It Was One of Those Nights

When Good Tanking Goes Bad
Mismash cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, workshops and coffins. Mismatches 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. Approach (ISSN 1094-0405) and (ISSN 1094-0405X online) is published quarterly by Commander, Naval Safety Center, 375 A Street Norfolk, VA 23511-4399, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. Approach is available for sale by the Superintendent of Documents, P.O. Box 979050, St Louis, MO 63197-9000, or online at: bookstore.gpo.gov. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (866) 512-1800. Periodicals postage paid at Norfolk, Va., and additional mailing offices. Postmaster: Send address changes to Approach, Code 52, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399. Send article submissions, distribution requests, comments or questions to Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. Approach is available for sale by the Superintendent of Documents, P.O. Box 979050, St Louis, MO 63197-9000, or online at: bookstore.gpo.gov. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (866) 512-1800. Periodicals postage paid at Norfolk, Va., and additional mailing offices. Postmaster: Send address changes to Approach, Code 52, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399. Send article submissions, distribution requests, comments or questions to the address above or email to: SAFE-Approach@navy.mil. 

FROM THE COMMANDER

We Are Your Safety Advocate

The Naval Safety Center has been in a state of transformation over the last couple of years, and thus, so have our magazines. Approach has transitioned from print format to a trial period of a solely digital publication and back to full-color print. It was our goal in this final edition of 2019 to get through a two-year backlog of submissions from the fleet, therefore we hope you enjoy the extra pages we have added to ensure we share your stories, experiences and lessons learned across the enterprise.

Approach magazine has been a valuable resource since the day I was designated a Naval Aviator in 1986 during the 75th anniversary of Naval Aviation. Much has changed since then, but much remains the same. Whether leafing through the June 1986 edition or the one you have in your hand, you will find commonalities that transcend time:

- Safety is a byproduct of professionalism
- Reducing mishaps improves readiness
- Cutting corners costs lives
- Telling your story helps others learn and prevent repeating the same or similar events
- Every Sailor, Marine and civilian is a safety leader with permission to speak up!

We must continue to reinforce a culture of excellence throughout the Department of the Navy. When excellence is the standard, professionalism and safety are at the forefront of every task we perform.

The sophisticated environment in which we live and operate demands that we conduct business with a sense of urgency and a deliberate emphasis on procedural compliance, risk management, saving lives and preserving readiness.

As we prepare to close out the year, I encourage you to continue to look to the Naval Safety Center as your safety advocate. We are always open to hear your story and to share your lessons learned throughout the entire fleet.

RADM Mark Leavitt,
Commander,
Naval Safety Center


Did you find the raven? Look inside the P-8's engine.
Most of us have been there before -- the last week of six weeks at sea. There are no more no-fly days between now and the Fly off. You’re in the grinder, hoping the long busy days turn into a short week.

We had been at sea for the previous month in support of tailored ship’s training availability (TSTA). TSTA went surprisingly well, and our crawl, walk, run approach seemed to be beneficial for the primary customer -- the ship. The air wing also benefited greatly after having not been to sea much in over 18 months. Day and night cyclic operations, fuel planning, benign large force strike (LFS), moderate strike fighter weapons and tactics (SFWT) production and urban close air support (CAS) were all part of the daily routine. All in all, we were having a successful TSTA.

The ship pulled in to Norfolk for two nights to offload one fighter-attack (VFA) squadron and on-load the crew to support the first Operational Test (OT-1) of the F-35C Lightning II. The OT-1 team -- people from VFA-125, VFA-101 and Air Test and Evaluation Squadron (VX) 9 -- were all out to get some reps and sets with the F-35C to see what lessons could be learned. What a great opportunity for everyone involved to be a part of this first for the Navy.

I felt proficient both day and night in and around the ship. The weather was typical for the area that time of year: night time thunderstorm buildups, but nothing too intense for our routine operations in the Atlantic. On the day of the event, I felt the slightest twinge in my throat. That could only mean one thing: after fighting it off for more than five weeks, I finally had “boat crud,” just in time to jeopardize my spot on the fly off and bring home a cold to the family. Great. During flight briefing, the twinge had spread into a full-blown sore throat, but thankfully, other symptoms had yet to manifest. The flight I briefed was in coordination with three F-35s, four F/A-18E/Fs, two EA-18Gs, one E-2D, two MH-60Rs and was something I was very much looking forward to. By the time I walked, I had my first snuffle, but could easily clear my ears. I had no significant sinus stuffiness and my head felt fine.

I was at the jet early for my 11:15 p.m. launch. I chit-chatted with the night check crew as much as any airman wants to chat with a 40-year old O-5, took a chance to note how spectacular the moon was that night (94 percent illumination, directly overhead), and enjoyed the refreshing breeze pushing across the deck while the ship made 28 knots.

It felt like it would be a great night. Then, as I walked around the back of the jet, I got a pretty healthy shower of jet fuel all over me, spewing out of some weep-hole on the aft starboard bulkhead during turn-around refueling while I was checking the starboard wheel well. I typically could care less if I get fluids on my flight gear during pre-flight, but my oxygen mask was pretty full of fuel. I tried to shake it out, and then used mask wipes to wipe it out enough to withstand the smell. As I used my last wipe, and gave it a test, the fumes and lingering smell of fuel was too much, so I had the ground crew go below deck to get another mask and hose. Meanwhile, I missed the event startups, and being parked on
the four row on top of Cat 2, I knew a delayed start up would not be tolerated by the flight deck. The replacement mask and hose arrived expeditiously, and I fumbled around in the cockpit, trying to figure out how to secure the thing to the regulator. This took much longer than it should have, and only drove me to get more and more flustered. Eventually, I got everything secured, set up the cockpit for the start, and got the right motor online just in time to make the mass check-in on radio. It was one of those nights.

The rest of the start up was nothing out of the routine, though I did need an identify friend or foe (IFF) crypto punch, global positioning system (GPS) punch, KY-58 punch, etc. At this point, you can imagine how flustered I was while a yellow shirt was waiting for the thumbs up to get me the hell off Cat 2! I eventually got it all done. The jet was fully mission capable (FMC) and ready to taxi. All that was left was to get the loaner mask adjusted and on while simultaneously taxiing, doing a hook check, aligning on the launch bar track, confirming the weight board and being hands up for arming.

