach. After making it to the catapult and rogering the weight board, I launched into the pattern. I completed my landing checks and checked fuel (I had 2.3k). I rolled into the groove, called the ball and started the mantra of “meatball, line-up, AOA.”

Although it was CAVU (ceiling and visibility unlimited), there was a low sea state in the carrier’s operating area. Because the CQ players were all unwinged aviators, the CNATRA tolerances for sea state are small: No more than six feet of pitching deck. At the in-close position, paddles waved me off because of the pitching deck. I found my interval and turned downwind. I redid my landing checks, double-checked my hook was down and again checked my fuel. At the abeam I had 2.0k of gas remaining. I completed my approach turn, saw the ball on the lens, and called the ball with 1.9k of gas when I rolled into the groove. Sixteen seconds later I slammed down on the flight deck, one more trap down, two to go.

**I FOUND MY TAXI DIRECTOR** and got clear of the landing area. I saw no line for cat 2, and the yellowshirt was trying to taxi me up to it. A long line for cat 1 stemmed from all the jets needing gas. I checked my gas, it showed between 1.7 and 1.8k remaining. I knew from my earlier briefs that when in doubt, there is no doubt. However, I felt confident in my abilities to get around one more time, trap and then sideline for fuel. Up to this point, I had not had a bolter or any waveoffs other than the one for pitching deck. I nodded to the director and taxied up to cat 2 for an immediate launch. This was my first mistake.

After launch, I dropped my hook, completed my landing checks and got ready for my next pass. I knew when I trapped that I’d need gas. I rolled into the groove, called the ball and worked hard to make sure of the trap. Unknown to me, one of my fellow student

pilots in the landing pattern ahead of the ship tried to cut out his interval.

One of the leads in the overhead stack saw this happening and screamed over the radio, “At three miles upwind, level your wings!”

This resulted in an immediate waveoff from the LSOs on the platform. I waved off, found my interval at three miles upwind and went around the pattern. My gas showed 1.5k remaining. Because of CNATRA requirements, the bingo for students was 1.2k.

After rolling into the groove and calling the ball, I again made it to the middle position before being waved off for the pitching deck. Once I climbed and got away from the carrier, I began to worry. I did not want to have to bingo back to the beach just for two more traps. I knew this next pass would be my last attempt. I rechecked my gas at the abeam and it was 1.3k. I called the ball and tried my best not to spot the deck. But my pride got in the way. As soon as I thought I had the steel made, I closed out the power lever for a split second to assure myself I’d trap. I caught a wire and did not break the jet.

Knowing my fuel state from the ball call, the yellowshirts taxied me to the base of the tower to get gas. With a full tank, I taxied to the catapult for my last qualification trap. Once airborne, I lowered the hook, completed the landing checks, and mentally prepared myself for the last pass. I felt good about myself; I had dodged a bullet with my previous fuel situation, and I had a full bag of gas to get one more trap. I rolled into the groove, called the ball and made my last pass the best one of the day. I cleared the LA and proceeded to the conga line. I had my 10 traps and waited anxiously for the call to go to the beach.

Finally, Boss called, “261, you’re a shot to the beach.”

I eagerly responded with, “261,” and pulled out my gouge card for the whiskey area and the San Diego approach corridor.

It was my turn to taxi to the catapult. The weight-board operator showed me a 10,500 pound weight board. I needed 12,500 and gave him the appropriate signal of lifting my palm to raise the weight setting. He

mistook that signal for a thumbs up, and left to show the catapult operator the weight setting.

I thought, “That’s not the weight setting I need. I should call the tower and tell them what my actual weight is.”

But, before I did the right thing, I again thought, “Nah, I’ll be fine.” So I taxied up to the cat ready for my long-awaited shot to the beach. Mistake number two.

Although it does not take much steam pressure to launch a T-45 when compared to a 5-wet Rhino or a Hawkeye, when you deal with such a low weight setting it is imperative that the weight matches what is needed. As the catapult fired, I stared intently at my airspeed indicator. It slowly ratcheted up as the end of the deck quickly approached. Over the previous two days and the past months of briefs, I had learned to look for at least 125 to 130 knots on my airspeed indicator at the end of the cat stroke. This time, as my wheels left the deck, I barely had triple digits. I checked to make sure I had a climb attitude, and sucked up the landing gear to minimize drag. I made the standard cut away for a Case I departure, and threw my flaps from full down to all the way up to help reduce the drag count. Finally, after about 15 seconds of dread my jet accelerated, and I breathed a huge sigh of relief.

Once I cleared the carrier controlled area and checked out with strike, I switched to Beaver Control, the controlling agency for the whiskey areas in the Pacific. I checked in with them and stated my intentions to return to North Island. They responded with radar contact and told me to maintain VFR (MARSA rules in effect). I knew from our course-rules brief that two small Mexican islands were directly between the boat’s operating area and North Island.

**D**uring my transit to San Diego, my North Island TACAN was intermittent and spun on me multiple times. The T-45A only has a TACAN to navigate, so my situational awareness of my actual position was a bit low. I took a heading of 360 and told myself that once I got closer, the TACAN would work better. By flying this heading I would stay well west of the Mexican islands. After a few minutes, Beaver came up on the radio and recommended a heading of 060. Based on my TACAN still not working, I assumed that I was clear of those islands and turned to 060. Mistake number three.

While heading 060, I searched for Point Loma and

the Hotel Del Coronado, a major landmark just south and east of NAS North Island. Although visibility was great around the carrier, there was still a hazy marine layer around San Diego.

After a few more minutes, Beaver said, “CD 261, recommend an immediate turn to 360 to remain clear of Mexican airspace.”

I could make out the two islands directly ahead of me. I yanked the jet into a knife-edge left turn to assure I wouldn’t create an international incident.

Finally, my TACAN came to life, and I saw Point Loma and the Hotel Del. I checked out with Beaver and switched to San Diego approach. I called NAS North Island in sight, requested the visual straight-in and landed. I taxied to our detachment line, shut down, and went upstairs to complete the standard post-flight paperwork. After a few minutes, my skipper approached me and asked how it went. He then soft-patched me with my wings of gold and congratulated me.

I survived three different circumstances that could have turned out a lot worse. First was violating CV NATOPS by taking a catapult shot below hold-down fuel. Although not an emergency at the time, it quickly headed that direction: bingo fuel. My second mistake was not taking the two seconds to call the Boss and tell him the weight setting needed for my cat shot. By not making the call, I quickly backed myself into another corner. Fortunately, the cat shot gave me just enough airspeed to clean up and climb. Had there been a soft cat, I would have had to eject out of a perfectly good airplane because of my negligence. Finally, I should have told Beaver that I was “negative TACAN” and requested vectors to NAS North Island. Instead, I blindly followed vectors given to me without confirming I would remain clear of Mexican airspace, barely escaping a flight violation.