Finally, I was airborne, and all was right with the world: a beautiful night and the jet was full up. Some puffy clouds on the base recovery course (BRC) during climb-out were easily visible due to the overwhelming cloud illumination. I was thrilled to be in the air and
executed an unrestricted climb to 28,000 feet enroute to my combat air patrol (CAP) point. On the climb-out, I didn’t notice any significant head, sinus or ear pain and was easily able to equalize above 8,000 feet. The mission itself was rewarding. My very junior wingman and I had lots to observe and learn on this mission. We skirted some weather near our CAP point, but nothing serious. The other elements of the flight had significantly worse conditions to negotiate further out to the east, so we were pleased with the luck of the draw on this occasion.

At one point during the mission, our section was to execute an aggressive descent from 28,000 feet down to the deck and proceed inbound at high speed. We executed the profile without deviation, and it was here that I noted for the first time my inability to clear my right ear. While diving for the deck, I removed my mask several times in order to get a better grip on my nose, so I could better squeeze it while trying to equalize my ear pressure (val-salva).

It took a few attempts, but in the end, I was able to just keep up with the pressurization schedule and achieve enough equilibrium to keep me from crying “Uncle.” As you can imagine, trying to get that loaner mask on and off multiple times proved to be more challenging than it should, but that’s what happens when you use gear that isn’t yours. We completed our profile, executed our egress, and started a climb back up. This is when things went from nuisance to “uh-oh.”

I had to level off our section in the teens as I now could not equalize the pressure in my right ear. I had lost most of the hearing in that ear just due to things being not-quite-right. I missed a couple of calls while trying to hear with my left, all the while trying feverishly to equalize the right with no luck. Eventually, the mission lead called the knock it off at the conclusion of the fight, which I heard and acknowledged, drove the section back toward the deck, fenced us out and checked in with Strike and Marshal.

During the hustle to get back to the ship on the last recovery, I was up to my ears in tasks, especially when the mission required a 120+ mile transit to CAP. During the shuffle and the subsequent descent while checking in with Marshal, I mis-heard the marshal radial, and dialed in the 300 instead of the 330. I set us up to descend away from the stack. It was only when I heard another section check in and their subsequent marshal instructions that I realized I had heard it wrong -- I had set our section up a good 25 miles from where we needed to be, with less-than-normal time to commence because of the last recovery, no launch requirement, ready deck.

It was one of those nights.

So, now I’m at 6,000 feet, the bottom of the stack, doing 525 knots, dodging thunderstorms, trying to shoot a point to point, while simultaneously valsalva’ing hard enough to blow air and snot out of my tear duct in my right eye! It was one of those nights.
If there was any humor in the night, it came when I requested a Mode 1 approach, to which the controller replied, “Bullseye (approach guidance) is down.” Of course, Bullseye has nothing to do with a Mode 1 approach, so I replied, “Say status of Needles (Instrument Carrier Landing System),” to which I was told, “Needles unreliable.” This will play into the story later.

It was one of those nights.

I was able to get myself situated on the marshal radial with speed under control with about 45 seconds to spare. I knocked out a quick landing check list (HAIL-R), and commenced on time at the right spot. The approach and recovery, however, rocked my world. The physiological symptoms I encountered during the descent from 6,000 feet down to 1,200 were incredibly distracting. I tried a dozen times to get that right ear to equalize, but it was not having it and I elected to remain pressurized at probably 8,000 feet. Driving inbound at 1,200, I was chasing lineup from 12 miles in. “99, ship’s in a turn....”

It was one of those nights.

“Bulleye is down, fly the final bearing.... ship’s in a turn, expected final bearing is....”

I feel like I missed my opportunity to fess-up somewhere between the eight mile dirty-up and tip-over, because I was struggling just to keep up with lineup while fumbling around trying to put on my mask. Eventually, I got automatic carrier landing (ACLS) lock-on, and of course, they were high and way right. By the time I got the lineup finalized, I was at tipover and just figured I could muscle through the final 1,200-foot descent. I mean, how much worse could it get?

I’ll go back to my previous reference to carrier air traffic control’s (CATCC) characterization of Needles as “unreliable,” and that was a fact. I’d surmise that between 3 miles and the ball call, ACLS lock was dropped 4-5 times. At a mile, I directed CATCC to “Stop locking me up,” and then immediately called the ball. I’d say I was locked and dropped another three times during the last 20 seconds of the approach, and when flying PLM path, that produces the added symbology of the velocity vector appearing, and then disappearing, then reappearing and so on. As I was driving into the middle, paddles gave me a “little power” call, obviously seeing my settle at the start, wanting me to “fix my major malfunction.” I adjusted the stick and placed the ship recovery velocity vector (SRVV) long until I saw the Meatball respond. From there, I relaxed pressure on the stick, tried not to go cross-eyed between the SRVV and velocity vector with out-to-lunch, non-corresponding Needles, and an ear that was still unresponsive to valsala attempts.

The end result was a no-grade 1 wire, as you can imagine. And while that alone was humiliating enough, the subsequent taxi fam up the bow with that ear still bothering me had me ready to set the parking brake, kill the motors and slide down the flaps on the spot. “Uncle!”

It was one of those nights.

There’s no point in writing all this if there were not lessons to be learned. In my scenario, there were many indicators that I could have used to readjust that night, if not pull the plug and cancel it all together. I’ve never had an issue with my ears, and if anything, I was more concerned with blowing out a clogged up sinus than being able to equalize ears. But, I should have terminated myself on that first aggressive descent during the mission, climbed to a comfortable altitude and then slowly worked my way down to an acceptable approach altitude.

Second, I should have better executed the first step of crew resource management (CRM), which is to properly communicate what was going on and perhaps differently task some of the section lead requirements in order to deal with the issue. As it was, I missed a call and ended up putting myself and my junior wingman in a disadvantageous scenario that might cause him to be late in marshaling, or worse, get severely disoriented trying to make his timing such that he too has issues with the approach.