Although this was a momentous day for me, I had managed to get away with my mistakes and poor decisions. One of my first instructors in primary preached to me that pilots have two bags throughout their career. One is luck, the other experience. When you start flying, your experience bag has nothing in it, and your luck bag is full. As you progress, the luck bag gets smaller and the experience bag expands. My luck bag was severely drained that day, but I added valuable lessons learned to my experience bag. 

LT SPANN FLIES WITH VAW-124.



# Shifting Time Zones = **INCREASED RISK**

**BY LT THOMAS BARLOW (MC) AND  
LT DREW THOMAS**

**D**eployments put unique stressors on Sailors and Marines. Emotional, relational, financial, and physiological stress affects nearly everyone who goes forward in defense of our country. One common physiological stressor, the disruption of normal sleep, is often discounted in importance, but can be dangerous to operations. Our squadron learned this lesson the hard way.

During a recent deployment to 5th Fleet AOR, VP-40 deployed from NAS Whidbey Island, Wash., and arrived in Kuwait 22 hours later, a shift of 10 time zones. For aircrew, OPNAV 3710.7U acknowledges the problem of decreased performance for those who undergo significant time-zone shifts; it suggests an accommodation period of one day for every time-zone shift over three. For maintainers, the NAVOSH Program, OPNAV 5100.23G, also discusses jet lag and gives an example of a minimum two-day accommodation for a shift of six time zones

Once the squadron arrived, we allotted several days for sleep adjustment among aircrew. However, our maintainers began work shifts only two days after arrival to begin the lengthy turnover process. There was a great amount

of information to absorb, planes to transfer, and aircraft to launch. We pushed hard, perhaps too hard, and did not take into account the full effects of our travels.

Five days after arriving at our deployment site, and a total of seven days after leaving home, our squadron had a Class B ground mishap. During a night towing operation across an active runway, an aircraft hit its tow tractor because of a failed shear pin on the tow bar connecting the nose gear to the tractor. Following the investigation, the aviation mishap board (AMB) determined fatigue of the tow crew played a role in the events leading to the mishap.

As part of our squadron's analysis of the mishap, and in an effort to better understand the extent of the impairment caused by desynchronization, commonly known as jet lag, we used the fatigue avoidance scheduling tool (FAST) software to model the sleep of three individuals in our command. The FAST software program uses an individual's 72-hour sleep history and awake periods to model their likely effectiveness and equivalent blood-alcohol level. This tool is used after a mishap in determining if an individual's sleep, or lack thereof, may be a causal factor in the event.

The first individual modeled was the “perfect traveler.” He could fall asleep at any time and sleep anywhere. He slept well during the transoceanic flights and layovers, and had no difficulty falling asleep or staying asleep after arrival in theater. The second individual was the “normal traveler.” She got some sleep on the plane, but not much quality sleep, like most of us. Upon arrival, she was so tired that she quickly fell asleep, but woke up after a few hours because her circadian rhythms were telling her that it was daytime. The third individual modeled was the “stressed traveler.” He tried to get the best sleep possible but was worried about leaving his pregnant wife. With his sleep cycle off, he woke up a lot and could not get back to sleep because of worrying; in addition, he sacrificed some sleep time to contact his wife.

Despite the differences, all three personnel were impaired because their circadian rhythms were not aligned with their new time zone. During the course of a day, our level of awareness increases and decreases according to our circadian rhythm. We begin our mornings alert and awake, but after lunch, there is a natural decrease in our level of alertness, and we soon rebound. Around our normal bedtime, alertness significantly

## Circadian Rhythm Sleep Disorders

These two types of sleep disorders affect aircrew and maintainers:

- Jet lag, which affects people who travel across several time zones.
- Shift work sleep disorder, which affects people who work nights or rotating shifts.



drops. This circadian rhythm, or internal clock, does not automatically shift to match the sun just because we have travelled to another location. After awhile, the new cues that we supply (primarily light exposure, but also mealtimes, wake-up times and bed times) will shift this internal clock to match the new time zone. Until this shift takes place, we are not functioning at full capacity.

Based on FAST analysis, even the “perfect traveler” is predicted to be functioning at 71-percent effectiveness with a representative blood alcohol content (BAC) around the legal limit of 0.08 percent. This drop-off in performance is the result of lagging circadian rhythms, despite achieving 8.5 hours of sleep per night. The “normal traveler” only got six-to-seven hours of sleep each day, and the added impact of interrupted sleep limited her effectiveness to 63 percent of normal. The “stressed traveler” suffered even more sleep deprivation, getting a total of about six hours of uninterrupted sleep over the first few days of deployment. This put his estimated effectiveness at 59 percent, much worse than legally drunk.

When the models were extended for several days beyond the mishap, they reveal that full recovery from the circadian shift takes several days beyond the Navy’s

recommended accommodation periods, even for the “perfect traveler.” This situation emphasizes that the Navy guidelines provide the threshold for the minimum reasonable period, not full recovery.

A simple internet search will yield numerous suggestions on how to reduce the effects of jet lag. However, none of these methods are scientifically proven, nor are they accepted by any U.S. government agency. NASA uses light therapy on quarantined individuals to “slam-shift” astronauts to a new launch schedule within a week before launch. This option is not available to deploying units. The flight surgeons at the Naval Safety Center and School of Aviation Safety tell us that circadian accommodation occurs in about as many days as time zones shifted: A seven hour time shift requires seven days to make full accommodation, but most of the accommodation occurs within the first three to four days. Hence the 3710 series guidance of one hour per time zone over three: a seven-zone shift would require approximately four days to accommodate. What the OPNAV 3710 does not take into account is the individual differences in each sleeper.

As with all safety issues, more knowledge enables better risk mitigation. Although most of the OPNAV 3710 crew-rest guidance appears to apply only to flight crew, the instruction specifically includes flight-support personnel as well (see section 8.3.2.1.1 Crew Rest for Flight Crew and Flight Support Personnel). Beyond existing NAVOSH and 3710 guidance, to better understand circadian rhythms and fatigue, we recommend you consult NAVMED P-6410 (Performance Maintenance During Continuous Flight Operations). Squadrons need to make every effort during predeployment work-ups to educate Sailors, Marines and their families to minimize external stressors.

There are no easy solutions. Operational deployment requirements will continue to make it difficult for commands to ensure complete recovery from the effects of travel. Leaders must recognize the real, tangible effects of intercontinental travel. As we do at the end of long shifts or during nighttime operations, increased vigilance and oversight of complex evolutions can mitigate the added risk brought about by fatigued personnel. 

LT BARLOW AND LT THOMAS ARE WITH VP-40.

For more information on the FAST program, visit the Naval Safety Center webpage at: [http://www.public.navy.mil/navsafecen/Pages/aviation/aeromedical/FAST\\_for\\_NMCI.aspx](http://www.public.navy.mil/navsafecen/Pages/aviation/aeromedical/FAST_for_NMCI.aspx)

NAVMED P-6410 can be viewed at: <http://www.med.navy.mil/directives/Pub/6410.pdf>



# Mechanical Bull

**BY LT LUCAS HUGIE**

**A**t the end of a command safety survey, there is a gloomy question: “What will be the next Class A mishap in your squadron?” I answered “night landings in brownout or low-light conditions’ as the most probable scenario. Sure enough, one of my closest calls in a naval aircraft happened in such conditions during air-ambulance operations on a recent deployment to Kuwait.

I had heard from a previous OinC that the most difficult environment in the world for landing is in Kuwait and Southern Iraq. The lack of horizon (even on good days), the sand, the power-restricting heat, and the featureless desert all conspire to make every landing in an unprepared area a white-knuckle affair.

I was about midway through my six-and-a-half-month deployment to the NAAD (2515th Naval Air Ambulance Detachment) when I was scheduled to conduct point-of-injury (POI) training with the 153rd Infantry Battalion from Camp Buehring in Kuwait. This training helps the Army units prepare for life-threatening injuries in the field, and it gives us a chance to practice air-ambulance operations at a high level.

The scenario was a vehicle-rollover incident, and it called for us to respond to a simulated 9-line MEDEVAC request, land, strap in two patients, and take them for a ride around the pattern. We would then debrief the Army unit on how to improve patient care, and explain our operational considerations for unpre-

pared landings next to a wrecked Humvee.

While this scenario was our primary mission for the night, it was also at the tail end of a two-hour, day FAM flight. We flew low-level routes on the earlier flight and conducted daytime unprepared landings at two of the landing zones (LZs) that we were told could be used for the POI training that night.

We were bouncing in the pattern at Udari Army Airfield when the duty officer at our base contacted us

After we established communication with the ground unit, they asked us to land to the north. This request would have left us pointed right at the base and all of its high-intensity lighting, which would have completely bloomed out our night vision goggles (NVGs). After analyzing the situation, we declined their landing request and opted to land to the south into the wind. The close proximity to the road meant we would also have to deal with car headlights blooming out our NVGs



and passed the simulated 9-line. I was at the controls in the right seat while the aircraft commander copied down the information and entered the location of the LZ into the GPS. The first thing we noticed was the LZ was not one of the two we had landed at earlier in the day. It was only one mile south of the airfield and just off the main road leading into the camp. The LZ was to be marked by strobe lights, which proved to be nearly impossible to discern. The airfield receives its fuel supply by tanker trucks, which have very bright, rotating yellow beacons that sweep the desert. The lights from these trucks washed out the flash of the pocket-size strobe lights that the ground unit used. The zero-percent moon illumination added to the difficulty of identifying the vehicles, personnel and LZ.

The site consisted of three vehicles on the side of the road: two Humvees and a truck. The 153rd unit had already laid out a north-south running LZ about 60 feet from the vehicles with six chemlights.

during our final approach. On a high-illumination night this may not have been a major problem, but it made for a challenging approach with no moonlight. Landing to the south also would have put our backs to the airfield, which had an Army UH-60 in the pattern at that time.

The cars on the road became our foremost problem. On our first low pass to the LZ, we discovered that we would lose sight of any detail on the ground as vehicles travelled toward us on the road. All I could make out were the six chemlights and the lights on the running Humvees. After two low passes and one waveoff, we finally timed it with no oncoming vehicle traffic to affect our NVGs.

The zone was certainly one of the more sporty ones I had worked. The dust engulfed the helicopter at 30 feet and did not settle back to earth until one minute after I had fully reduced the collective. After the flight, the second crewman said that when he first stepped off the aircraft to perform the litter training he sank two inches into the soft, powdery dust. We had opted to

land to the left and aft of the chemlight lane they had set up; we didn't want to blow the chemlights off into the desert on the first landing. We also thought the lane was set too close to the Humvees.

The litter training was uneventful. The grunts brought a sergeant first class and a first lieutenant in on the litters. Our aircrewmembers and the corpsman heaved them into the slots on the litter-management system and strapped them in for the short flight. I told tower we were lifting from the LZ and would do a lap before setting back down. I intended to do a quick lap in the pattern and get on deck as soon as possible. We were running late for our scheduled hot-seat time, and the Army unit wanted another run. I did a quick and deliberate tactical takeoff because of the brownout conditions.

**DURING A SHORT DISCUSSION** about which specific pattern we were going to fly, I let my instrument scan break down and got low and slow. Following a briefed safety procedure, the aircraft commander called for an increase in power. I made a benign input that only resulted in a 100-fpm climb, so the aircraft commander took the controls and proceeded to do a full lap in the airfield traffic pattern. We returned to the LZ and intercepted a long straight approach to final.

Again we opted to land to the aft and left of the chemlight lane to maintain lane integrity and to have safe spacing from the personnel on the ground. Doing this type of landing from the left side of the cockpit is a challenging endeavor because the visual cues from the chemlights were on the other side of the aircraft. Following our procedure for brownout landings, I called out altitudes and ground speeds as we descended from 100 feet. The approach starts at 100 feet and 50 knots, and works its way down to 80 feet and 40 knots, 60 feet and 30 knots, 40 feet and 20 knots, 20 feet and 10 knots, and finally to 10 feet and 5 knots before setting down. The idea is to be ahead of the dust cloud and set down before the visual cues in front and to the sides are obscured. Initially the aircraft commander was a little fast, but by the time we got down to the crucial wicket of 40 feet and 20 knots, he was back on profile.

Of the three crewmembers in the back, the second one and the corpsman were on the left side, and the crew chief was on the right. Only the crew chief realized we had the nose of the aircraft cocked out to the left, and he called it as we passed through 20 feet. The brownout enveloped us, and I lost all outside visual cues. I felt the

tailwheel touch down. Then things got interesting. The left mainmount hit first, which bounced the aircraft onto its right mainmount. I felt the cyclic smack the sides of my thighs as the pilot tried to keep the aircraft level. The aircraft rocked back and forth from tire to tire, and it vaguely reminded me of riding a mechanical bull. I was sure the blades would whap into the sand, causing the generators to fall offline, and make the cockpit dark for the remainder of the ball up.

All of the crewmembers yelled, "Power! Power! Power!"

When I glanced at the engine instruments I saw all of the engine tapes in the red and the Nr was at 93 percent. At 50 feet we cleared the dust cloud, and I called out the altitudes as we climbed straight ahead.

We turned back into the traffic pattern of the airfield, and did a full-stop landing with some surprised Army personnel riding in the back.

During the debrief we outlined everything that had gone wrong and those things that had gone right. The factors that were stacked against us were numerous. The marginal LZ located in close proximity to the airfield, combined with the vehicle traffic that consistently bloomed-out our goggles, made it difficult to see any detail in the LZ and made it unsafe to land. The beautifully laid out chemlight lane was set too close to the vehicles and influenced our decision to land away from it. The lack of visual cues for the left seat pilot, and the attempted landing from that side, was probably an unnecessary risk. Lastly, despite the fact that all pilots brief, "wave-offs are free," and that we should wave off as often as necessary before committing wheels to dirt, there's always a building frustration when you have multiple waveoffs at an LZ. We had a timeline and operational requirements to maintain, and the environment was not favoring a quick training evolution with the ground unit. However, the unprepared landings we'd done that day were a good warm-up, and the professionalism of the crew was never in question.