Finally, and most importantly, I should have talked to Paddles. When it came down to it, the rushed timing in marshaling, the quick penetration and attempts at equalizing my ear, the weather encountered, the lack of bullseye, the turning ship and unreliable needles should have all led me to actually execute Carrie Underwood’s million dollar plan of “Jesus Take the Wheel” by owning up to my degraded ability at five miles and saying, “Paddles, 300, I’ve got a bad ear and I could use a talk down, please.” No harm, no foul, end of story. Those guys are there to save the day when you’ve done everything imaginable to screw it up.

While this story ended with a safe but humiliating 1-wire, many others have ended with catastrophic results. As a former Paddles, I used to relish the days when someone needed that extra nudge via some good bedside manner on button 15 or 17, and later came to tell a similar story about how things got all messed up during the flight, and they were grateful for the 9th inning save from Paddles. I should have called them in and worked the problem as a team, and not as an individual. Sorry, Paddles. Next time, I promise.

I met the doc in medical after my post-flight. He noted fluid had collected behind my ear drum and was trapped in my middle ear. Gave me some Afrin, Pseudoephedrine, and a down-chit with a note that said, “Take two of these and call me in the morning.” It took all of the next day before I was finally able to Valsalva that ear back to sea level. The fluid subsided, the head cold passed, and the doc cleared me for the tanker drag cross-country five days later.

I regret my inaction in that flight, and hope that if you or your crew are in a similar situation where the odds are stacked against you, that you don’t keep that secret, and let someone else with a different perspective contribute to the solution.

Don’t let it be one of those nights!
When it Rain...

By 1st Lt Patrick Kaufer

If you have spent any time flying in Texas, then you are no stranger to pouring rain. But, you typically don’t see that same behavior out of your airplane. Earlier this year, I had the unfortunate realization that when something goes wrong on your airplane, it occasionally goes very wrong.

I was beginning my fifth month of instructing in the T-45C Goshawk as a Selectively Retained Graduate (SER-GRAD) instructor pilot with VT-22 at NAS Kingsville. While my aviation experience is limited compared to the rest of the cadre of instructors, I was approaching 500 hours in the Goshawk, so I felt reasonably comfortable in the aircraft. Today’s familiarization out and in flight to Corpus Christi was incredibly routine at this point, with the student in the front seat and myself instructing in the back seat. The first leg went well, with no significant issues noted. After a thorough brief, we took off on what appeared to be an uneventful departure back to Kingsville. All was normal until we leveled off at 10,000 feet and I get a call on intercom system (ICS) from my student. “Sir, do you feel weird? I don’t feel okay.” My initial response was, “No, man, I don’t feel weird,” but as I uttered the word “weird,” my symptoms hit me.

Sensations of air hunger -- throbbing feet, and an overall intoxicated feeling -- are the best descriptors for what I felt.
When it Rains, it Pours!

The student was experiencing similar symptoms, including a numbness and tingling in his lower lip. I very quickly realized something was seriously wrong physiologically with both of us, and that we needed to land.

“I do feel weird. Go through your bold face, squawk emergency. I have controls.”

After getting on emergency oxygen and securing our on-board oxygen generating system (OBOGS) flow air, I began a turn and descent while coordinating with approach for a recovery to Kingsville. We were about 20 nautical miles (nm) to the east of the field at this point and we knew there was an overcast layer at about 1,400 feet, so I was expecting the Precision Approach Radar (PAR) approach into runway 13R.

As we descended to 2,000 feet and began getting vectors, things seemed to settle down. The student was doing a great job of conducting crew resource management (CRM) with me, backing me up and ensuring the system was configured correctly for the approach. While our symptoms never improved, I was very aware of what was going on. I knew where I was, and I was confident that despite our physiological degradation, we could safely land the plane.

“BLZR 287, turn left heading 150, standby Kingsville final controller.”

I began the turn I had made hundreds of times before. We were in hard instrument meteorological conditions (IMC), so I was thankful for the excellent final controllers we have in Kingsville.

But, as I began to roll out, my displays didn’t respond as expected. “I feel like I’m in a right-hand turn now...I am in a right-hand turn!” The thoughts crossed my mind as I observed a complete display system freeze.

My attitude indicator and heads up display (HUD) both indicated a left-hand turn. My standby gyro now indicated a right-hand turn and my horizontal situation indicator had frozen entirely in place, showing a 150 heading. As I leveled the wings on the standby, several things crossed my mind:

“Am I so hypoxic that I’m imagining this?”

“Am I in a simulator with one of our cruel simulations?”

I finally asked the student if he saw similar indications, which he confirmed. Full display system failure, while IMC and hypoxic. When it rains, it pours I suppose.

Around this time, both my own and the student’s symptoms got significantly worse. The air hunger intensified. The intoxicated feeling progressed to a state I have not felt before, let alone while flying an airplane. We did our best to fly the no-gyro, hypoxia PAR.

While fighting our symptoms and the jet, we broke out at about 1,400 feet and approximately 8 nm from the field. I picked out the runway in the distance as it appeared to get further away. I elected to keep the jet clean for now to get us to the field as quickly as possible. As the student tried to verbalize the extent to which his symptoms had progressed, I came to the uncomfortable realization that I might need to eject out of this airplane. As I seemed to slip closer to unconsciousness, riding the rocket chair sounded more appealing than riding the crippled aircraft into the dirt. That is the scary part of these physiological events. Ejecting can’t be the last option since you’ll likely be unconscious before realizing your need to hop out. So I decided I would stick with it until I felt like passing out was imminent.

Around the time I was coming to grips with ejecting, the student said, “Sir, I dropped my mask, and I feel a lot better.”

While my initial reaction was to tell him I’m keeping my mask on, having the mask on and visor down significantly reduces the risk of injury during ejection, due to the nature of our canopy fracture system. Again, he tells me that he dropped his mask and emphasized that he feels much better. Something in me decided I should try it, so off it came. Within 2-3 breaths, clarity began to return to my mind, and all thoughts of ejection vanished. It was as if the Aeromedical Safety Officer (AMSO) had just pushed the big red button on the reduced oxygen breathing device (ROBD) trainer we all do. We were about two miles from the field now, so I dropped the gear, flaps and hook, and took an uneventful field arrestment. Traps are free, right?