My opinion has not changed: nighttime, unprepared surface brownout landings are among the most difficult things we do in the helicopter community. We deploy to some of the most challenging environments in the world. Our crew did everything that was necessary to turn what could have been a Class A mishap into an interesting ASAP read for the safety department. Flights like this make it on my "never again" list of close calls. In the future I hope to avoid any more inadvertent mechanical bull rides in a helicopter. 

LT HUGIE FLIES WITH HSC-21.



## The War on **FOD** Afloat

**BY LTJG BRAD WEILAND**

“All hands are invited to muster on the flight deck for FOD walkdown.”

**A**t 0700 in the morning, you would be hard pressed to find more annoying words, especially if you had a late night and looked forward to getting your eight hours of uninterrupted sleep. What if I laid there for a moment, let about 15 seconds go by, let out a dismissive sigh, then rolled over, and went back to sleep? What harm can come from missing one FOD walkdown? It's not like there aren't 100 other people that are headed up there, right?

Three months into deployment and the air wing was still finding itself having FOD issues. Tools left in airplanes, soda cans on the flight deck, pens going flying on the cat shot, and even a pair of gloves disappearing in flight. Call it complacency or lack of attention to detail, either way, the return to disciplined FOD awareness should not come at the expense of damage to equipment or injury to personnel. All it takes is about

10 minutes with your eyes on the deck and your hands out of your pockets.

The war against FOD is not just limited to the flight deck. FOD is a disease that can spread to our flight suits, our helmet bags, and our cockpits. The smallest piece of FOD can take down an aircraft.

By the midpoint of cruise, we'd have had 10 instances of aircraft down for reported or suspected FOD, most of which were aircrew-related.

What is even more frightening is the FOD that no one knows is missing: FOD searches that reveal more unreported FOD. That is why it is imperative to inventory everything that we take into the plane and account for it when we leave the plane.

**FOD CAN ALSO DAMAGE MORALE** and command climate. There is nothing worse for maintainers to hear than that a plane coming back is down for FOD. VAW-126 has a 100 percent sortie completion rate, so dropping a couple Skittles has the potential to destroy a squadron's record. Troubleshooters want to get into the planes and fix gripes. They do not want to spend time pulling up floorboards and tearing apart seats looking for a pencil. Persistent FOD incidents can also create a loss in confidence between maintainers and aircrew that has a way of sticking around a lot longer than the FOD. We hear it all the time, see it on Naval Safety Center posters, and have it beat into our heads by our safety officers. FOD is a powerful force working against our flight operations and the material conditions of our aircraft. Yet, there are still times when we blow it off, or just assume that the other guys are up there, and that we won't be missed. The problem is when more and more people start adopting the same attitude, and you are eventually left with little to no one up walking the deck. Continuing the emphasis on FOD must continue until the fear of FOD fails to fade.

FOD walkdowns are a great opportunity for aircrew to bond with their troopers, and a great time to get up on deck and interact with the guys and gals keeping the planes flying. A little show of presence, a handshake, and some gratitude can go a long way.

The next time you hear the word passed on the 1MC, put down the blue folder, log off the computer, grab your sunglasses, or get out of bed, but head on up to the flight deck. It might just save your life. 

LTJG WEILAND FLIES WITH VAW-126.

# Breaking All the Rules

BY LT CHRISTIAN DURLAO

I was in the backseat of the lead jet in a division of Prowlers. We were on USS *Abraham Lincoln* (CVN 72) for CompTUEX 2010, preparing for our upcoming deployment. During the pre-flight brief, our commanding officer said that he didn't want any unnecessary baggage in the cockpit, because we would be completing carrier qualifications (CQ) upon arrival.

The EA-6B is equipped with an aft equipment compartment (nicknamed "the birdcage"), where we can also store a small amount of baggage. The majority

ing. As the line division officer and FOD-prevention program officer, FOD was a near and dear subject to me. We are taught that FOD is preventable, and that aircrew play a very important role in minimizing FOD damage. Before every flight we sanitize ourselves and our flight gear and make sure our nav bag or helmet bag is only filled with items essential to mission completion. We should be intimately familiar with what we bring into the cockpit, so that we will know immediately if something is missing and possibly left in the jet. My nav bag usually only has things that I need for my flights, and I



*Little did I know that as I was climbing out of the jet, I was dropping pens, pencils, and markers all over the flight deck.*

of the bags for my crew were placed in the birdcage, but I decided to keep my laptop bag with me in the cockpit for fear it might be damaged. This is a common practice for fly-ons. To minimize the amount of space my gear would take up, I also placed my kneeboard, charts, and flight pubs in it.

Foreign-object-damage (FOD) prevention is engrained in our heads from the very start of flight train-

ing. But because I had my laptop with me, I decided to put my nav bag inside my laptop bag.

When the skipper saw me walk to the jet with my laptop bag, he gave me a surprised and disappointed look. I reassured him that all would be well—I didn't want to risk damaging my laptop by putting it in the birdcage. He proceeded to do his preflight walk-around

of the jet. The laptop bag that I used for this flight was the same bag that I had used for college, so it had pens, pencils, markers, scissors and other scholarly materials in it. I had a classic brain fart as it never occurred to me that I should inventory everything in the bag before bringing it into the cockpit. Even worse was that this was not the first time that I had brought this bag into the cockpit. I had flown with this bag on ferry flights during workups and deployment.

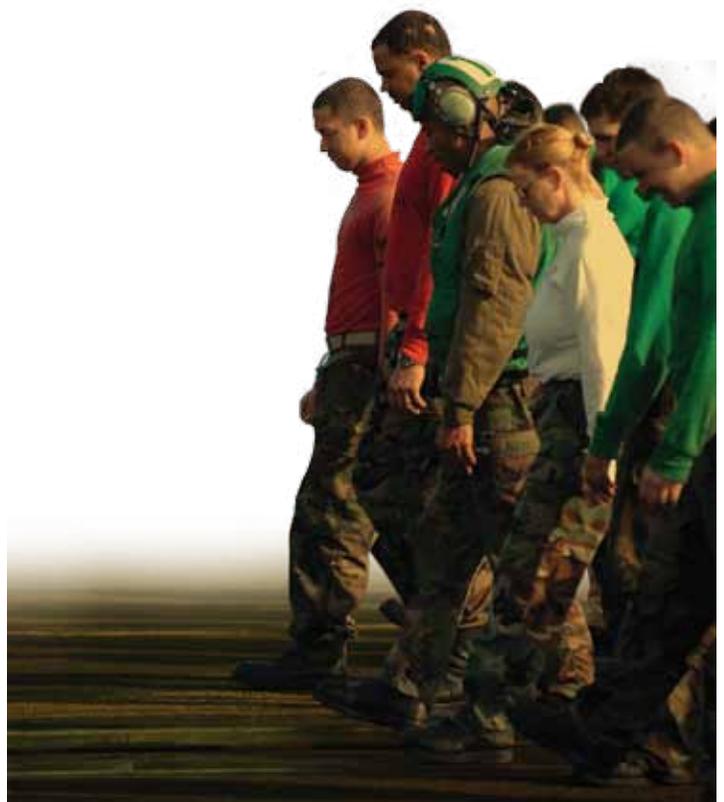
The flight from NAS North Island to USS *Abraham Lincoln* went smoothly. We completed our standard trap, two touch-and-goes, and a trap to complete CQ. After our second trap, we parked the jet, so our maintenance crew could turn it around for night CQ. As I climbed out of the jet, one of the zippers on my bag caught one of the canopy hinges and accidentally opened. Little did I know that as I was climbing out of the jet, I was dropping pens, pencils, and markers all over the flight deck. My skipper witnessed the whole event and frantically yelled at me to secure my gear. It was too late; I had FODed the flight deck. There was no way for me to know which pens, pencils, and markers I had or how many I had lost.