This trap ended the most exciting and challenging “.4” of my young flying career. It was a learning point for so many reasons. It taught me how a cool head and keeping it together could get you out of sticky situations. It taught me the value of CRM, and the importance of speaking up when something doesn’t feel right. And it demonstrated to me, and hopefully to all of you, that the training works. I do not have a fleet background to draw on. I do not have deployments, and years in grey aircraft to call on when the situation requires critical thinking and extra creativity. I am a young first lieutenant with nothing more than the training given to me by my instructors, and it was sufficient. I am thankful to call most of those instructors friends now, and I’m very thankful to my command for allowing me to teach my peers. It’s exciting and humbling every day and I’m incredibly grateful to be able to share this day, which can only be described as less than ideal, with the fleet.
The Most Undesirable High Five

By LT Ryan B. Ewanchew

While embarked on deployment, my Electronic Warfare Officer (EWO) and I were up for a proficiency night flight with a sunset launch. We were approximately a month into deployment with flights averaging about one every other day. We were one of two Growlers launching in our event and coordinated to operate as singles during the event. We performed a standard Naval Aviation Training and Operation Procedures Standardization Manual (NATOPS) brief following the pocket checklist and paying particular attention to the administrative portion of the flight.

Once we completed briefing the tactical and mission portion of the flight, we went to grab a quick bite before walking for the flight. As is standard on the aircraft carrier, the planes were parked with their wings folded in close proximity to one another. We arrived at the plane, receiving a standard brief from the Plane Captain (PC) in training, accompanied by his qualified PC. He verified all pins accounted for, the ducts were cleared, circuit breakers pushed in and we had the correct fuel load. We then shook the PC’s hand and proceeded to get strapped into the aircraft after we performed our preflight inspection.

I did a quick sweep of the cockpit moving from right to left as I was connecting the last of my leg restraints and lap belt (Editor’s note: In the E/A-18 interior checks checklist, the WINGFOLD switch should be checked to ensure it matches actual wing position to ensure there are no unintended wing movements after aircraft generators come online). Once we heard the announcement from Mini Boss to start Auxiliary Power Units (APU), we began to start the APU and then the right motor. The start was standard, but when the generators came online, I noticed more movement than usual out of the ground crew in my peripheries. My flight deck chief and plane captain were giving me the “fold wings” signal, but by the time I realized what they were trying to communicate to me, contact had been made.

The ALQ-218 wingtip pod struck the adjacent Growler’s wingtip pod. I looked down to see the wing fold switch and confirmed it was in spread. The attempt to fold the wings failed, requiring the wing to be cranked to set it back to the upright position. After the wing cleared, the flight deck crew directed a shut down. Quality Assurance (QA) personnel began inspecting the damage to determine its extent, downing both jets in the meantime. All witnesses were required to give statements and execute the pre-mishap plan.

As soon as the wing crunch occurred, I felt a mixture of guilt and anger stemming from the internal questions I kept asking myself, “How could I overlook something so basic?” and “What was the cost in downed assets and parts to rectify this damage?” As the anger began to subside, I started to analyze how the situation manifested. I concluded that, from my point of view, this situation could have been avoided had I not taken things for granted.

Complacency is a basic issue within our line of work — even more critical on the flight deck of a carrier. It has the potential of being costly in loss of life or loss of equipment, preventing us from accomplishing our mission. That day, I failed to verify the position of the wingfold switch, and we paid for it with the downing of both Growlers for that wave and an indeterminate amount of time after that. I felt ultimately responsible as the pilot in command (PIC) and knew that more was expected of me.

‘How could I overlook something so basic?’

Once maintainers inspected both planes, they determined that the only damage was a single drainage tube on the underside of the wingtip pod. The rest of the damage consisted of minor scrapes, which did not affect the structural integrity of the pods. One aircraft was back to full mission capable status by the next day and the other was awaiting a few more inspections to verify the integrity of the wing fold drive unit. Within two days, subsequent inspections found no additional problems with the other aircraft and it was back flying. Needless to say, the outcome was incredibly fortunate.

The result was nothing short of a blessing, but we cannot look at this and say, “All is well that ends well.” What we can do is take a step back to figure out what we can do differently to prevent this or another similar situation from happening again. As a squadron, we incorporated the addition of a wing fold switch, seat handle, master arm switch and anti-skid switch position into the plane captain brief to the aircrew. As aircrew, we are now confirming the wing fold switch position during our communication system checks before starting the fire warning tests. These measures will add a few more checks to prevent a situation in which personnel or equipment could be harmed or damaged.

Learn from my error and assess if complacency plays a part in your habit pattern so that you can identify it and take the appropriate steps to mitigate it. I did not make the proper assessment of my habit patterns and was a part of the most undesirable high five I have ever been a part of in my life. We must keep each other safe on the flight deck or flight line and not let complacency lead us down the path of neglect and blunders.
Combat Divert: Applied CRM Over the Skies of Iraq

By LT Alex Beasley

The pressures of combat operations in support of Operation Inherent Resolve (OIR) can add an element of stress and task saturation to even the most seasoned aviators. But, sound execution of emergency procedures, the application of good headwork, and Crew Resource Management (CRM) — even in the face of perceived external pressures — can enable safe and survivable operations in a combat environment.

During a night combat sortie in the summer of 2018, Freedom 81 and 82, a flight of two F/A-18Es from the “Sunliners” of Strike Fighter Squadron (VFA) 81 and Carrier Air Wing (CVW) 1, launched from USS Harry S. Truman (CVN 75) and transited east for the evening’s first tanking operation over Syrian airspace. It was the final day of planned combat operations before a well-deserved port visit, and VFA-81’s most senior junior officer was leading the air wing commander on a close air support (CAS) mission. The thunderstorms they encountered along their ingress had given way to clear skies over the mission objective, and the flight was proceeding as briefed. While conducting in-flight refueling, Freedom 81 received a full internal load of fuel but was unable to receive fuel in the centerline tank. After Freedom 82 received the fragged fuel, Freedom 81 elected to troubleshoot alongside the tanker. While troubleshooting, Freedom 81 received two cautions simultaneously, indicating low hydraulic pressure in his primary flight control circuits. Both cautions began cycling at approximately 10-second intervals. A quick scan of the hydraulic gauges revealed that the aircraft’s Hyraulic 1 (HYD 1) pressure was cycling between 800 psi and 2200 psi, and per the Naval Aviation Training and Operating Procedures Standardization (NATOPS) manual, Freedom 81 secured the left engine. After securing the engine, Freedom 81 was unable to maintain altitude or airspeed and coordinated a descent to 19,000 feet via Tactical Command and Control (TAC C2).

Freedom flight was now faced with a dilemma. Due to thunderstorms along the egress route to the carrier, the return to friendly forces would require either a climb to high altitude or a lateral divert. Since operational restrictions limited any lateral deviation from the egress route, Freedom 81 had to decide between penetrating a thunderstorm or diverting to an unfamiliar airfield miles away from the nearest U.S. maintenance support on the day before the carrier’s planned move to the central Mediterranean Sea. After discussing their options, Freedom 81 and 82 decided that the primary divert airfield was no longer a viable option and elected to divert to Erbil, Iraq. On the transit to Erbil, Freedom 81 received multiple flight control system (FCS) cautions with degrades in the leading edge flaps (LEF) and rudder channels, as well as an amber flaps light indicating loss of normal function of the aircraft’s flaps. Freedom 81 was able to clear the FCS caution with FCS resets for five minutes at a time. About halfway through the 200-mile transit to Erbil, Freedom 81 also received a fuel transfer caution. Freedom 81’s feed tanks were indicating 1,500 pounds, while both the wing tanks and tank four were full. Freedom 81 and 82 conducted a thorough airfield discussion on their inter-flight frequency and developed a game plan to land the aircraft via a normal landing after restarting the left engine. Freedom 81 restarted the left engine 25 miles from the airfield and made an uneventful landing in Erbil. Freedom 82 landed and refueled to make the flight’s planned recovery time aboard Truman. Freedom 81 remained in Erbil for the next eight days, coordinating repairs and logistics for the rescue detachment.

This incident taught the Sunliners and the CVW team some valuable lessons:

- **Hydraulic System:** After examining the aircraft, squadron maintainers discovered that a main hydraulic line in the HYD 1 system developed a one-inch gash. The location of the gash is a known issue in the Super Hornet, where the hydraulic line can rub against the generator control unit (GCU) and cause wear over time. Freedom 81’s decision to secure the engine helped prevent the hydraulic pump from being destroyed and potentially causing a fire.

- **Fuel System:** Maintenance personnel also discovered that the tank three transfer pump had failed in flight. The tank three transfer pump is operated by the starboard engine, while the tank one transfer pump is operated by the port engine. By shutting off the port engine, the normally functioning tank one transfer pump lost its power source and stopped working. Fuel should gravity feed from tank four during these failure conditions, however, approximately 1,000 pounds per wing tank will not transfer without an induced side slip. In the case of Freedom 81’s engine shutdown, fuel was not an issue, however, consideration should be...
Approach

given to the high likelihood of trapped fuel.
• CRM: Freedom 81 faced real and perceived pressures in this scenario. Tasked with leading the air wing commander in combat, 81 dealt with deciding to divert to an unfamiliar airfield even though the aircraft carrier and all maintenance support would be steaming west later that evening. Complicated by bad weather, hostile ground forces and geopolitical constraints required all of the elements of the familiar DAMCLAS (decision making, assertiveness, mission analysis, communication, leadership, adaptability/flexibility, situational awareness) principles encompassed in CRM. A select few of these principles are highlighted below.
• Assertiveness: Regardless of outside influences, compound emergencies require aircrew to assess the condition of their aircraft and make sound decisions that are critical to getting their aircraft safely on deck. Freedom 81 and 82, in this case, had to apply an old axiom: “there is no rank in the cockpit (or flight).” By separating rank from the problem, a junior pilot was able to effectively handle a stressful inflight emergency and land without incident at an unfamiliar airfield at night. The cohesive teamwork demonstrated that evening was a direct result of the appropriate application of CRM principles in what could have been a very daunting environment for the junior officer.
• Mission analysis: This divert scenario presented an even greater external challenge since CVW-1, along with the rest of the Truman Carrier Strike Group, would be steaming west the following day and leaving its current operating area. Faced immediately with the knowledge that a major system casualty would likely lead to extensive delays on the deck while awaiting maintenance, Freedom flight had to apply the mission
analysis portion of CRM. As the two pilots discussed their options, they arrived at the conclusion that, based on mission planning factors and the inability of the flight to return to the carrier safely due to poor weather and geopolitical limitations, the flight’s best option was to divert east into Erbil. Of note, Freedom flight recognized in real time that maintenance logistics could pose an enormous challenge once on deck. They rejected this factor as insignificant and prioritized the safety of flight as the number one priority.

- Adaptability/Flexibility: Arguably the most important CRM principle employed on this difficult mission was the adaptability and flexibility required to assess the situation, make informed decisions based on the best information available, execute sound NATOPS procedures and good headwork on the way to a successful divert. As tempting as it was to press west through questionable weather to avoid an unfamiliar divert scenario and a complex logistics problem, Freedom flight accurately prioritized the aircraft emergency and landed without further incident.

The intent here is to emphasize the importance of assessing in real time what the mission priorities are and reacting appropriately. Freedom 81’s eventual return to Truman was a complex operation requiring major coordination with international and joint partners. In anticipating these difficulties, it might have been easy to succumb to “get-home-itis” and press a broken aircraft into a bad situation. Despite the challenges encountered, Freedom flight walked away from the flight having gained important experience on the value of applying sound CRM principles, even in the face of extensive perceived and actual operational stresses and challenges.
Crew resource management (CRM) has become a cornerstone of Naval Aviation that is discussed before every flight and revisited in depth annually. Like all humans, pilots are prone to error. An erroneous fire light over the South China Sea put the CRM of our MH-60R crew to the test.