Our skilled Prowler maintainers and troubleshooters were on their “A” game that day. Our line shack LPO quickly rallied the troops and directed them to pick up everything that had fallen out of my bag. They recovered everything on the flight deck, but the big unknown was whether any of my unaccounted for scholarly materials had fallen in the cockpit.

The LPO assured me that nothing was in the cockpit because he saw that the zipper was accidentally opened on my way out of the cockpit. But even with that assurance, the only way to know for sure was to have QA inspect the jet. The last thing we needed was to launch that jet for night CQ with binding flight controls because of one of my pens. I could never forgive myself had we lost aircrew or a jet because of my carelessness.

Nothing from my bag had fallen into the cockpit, and the jet was only down for a few hours while QA did a FOD-free inspection. Like many squadrons, we were operating on a compressed deployment turnaround cycle and could not afford to lose any CQ events.

This incident was embarrassing because of my position as line division and the FOD-prevention-program officer. I had broken all the rules the skip-



per had entrusted me to enforce throughout the squadron.

The first lesson learned is to always listen to your skippers because they usually know best. He specifically said in the preflight that he didn't want anything in the cockpit that wasn't necessary for the flight. I completely ignored that order and took my laptop bag with me.

Second, if you are going to ignore an order from the skipper, make sure you don't screw it up because you will most likely end up on the wrong end of a one-way conversation.

Third, make sure that you know exactly what you take in and out of the cockpit with you because you need to account for those items.

Last, sanitize your nav bags and helmet bags and make sure that what you take to the jet is the absolute minimum to complete the mission. I am willing to bet that I am not the first aircrew in the fleet who has brought some sort of backpack or bag with them to the cockpit that they did not sanitize or inventory. This is very common practice for ferry flights. Depending on what your specific mission is, you could be failing to protect your brothers and sisters in arms on the ground. 🦅

LT DUMLAO FLIES WITH VAQ-131.

## Struck by Lightning and Pressing On

BY LCDR ED ARNOLD

The squadron was about a month into our deployment, and we were settling into our routine. We briefed for a 10-hour flight out of Kadena Air Base, Japan, that had us searching for a high-value target. The weather brief showed a large cloud cover to the south of Okinawa, moving from northwest to southeast. The weather in Atsugi called for isolated thunderstorms.

“No big deal,” I thought, “we do this all the time.” The APS-137 radar in the P-3 allows us to pick our way through just about any type of weather.

Preflight went smoothly, and I made sure there were no problems with the radar before we took off. Besides myself as a senior patrol plane commander (PPC) and one of our more experienced flight engineers, I was flying with a relatively junior flight crew. The 2P also was a PPC with about 800 hours under his belt, and the 3P had been in the squadron for about six months. I had flown into similar weather over the years, so I had no concerns about today’s flight. At planeside, I briefed the crew about the weather, and the sensor-station-3 operator (SS3) knew his radar would be our eyes to get us through. No one had any problems or concerns about going.

I had the 3P in the left seat for takeoff to get experience with heavyweight takeoffs and to build confidence flying in adverse conditions. She was progressing well through the training syllabus, and I felt she could handle most anything during the departure.

We had a normal takeoff and departure. During climbout, we saw the area of weather to the south of the island. As departure control turned us to the south,

we knew we were heading straight into it. The area was so large that going around it probably would have cut short our on-station time by about one and a half hours, so I proceeded and let the radar do its magic. Before I could even ask, SS3 had the radar up and was providing weather updates. We also used the radar display in the flight station for added situational awareness.

As we went IMC and leveled off at 18,000 feet, ATC directed us to switch up Naha Control. As soon as I switched, I could hear that several other aircraft were asking for vectors to the left or right of course for weather avoidance. SS3 said we would be good for another 10 miles or so, and then we’d need to come left about 30 degrees for a storm cell off the nose. Naha granted our request, and when we were clear of the cell, we came back on course. As we approached our max-range airspeed, we requested and were cleared up to 20,000 feet. So far the weather was not bad and matched the forecast. We had only run into some patches of light rain and slight icing.

“So far, so good,” I thought.

Upon reaching 20,000 feet, SS3 said we should be out of IMC in about 20 miles, but we needed to come left again to avoid another cell. At about the same time, we saw a flash off the starboard side. I had the 3P start the turn, and I called control and got clearance to deviate as necessary. SS3 gave us a fly-to-point to keep us clear, and we turned the aircraft to proceed direct. As soon we rolled wings-level, we got a blinding flash. Almost simultaneously, the in-flight technician in the starboard aft-observer seat screamed a few expletives over the ICS, followed by, “We just got hit by light-

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ning!” He said the strike went from the starboard wingtip back to the horizontal stabilizer.

After conducting a flight-control check and making sure we weren’t about to fall out of the sky, I directed the flight engineer to pull out NATOPS and run the lightning-strike procedures. We ran through the procedures as written. I called for an inspection of the aircraft, or a “Condition IV” check, and then had the crew do a positional inspection to detect any equipment that may have been damaged—nothing was found. The P-3 NATOPS is specific on most malfunctions and when to abort a mission. The procedures for the lightning strike leaves the decision up to the mission commander, which was me.

I checked with the crew and asked how everyone felt about pressing on with the mission. Everyone on the crew was geared up and ready to continue. We were all fresh on deployment and champing at the bit to get a shot to prosecute a real-world, high-priority target of interest. With no noticeable damage to the aircraft, safety of flight or otherwise, and a motivated crew, I elected to continue the mission. As one final sanity check, I had the navigator contact home plate, inform them of the situation and our decision to continue.

The remainder of the 10-hour mission was uneventful, and we returned to Kadena Air Base without incident. We landed at about 0400, dreary and tired. I did my postflight walk-around and didn’t see anything out of the ordinary and noted no damage. When maintenance started the lightning strike conditional inspection, several holes were discovered along the trailing edge of both flaps. The crew completed all of the postflight paperwork and left the hangar.