The flight began like every other flight we had flown over the previous weeks for our two aircraft detachment with an Operational Risk Management (ORM) and Naval Aviation Training and Operating Procedures Standardization Manual (NATOPS) brief as a crew, then aircraft pre-flight for an on-time departure. After launch, our mission progressed uneventfully as we passed down contacts to the Anti-Submarine Tactical Air Controller (ASTAC) as we had done many times before.

At that time, the red glow of the master warning panel fire light flashed, along with the No.1 engine T-Handle fire light. An engine fire during blue water operations, with only a small flight deck to return to, would make even the most experienced crews anxious, but thanks to our emergency procedure (EP) training, our response was second nature. “Standby,” the Helicopter Aircraft Commander (HAC) radioed to the ASTAC before beginning the external engine fire emergency procedure. He asked the crew to confirm a fire on the No.1 engine.

Our CRM began to break down at this point, as the HAC thought he heard the aircrewman report “confirmed engine fire.” The HAC moved to the next steps and proceeded to the engine malfunction in-flight emergency procedure. He then asked for my dual concurrence in securing the No.1 engine. I did not have nor did I hear any confirmation of a fire; I thought the HAC had confirmed indications, so I provided my concurrence. Seconds before activating the fire extinguishers, the HAC noticed no indications of a fire other than the fire light. He asked our aircrewman if he still had fire indications and he reported he could not see the number one engine at all.

The HAC then asked the crew who had said, “Confirmed engine fire” and I told him I said this while reciting the emergency procedures at first indications. While not verbatim, it is essentially the first step of the external engine fire emergency procedure, but this statement was interpreted as confirmation of the fire.

Once the miscommunication was discovered, we reassessed the situation. The NATOPS manual notes that sunlight filtered through haze can trigger the fire detectors, so we restarted the engine and returned to the ship without further incident, where we safely shut down to have our aircraft inspected.

In hindsight, we analyzed several CRM skills that would have helped us avoid our CRM breakdown. The first is communication. Before the flight, we did not discuss who would verbalize the procedure steps in the event of an actual emergency. When the fire light illuminated, we both said the procedure aloud and at different times, causing miscommunication.

Second -- the aircrewman and I failed in another critical CRM skill: assertiveness. When the HAC started the procedure to secure the engine, neither of us requested clarification on how he confirmed the fire. Instead, we just assumed the HAC had confirmed the fire somehow without needing our input. This lack of assertiveness stemmed from a lack of situational awareness (SA). With the fire light indicating a fire in the number one engine, my SA was immediately degraded since I was in the opposite seat and had no way of observing the number one engine. With the continued illumination of the fire light, the adrenaline generated by the thought that it was potentially an actual fire further restricted my SA. I became focused on what I was doing instead of maintaining awareness of the actions of the entire crew and how my actions affected them.

We overcame the CRM breakdown before it devolved into an unrecoverable situation thanks to re-employing these same skills correctly. The HAC’s decision to take a second to communicate and make sure everyone was on the same page helped us not only to realize that there was no actual fire but also the cause of the CRM breakdown. Finally, we demonstrated our adaptability and flexibility as we recovered from the false indication. We restarted the engine and returned safely to the ship with no impact to the aircraft or crew other than a valuable lesson learned.

During the flight debrief, we agreed that the first pilot to verbalize an emergency procedure should be the only person saying the checklist aloud, especially in the case of a fire. This minimizes the opportunity of a misunderstanding during high adrenaline situations.
An MH-60R Seahawk helicopter from Helicopter Maritime Strike Squadron (HSM) 35 takes flight from the USS Momsen (DDG 92). Navy photo by Mass Communication Specialist 2nd Class Sean Rinner.
It was a good weather night in the Florida panhandle in late August and we were ready to complete the first of two navigation routes of the evening while utilizing the AN/AVS-9, night vision device. We conducted the brief, checked out our gear, screened the Aircraft Discrepancy Book (ADB), conducted a thorough preflight and started up with the student following along with the checklist to ensure completeness and compliance.

We departed home field uneventfully with the student at the controls. As we neared the end of course rules and transitioned to the navigation route, descending from 900 feet to 500 feet while maintaining 100 knots indicated airspeed, I took the controls. The student identified the first checkpoint early, which gave plenty of time to get set up to navigate. At this point, we heard a slight increase in Internal Communication System (ICS) feedback, and then it suddenly went away. Along with the silence was a subsequent generator failure caution light, which did not raise much concern, as the standby generator fitted to the TH-57C picks up the electrical load for equipment required for night and instrument flight.

I passed the controls to the student and broke out the Pocket Check List (PCL) to conduct the appropriate emergency procedure. We secured non-essential equipment, then reset the main generator and it immediately came back online. As a crew, we discussed the appropriate actions and elected to continue training, since the electrical system had returned to fully operational. I took the controls and allowed the student to return to the task of navigation.

About 30 seconds later, the feedback in the ICS increased again to an even higher volume, went silent and the generator caution light returned. This time, the standby generator caution light illuminated as well. A scan of the cockpit showed the standby generator circuit breaker had popped. At this time, I turned directly to the course rules entry point.

Fearing a short and a possible overload within the electrical system, I made no subsequent attempt to reset either generator. I maintained the controls and instructed my student to retrieve the PCL and conduct both the main and standby generator emergency procedures. I immediately turned off the mini stabilization system as I was at the controls and could turn it off without significant adverse effects to the controllability of the aircraft.

The student then asked which electrical equipment she should secure. We started by securing unnecessary equipment such as the ADF and VHF radio. I then thought of and secured high load equipment, like the anti-collision lights. After going through nearly every piece of electrical equipment, we were flying with only position lights on dim, the UHF radio, transponder and force trim. We turned off all the interior lights and used our lip and finger lights to illuminate the cockpit. I checked the battery voltage and it read approximately 23V for a 24V battery.

At the course rules entry point, I contacted the tower and advised them of our situation. Since we were operating on battery power only, we asked and were approved to turn off our transponder. This left us with only three electrical
components operating. I informed the tower that we would divert to a nearby outlying landing field if all electrical power was lost before entering the inner core of the Whiting Class C airspace. As we passed the outlying field, I scanned the instruments and saw the voltage had dropped below 20V and could see the needle slowly lower.

Approaching the final checkpoint before entering the pattern, I instructed the student to turn on our anti-collision lights and spotlight to increase our visibility to departing aircraft, one of which would cross our flight path. Once clear, I instructed the student to secure all the lights and advised tower as such. Again, I looked and saw the battery going below 15V.

I wanted to land on the inactive runway for two reasons: ease of pattern entry in relation to my position and the fact that it was unlit and would prevent our NVGs from degrading. Unfortunately, the winds did not support a straight-in approach to the inactive, so I elected to take a diagonal final. The approach was uneventful. Once in a safe hover taxi, I instructed my student to switch to Ground immediately. I contacted Ground, who came back weak, but readable. After receiving my clearance to taxi to the line, the radio went dead. I checked the battery voltage one last time and it showed well below 5V. The total time from indication of a main, standby, total electrical failure and battery depletion was approximately 12 minutes.

Without electrical power, we taxied to the first spot on the line and landed. As we conducted the shutdown checklist, I realized I made a mistake: I had left the Environmental Control System (ECS) turned on. This draw on the electrical system resulted in a total loss of electrical power that moments earlier could have led to catastrophic results.

The TH-57C has an electrical system engineered to meet the minimum requirement for flight set forth by the FAA. Utilizing two redundancies, a standby generator and a battery, it can continuously power essential equipment in the event of a main generator failure. With this failure in daytime operations, the system is designed to disconnect the non-essential bus. Per standard operating procedures, the system is configured to restore the non-essential bus at night to keep lights on. The ECS receives power from the non-essential bus and would have been disconnected under normal conditions, but remains on in this configuration. The electrical load pulled by the ECS is significant, so much so that during pre-takeoff checks aircrew are required to check that the load meter is indicating below 50 percent. All this requires a far more systematic approach to ensuring non-essential equipment is turned off.

In this situation I did not decide to leave the ECS on; it was purely an oversight. At no point did I question the completeness of securing the non-essential equipment. Had we used a systematic means of confirming all non-essential electrical equipment had been secured, we would likely have had enough electrical power to maintain essential electrical equipment all the way to landing. I hope that others can learn from this, as some Naval Aviation Training and Operating Procedures Standardization Manual procedures allow for the discretion of the pilot.

Our squadron was three weeks into our third long work-up. I was flying a night over water Tactical Formation (TACFORM) and aerial gunnery sortie in the lead aircraft with our new Super JO and two aircrewmen. We were planning to shoot a few hundred rounds for currency. The other helicopter had a junior helicopter aircraft commander (HAC), a budding Helicopter Second Pilot (H2P) getting a TACFORM grade card and two aircrewmen who were shooting for currency. We thoroughly briefed the TACFORM maneuvers, gun patterns, bent weapons contingencies and the sequence of events. Although both crews were current and proficient in carrier operations, it was a dark night, and the Composite Training Unit Exercise (COMPTUEX) air plan was intricate. Dash two was the plane guard asset, so we planned to drop a smoke for a target and do gun runs within 10 nautical miles (nm) of the carrier.

Both aircraft launched uneventfully and proceeded 7 nm to the west while the carrier continued to make a path of intended movement (PIM) to the south. We assessed the
many surface contacts and winds to determine our heading. COMPTUEX typically yields crowded airspace, lots of surface contacts and clobbered radios. However, despite these complexities, we were confident we could conduct our training without interfering with the fixed-wing cycle and still be available in the event the plane guard bird was called upon. After declaring green range, lead called for the first gun pattern, “Knight flight, L-Attack, left side, 360, follow-on timed race track.”

The Seawolf maneuver description guide states that an “L-Attack” is an initial, quick method to suppress a threat, commonly used to transition to a race track pattern. It allows the helicopter to engage enemies on both the ingress and egress legs while protecting friendly forces and setting up an easy transition to follow-on patterns. The heading in the radio call is the firing leg heading, and the side clarifies which gun will be employed, either the long-range GAU-21 or the short-range M-240D.

A common configuration is to have the GAU-21 on the starboard side and the M-240D on the port side. The configuration plays a large part in setting up gun pattern geometry, and this common configuration in a race track pattern typically calls for a clockwise flight path to employ the M-240D on the inboard leg due to its shorter range and the GAU-21 on the outboard leg because of its longer range. However, on this night we had a port GAU-21 and a starboard M-240D to support search and rescue, so our configuration dictated a counterclockwise pattern. We neglected to clarify this in our brief or in the gun pattern call.

In formation, we turned north to heading 360 and setup to enter the race track pattern on the outboard leg. There was confusion regarding the pattern setup and entry. The flight lead attempted to clarify what was happening as we began the left turn for a counter-clockwise race track pattern. As lead continued the pattern, wing was still confused on how the pattern would ultimately be executed. Our aircrewman called “aft stop” on the inboard leg, and flight lead called “out” and began a left turn to enter the outboard leg again.

As soon as we called “out” in the lead aircraft, we saw a low-flying, fixed wing aircraft off our nose with bright lights. The carrier had turned without an updated Base Recovery Course (BRC) call and began recovering aircraft. What we saw was a jet on short final. As we diverted our attention to regaining situational awareness (SA) on the geometry of the jet pattern, we lost SA of our own section. Rolling out at 300 feet on the outbound leg of our gun pattern, we immediately noticed our wing aircraft’s altitude, right off our nose. Our brief loss of SA had placed us in a head-on collision course with our other aircraft. Both crews recognized the immediate need for vertical separation and called “blocks!” We maneuvered as briefed and began a descent to 150 feet while wing remained at 300 feet. Each aircraft maneuvered to pass port to port, and flight lead reiterated “blocks” to emphasize the importance of altitude separation.

The near mid-air coupled with the realization that our section was operating on the final bearing yielded a “knock it off” call from flight lead, and each aircraft proceeded to opposite holding deltas. Enroute to the starboard side, we switched off air-to-air tactical air navigation (TACAN) and tuned up the carrier’s TACAN. While the crew was agitated, we discussed the perfect storm that had brewed over the course of the flight and used good Crew Resource Management (CRM) from front to back and side to side to keep our heads in the game. While we didn’t expend all the ordnance we had planned for, we decided as a section that the training could be accomplished another time. Both aircraft recovered uneventfully.