As I came into work that next afternoon, I ran into



**As soon we rolled wings-level,  
we got a blinding flash.**

the maintenance officer, who promptly asked me if I had seen what I’d done to the airplane. Evidently, after the aircraft was towed into the hangar and the light of day came around, a total of 37 small, char-marked holes were discovered. They started at the starboard wingtip, continued along the trailing edge of the flap, aft along the fuselage to the aft radome, around and up the port side, along the trailing edge of the flap, and out the port wingtip. Amazingly, no other damage was found, and with the help of a motivated airframes shop, a file, and a few rivets, the aircraft was returned to flight status the next day.

The very first paragraph in the P-3 NATOPS states, “No manual can cover every situation or be a substitute for sound judgment.” I made the decision to press on knowing that the aircraft and the crew could both continue. Given that set of circumstances again, specifically the real-world, high-priority target, I would do the same thing. As mission commanders, we hear, “That’s why you get paid the big bucks.” It’s for making the decisions that matter, either simple or complex, to complete the mission or come home knowing you did everything you could. 

LCDR ARNOLD FLIES WITH VP-9.

## Letter to the editor:

*Dear Mr. Stewart,*

*The September-October 2010 Approach featured an article that I was delighted to see. “Touch and ... and ...,” by Lt. Jeremy Arnott, discussed the problem of not being able to add power to an E-2 after a carrier touch-and-go landing. Reading the article brought back vivid, sad memories from 1985. The grabber was the not-so-thorough discussion of the power-lever lock on the mighty Hummer (also applies to the COD). I would like to elaborate on the power-lever lock, the role it played in his flight, and the role it played in a less fortunate E-2 mishap on USS Midway (CV-41). Please see the proposed Approach article enclosed.*

*Thanks for all you do to promote aviation safety. Your efforts are appreciated.*

*Sincerely,  
Bert Polk*

# Bolter, Bolter ... Power and ... It Won't Go!

**BY CDR BERT POLK (RET.)**



K, I'm an old guy, and part of what you read here qualifies as an “old war story.” However, the discussion is relevant now, and I hope it will contribute to the production of more old guys.

In the summer of 1985 I reported to USS *Midway* (CV-41) in Yokosuka, Japan, as the safety department head. Two years earlier I had been piped off at the end of the cat, flying the venerable Hummer with VAW-115. I was now back for another two years in ship's company. After more than 2,000 hours in the Hummer and 1,000 in the mighty Fudd, this was my first non-flying sea tour. Except for the events in the fall of 1985, it turned out to be perhaps my most rewarding tour of all.

On the way to *Midway* this time, I took every conceivable course that had to do with aircraft carriers: safety (ship, aircraft, PG school safety command course, stuff we didn't talk about and/or no longer remember) and 3M. Having already lived on *Midway* and in Japan for two years, I felt “ready on arrival.”

About three months into the tour, *Midway* had transited from Japan into the Indian Ocean. You may recall there was a lot going on at the time concerning a place called Iran, where tension remained high after the

hostage-taking. *Midway* was operating in the northwest corner of the Arabian Sea (carriers weren't going much farther northwest). Everything was ops normal on the cruise, with proficiency at a high level.

*Midway* was conducting flight ops about 2000 or a little later that night. Sea state was calm, the night was clear and dark, and I was doing paperwork in the safety office, located aft and one deck below the hangar deck. There was a PLAT (pilot landing aid television) displayed over my head, but that was not the focus of my attention.

Suddenly, the 1MC blared: “Aircraft in the water, port side!”

Alarms were sounding and the announcement repeated as I grabbed my flight-deck cranial and vest, and charged up the nearest ladders to the flight deck. On the way, people shouted that it was an E-2. A lot of things happened in the next 45 minutes or so.

I ended up in sick bay that night with three members of the five-man crew. Later, I was the senior member of the mishap board, learning the causes and the reasons for the mishap. The mishap resulted in the tragic loss of two young aviators, the left seat pilot and the junior NFO in the ACO's seat, which is way aft in the Hummer. The primary cause of the mishap was

clear: improper use of the power-lever lock.

The E-2/C-2 power-lever lock is a simple, mechanical “Rube-Goldberg” type device that is used only on carrier landings to prevent the power levers (“throttles”) from coming out of the flight range after touchdown. The E-2 power levers need to stay in the flight range to allow a successful bolter or touch-and-go. If they come all the way aft in the flight range, they can accidentally slide up and out of the flight range and into a “no man’s land,” where they can’t be pushed forward by the pilot.

“Out of the flight range” is not the same as “in the ground range.” Moving from flight range to ground range requires relatively long upward travel of the power levers. However, the difference between being in the flight range, as opposed to up enough to be out of the flight range, is no more than a whisker.

After you leave the flight range, trying to push the power levers forward—even if you are the strongest member of our community—will not result in the power levers going forward. With power levers stuck in the transitional “no man’s land,” the aircraft will not fly more than about 50 feet past the front of the angled deck before hitting the water. That is exactly what happened that night on *Midway* and what was recently avoided through quick actions by Lt. Arnott.

To prevent the power levers from retarding out of the flight range, there is an item on the landing checklist: Power Lever Lock—AS REQUIRED. ON (or locked) for carrier landings, OFF (or unlocked) for field landings. The action is simple. The device is only about three inches long and is hinged behind the power levers. You only need to pivot it forward (ON—ship) or aft (OFF—shore).

Lt. Arnott is not specific about what happened with the power-lever lock. Presumably it was ON. There may be other complications that have evolved since the 1980s, but we had two potential problems with the device, other than not using it as intended.

One involved adjustment. If the power-lever lock was not secured, maintained, and set properly, the power levers could be pulled hard into the lock, causing the power levers to jam against the lock or for the lock to be ineffective. This situation could be corrected by a firm down motion on the power levers, followed by advancement of the levers, and a nice gripe in maintenance control before the next hop.

The second was that a glove or sleeve can catch on

the lock. That can cause the lock to move out of position, or the lock can prohibit the pilot from pushing his hand forward along with the power levers.

Both of these problems are rare, but pilots need to be aware of them and know how to prevent and correct them—very quickly. Lt. Arnott and his instructor pilot responded quickly and correctly to both potential power-lever-lock problems.

Back to *Midway*. The left seat pilot was junior, with an experienced lieutenant as the carrier aircraft plane commander (CAPC) in the right seat. The approach that night was a little high, maybe a little fast, which probably caused the pilot to retard power when close to the aft end of the flight range just before touchdown. The power-lever lock had been left OFF. That action set up the situation where the power levers could go back and out of the flight range. When the aircraft touched down, it bounced slightly and did not catch a wire.

**THE LSO CALLED, “POWER.”** As the aircraft went off the angle the Air Boss also called, “Power.” Both continued to make their calls as the aircraft settled and hit the water.

Inside the aircraft, the CAPC also called for power while the left seat pilot indicated he could not add power. The aircraft hit the water nose high, tail first, just to the left of the ship. The right seat pilot and two crewmen in the back immediately exited through overhead hatches. The reason the other two crew were not recovered will never be known. The aircraft floated at the surface for several hours.

The conclusion of the mishap board was that the mishap was a result of the power-lever lock not being set in the ON position. The power lever’s position was out of the flight range. When the pilot tried to add power on the bolter, he applied forward pressure but was physically prevented from adding power because the levers were not in the flight range.

The shiny new E-2D is now coming into service and will remain in service for many years. Although the power-lever lock has been redesigned since the 1980s, it’s still possible to inadvertently leave the flight range at a very critical point in a touch-and-go or bolter.

As Lt. Arnott noted, current and future E-2 pilots will “listen to all the old war stories.” Remember the reasoning behind the power-lever lock, follow the checklists, follow NATOPS, and fly safely out there. I like Lt. Arnott’s “old war story” better than mine. 

# Crew Resource Management

Decision Making  
Assertiveness  
Mission Analysis  
Communication  
Leadership  
Adaptability/Flexibility  
Situational Awareness



## What I Would Do DIFFERENTLY

BY LT GRANT ROBINSON

**M**y copilot, the aircraft commander, two aircrewmembers, and I had launched from USS *Harry S. Truman* (CVN 75) in our C-2A Greyhound. We were transporting mail, cargo and passengers, including two distinguished visitors, from the ship to our detachment logistics site in Bahrain. This mission has been a daily standard for COD services in the Fifth Fleet since the beginning of Operation Enduring Freedom.

Things were routine until we felt a severe vibration accompanied by an audible change in engine noise. In these situations, instincts and procedures dominate. I fed in control inputs and power to counteract a left swerve, and the copilot began to shadow the controls. We scanned our engine instruments. We saw a master caution light and a left generator caution light. Our emergency procedure (EP) and systems knowledge told us where to look next: the left engine rpm. By the time our eyes made it to the indicator, the rpm was falling through 75 percent, which confirmed the left engine failure. We completed the engine-failure checklist, and started to assess our situation and options.

We had to climb to FL180 and were about 70 miles from the nearest airfield: Muscat International Airport in Oman. Had this emergency occurred just five minutes earlier, we would have been considering the implications of returning to the ship for a mid-cycle, single engine, emergency landing. The considerations for that scenario would have been extensive and very subjective between different aircrews. COD crews are typically spring-loaded to divert to a field instead of a carrier.

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## **Things were routine until we felt a severe vibration accompanied by an audible change in engine noise.**



Many factors drive this unwritten preference to divert. We have practiced single-engine field landings far more often than single-engine shipboard arrestments. Unlike the rest of the carrier airwing, our maintenance support is shore-based. We are comfortable landing at foreign airfields and working with local support personnel. However, this preference has drawbacks. Foreign landing clearances must be arranged, and support equipment (SE) may not be available. Fortunately, we already had blanket landing clearance and SE was available. The timing of our failure clearly dictated diverting to Muscat.

As members of tailhook aviation, we nearly always practice engine-out scenarios to a field-arrested landing. However, the difference between this situation and a training event at our home field was that Muscat had no arresting gear. This meant we would face decelerating with asymmetric thrust and, by the way, the C-2 does not have anti-skid brakes. Also, NATOPS cautions, "Because of the extreme sensitivity of the brakes, their use at speeds in excess of 50 knots could result in blown tires and subsequent loss

of directional control." The saving grace was that in this region of the world, where summer temperatures routinely reach into the 100s, runways are typically very long. Muscat's nearly 12,000 feet was available for deceleration, so heavy breaking and reverse thrust would not be necessary.

From our position, we were nearly aligned on a 70-mile straight-in approach to the active runway. Clear skies and good visibility prevailed. With a plan in place and a solid right engine, the aircraft commander and I talked through every step of our approach, landing and rollout. We essentially chair-flew the remainder of the flight. This CRM drill increased our confidence and got us on the same sheet of music. In a multipiloted cockpit where experience, knowledge and expectations never will be exactly the same, this type of drill provided significant benefits.

The one drill we did not perform was a practice waveoff. We had sufficient altitude at our position to start a slow, controlled descent to the field, and that is what we did. Doing this maneuver could have served two purposes: Practice in the event we needed to

waveoff at the field, and to verify climb performance. If performance was not satisfactory, we could have dumped fuel to compensate. I would consider a practice waveoff if the situation arose again.

## **I have often recalled the emergency to determine what I would do differently.**

**T**he approach and landing went as planned, with minimal directional-control deviations during the rollout. We taxied clear of the runway and parked. Our other detachment aircraft returned that evening to pick up our cargo and passengers. They also delivered maintenance personnel to make an initial inspection and assess the repair requirements. Three days and one engine later, our aircraft returned to service.

I have often recalled the emergency to determine what I would do differently. The speed at which the engine failed appeared to be much faster when compared to the simulators, or when instructor pilots simulated a failure. My copilot and I completed our procedures in a timely manner, but in a way, it didn't seem fast enough. This left me to compare two unwritten emergency-procedure rules: No fast hands in the cockpit, and quickly completing the bold face items without sacrificing accuracy for the sake of expediency. Memory-item steps are meant to be completed in order without delay. However, you must know what each step is meant to do and understand the underlying controlled systems. Quickly manipulating the controls and

throwing switches in a multipilot aircraft is poor CRM. Sound standardization with clear responsibilities will mitigate errors and delays.

**EXPERIENCE LEVELS CAN ALSO** be a hindrance. The aircraft commander had two deployments and 400 more C-2 hours than I had. He could process what was occurring at a faster rate and had greater situational awareness (SA). The pilot-at-the-controls (PAC) is supposed to execute the bold-face EP steps with concurrence from the nonflying pilot. However, because the aircraft commander was ahead of me in assessing the situation, he took a directive role in the EP steps. This action resulted in me following directions rather than leading the charge. We had concurrence when securing the engine, but it was not in accordance with our community standardization.

As the PAC, I should have kept myself in the driver's seat while completing this EP. This is not to undermine the responsibility and authority of the aircraft commander, but to make sure I was assertive and providing the proper checks and balances according to CRM principles.

LT ROBINSON FLIES WITH VRC-40.

*Analyst comments: A single-engine C-2 with passengers onboard isn't an ideal situation. Combined with the lack of anti-skid brakes and flying to a foreign field with no arresting gear, it has the potential for a really bad day. This situation highlights the benefits of solid CRM, while illustrating some areas for improvement. Chair flying and thoroughly discussing possible scenarios is a great CRM/ORM tool that we can use as aviators, without ever having to leave the ready room.—Lt. Brian Abbott, E-2/C-2 analyst, Naval Safety Center.*

**Mishap-Free  
Milestones**

VFA-37

48,232 Hours

10 Years



# VT-10



LT PAUL PARSONEAULT, a flight instructor with VT-10 at NAS Pensacola, Fla., is also the T-6A NATOPS officer. He was contacted by a cross-country crew to determine if they could service their T-6A with a remote airfield's available engine oil. This oil matched a recommended specification listed in the crew's fuel-servicing packet provided by maintenance, but it did not match the authorized oil listed in NATOPS.

Investigating this discrepancy, Lt. Parsonault found that the quart oil cans in the flight line oil locker were the same specification listed in the fuel packet. Recognizing that 55-gallon oil drums rather than quart cans were used to fill the pre-oiling and pressure fill tank (PON-6) used to service the aircraft, he examined one of the empty drums. The drum was marked with an oil specification prohibited for use in the T-6A. Maintenance personnel had been servicing the aircraft with this prohibited oil.

Lt. Parsonault immediately notified his chain of command, and the oil systems on all 40 T-6A aircraft were flushed and refilled with the correct engine oil. His NATOPS knowledge and research of authorized oil types ensured all aircraft were correctly serviced.

# BRAVO Zulu

# HT-28

ENSIGN MICHAEL FEAY AND LT CARLOS ESQUIVEL were on a daytime, visual-navigation syllabus flight from Tallahassee to Gainesville. Ensign Feay navigated the route, which had ceilings at 1,400 feet with 10-mile visibility. Unexpectedly, the ceilings lowered and they entered inadvertent-instrument meteorological conditions (I-IMC).

Lt. Esquivel assumed the controls and began the I-IMC procedures discussed during the NATOPS brief. He switched to an instrument scan and initiated a right turn. He developed vertigo during the turn. He felt like he was straight and level, but noticed they were in a steep right turn according to the attitude indicator and turn needle. They continued into a steeper angle-of-bank, with the nose falling through the horizon. Ensign Feay immediately recognized the situation, took the controls and executed the unusual-attitude-recovery procedure. He continued to fly the aircraft into visual meteorological conditions (VMC), followed by an ILS approach to a full-stop landing at the planned destination.

Ensign Feay's ability to fly the aircraft during challenging instrument-meteorological conditions is particularly noteworthy because, at the time, he had only partly completed the TH-57C instrument-flight syllabus.



# Blinded By The Light

BY LT BENJAMIN FARWELL

**M**y SH-60B crew just had finished an uneventful three-hour, night, surface surveillance and control (SSC) flight, and we were on our way back to our frigate. The low-light-level night created a challenging environment, even with the use of our night-vision goggles (NVGs). I asked the ship to set up the lights for an aided recovery, and requested a one-and-four (one approach and four bounces). The helicopter second pilot (H2P) took the controls from the right seat, and I began to talk him through the approach.

He completed his landings, and I set up for my bounces. I picked up into a hover, slid up and aft, then briefly stabilized. Making sure I was in good position, I started moving forward to line up our RAST (recovery assist, secure and traverse) landing-system probe with the RSD (rapid securing device). Suddenly, the red waveoff lights flashed. The entire hangar face and flight deck in front of me disappeared as the lights bloomed out the goggles. Everything was a monochromatic green. I turned my head to the left to keep the blinding sensation to a minimum, and used my peripheral vision to keep the helicopter in a steady hover just aft of the RSD. The H2P next to me threw up his hands to block out the flashing lights. The waveoff lights were only on for five seconds, but it was long enough to completely disorient the crew.

I yelled over the radio to the HCO and LSO to secure the lights. With all the confusion in the cockpit, the only response I heard was from the LSO. He said the ship had experienced an engineering casualty

and needed us to waveoff. Then I saw the smoke. It came billowing out from the O-2 level, swirled through the rotor wash and all over the flight deck. Once again, I lost sight of the hangar in front of me, but my crewman could still see the RSD trap through the cargo-hook hole in the back. I made a split-second decision to land. We were hovering over the trap. Trying to make an emergency departure through the smoke, with a disoriented crew seemed like a bad idea. Gas was getting low, and who knew how long it would be before we could land again.

As I made this decision, I heard the H2P say we needed to depart. I told the crew and the LSO, "No. We're landing!" I put the helicopter on deck, mistraping just to the right of the RSD.

It was time for another split-second decision. Should I just accept what we had, or try and reposition the helicopter to put the probe in the RSD. The ship had a pitch of two degrees and a roll of four. If the ship casualty was going to delay setting chocks and chains on the aircraft we needed to be in the trap, otherwise, we would face the problem of an unsecured helicopter on deck. Telling the crew what the plan was, I lifted the helicopter, slid over, and placed the probe in the RSD with the guidance of the aircrewman. After a 30 second delay, the chocks and chains were in place, and we shut down without further incident.

The entire event took just under 40 seconds from the time the waveoff lights started flashing to the time we landed in the RSD trap. I found out later that the ship had lost one of its engines as I was setting up to land.

## The entire hangar face and flight deck in front of me disappeared as the lights bloomed out the goggles.

There are a few good lessons to take away from this experience. First, brief the ship. It's important that everyone knows what the safest course of action is and what you plan to do in the event the ship experiences a casualty while the helicopter is airborne, especially when hovering over the deck. When the ship called for a waveoff they had expected us to depart without any difficulty. After debriefing I explained why we landed. They agreed it was safer to land, and a waveoff directed from the bridge was not the best call because of the disorientation from the lights and the smoke over the deck. Second, start talking as a crew about what you will do in a similar situation. The H2P knew waveoffs are mandatory, but sound judgment dictated landing as opposed to departing. Since this incident, the H2P has began incorporating into his preflight NATOPS brief a discussion of the actions to take in such a situation.

Finally, train the whole team, to include the bridge and the flight-deck crew. On air-capable ships, non-aviators fill many roles on the ship normally filled by aviators on aviation ships. Teamwork is essential. Non-aviators do not have the years of training a seasoned aviator does, and are often unfamiliar with flight operations and practices that we, as aviators, take for granted. Before this incident, we had covered procedures and

expectations, but never any training with NVGs. We have since led some hands-on training, demonstrated different lighting conditions and the difference between compatible and incompatible lights. I hope that this will help drive home the warnings in NAVAIR 80-T about activating waveoff lights at night. 

LT FARWELL FLIES WITH HSL-48.

### CO's Comments:

*The two mandatory LSE signals are hold and wave-off. Disregarding a LSE's signal can have dire consequences. For example, had the ship needed to maneuver suddenly, the pilot's decision may have resulted in a far different outcome. That said, given their significant disorientation caused by both the blooming of the NVDs and the smoke from the shipboard casualty, I believe this aircrew ultimately made the right decision.*

*This is one of several recently reported incidents of small-deck HCO's inappropriately activating wave-off lights or improperly configuring ship's lighting during NVD operations. This incident highlights the hazard of NVD incompatible shipboard lighting systems. Until this hazard is eliminated, proper training and procedural compliance from flight crews, flight deck crews, and bridge/CIC watch teams are essential to safe conduct of flight operations. There is no acceptable substitute. The next time we may not be so fortunate.—Cdr. Donald Kennedy, Commanding Officer HSL-48.*

**All the tactical proficiency  
and focus in the world  
does us no good if we do not  
first safely take off, rendezvous,  
navigate and recover  
our aircraft.** —Lt. Joseph Burns, VFA-137.