In hindsight, we should have briefed the non-standard gun pattern and sacrificed brevity for clarity on the radios to ensure both aircraft clearly understood where they needed to be. In the dynamic environment of carrier aviation, we also should have expected the ship to turn without notice. In the execution of something non-standard, we had lost SA on the bigger picture of what was happening around us. While we have tools like Link 16, no single tool can be a substitution for good situational awareness. It is imperative that pilots and aircrewmen maintain an aggressive scan of what is happening within their own aircraft, their section and environment around them. When a safety of flight call is made, pilots must react instantly to protect their crew and their aircraft. Practicing contingencies like altitude blocks, inadvertent Instrument Meteorological Conditions (IMC) and join-up procedures more frequently would create the muscle memory needed to safely execute these maneuvers when called upon.

As thorough as we thought our brief was, in the actual execution of our flight that night we allowed ourselves to become distracted by something non-standard that was not clearly briefed and we neglected to constantly assess our surroundings. Thankfully, good CRM proved effective and allowed our section to recover safely.

‘When a safety of flight call is made, pilots must react instantly to protect their crew and their aircraft...’

- LT S AR A H M C G U I R E
Approach

By LCDR John Edwards

Vortex Ring State (VRS) is a serious hazard to helicopters operating at high descent rates and low forward air speeds. The MH-60R Naval Aviation Training and Operating Procedures Standardization (NATOPS) describes VRS as “an aerodynamic condition where a helicopter may be in a vertical descent with maximum power applied and little or no cyclic authority.” This loss of lift and reduction in cyclic authority is caused by the vortices producing large areas of turbulent flow over the blades. The turbulent air disrupts the flow over the blades resulting in a serious reduction of useable lift.

The H-60 is susceptible to these effects at descent rates greater than 700 feet per minute (fpm) and airspeeds 0 - 20 knots indicated airspeed (KIAS). The condition is worst when approaching descents in excess of 1,500 fpm with 5 - 10 KIAS. The crew begins to experience oscillations and aircraft vibrations as the rotor disk is buffeted with its own vortices. The corrective action provided by NATOPS is:

- Decrease collective pitch.
- Increase forward airspeed.
- Enter autorotation if altitude permits.

VRS occurs when the rotor system begins to ingest its own vortices and thus settles down in its own wake. The result is a rapid descent without adequate thrust to counter the descent. If left uncorrected, helicopters can develop descent rates of more than 6,000 fpm with little to no cyclic authority despite maintaining 100 percent rotor rpm (Nr). The result of this condition can lead to a total loss of aircraft and crew.

The MH-60R community utilizes NATOPS, standard operating procedures (SOP) and maneuver description guides (MDG) to avoid flight profiles that can lead to VRS. Despite these controls, there is still a very real

Integration of the Vuichard Recovery

By LCDR John Edwards

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The MH-60R community utilizes NATOPS, standard operating procedures (SOP) and maneuver description guides (MDG) to avoid flight profiles that can lead to VRS. Despite these controls, there is still a very real
threat posed by this treacherous condition given the nature of our shipboard operating procedures, landing profiles and dipping operations. The current corrective procedures in use by the Navy, while effective when there is altitude to enter an autorotation, are not ideal for the profiles in which MH-60R helicopters are most likely to experience VRS. Therefore, there is a critical need to adopt a procedure more suited to low altitude recovery from VRS.

NATOPS also states “a considerable loss of altitude may occur before the condition is recognized and recovery is complete. During approach for landing, conditions causing vortex ring state should be avoided.” Unfortunately, MH-60R crews are more likely to be in a steep and slow profile near the ground rather than at an altitude sufficient to execute the published procedure.

The key to recovering from VRS is to escape from the recirculating airflow. We can look to other communities and industries to see what other viable methods exist for VRS recovery. Claude Vuichard, a Swiss flight inspector and flight examiner, developed an alternate recovery procedure while flying high altitude helicopter operations in the Swiss Alps. The Vuichard recovery utilizes tail rotor thrust and the upward flow of the vortex to slide the helicopter out of VRS. For counter-clockwise rotating helicopters (MH-60R included) the procedure is based on two relatively simple steps:

- Increase collective to climb power while simultaneously applying left pedal to keep the nose straight.
- Displace cyclic right (10-20 degrees bank angle).

The maneuver is completed when the advancing rotor blade reaches clean up-flow. According to the United States Helicopter Safety Team, the average loss of altitude when executing the Vuichard recovery is 20-50 feet.

The MH-60R and MH-60S are expected to operate in low altitude environments that require rapid decelerations and descents into confined landing sites or dip points. Crew in both airframes are trained to and well versed in preventative procedures to avoid VRS. However, when operating under adverse or chaotic operational environments it is easy for crews to place the aircraft into dangerous profiles. This procedure allows crews to have an out when they are most vulnerable to entering VRS – near the ground while executing dynamic operational maneuvers. The H-60 has a large and powerful tail rotor that is capable of providing a significant amount of sideward thrust to slide out of VRS. Commercial operators already have adopted the Vuichard Recovery -- the military will benefit from this procedure given the nature of our flight profiles and the relevance of low altitude recovery.
The environmental control system (ECS) throughout the F/A-18E/F and EA-18G community has been fraught with numerous systematic and operational malfunctions for many years. Lately, much attention has focused on a rash of hypoxic and decompression sickness illnesses caused by On Board Oxygen Generating System (OBOGS) faults and fluctuating cabin pressurizations throughout our community. While most of these occurrences have concluded with aircraft landing safely on deck, some have resulted in catastrophic and life threatening situations.

As wingman enroute to one of the local operating areas in eastern Washington state, my Electronic Warfare Officer (EWO) and I were focused on setting up our systems in preparation for a Suppression of Enemy Air Defenses (SEAD) training mission. About 20 minutes into the flight and level at 23,000 feet, I noticed the forward cockpit get eerily quiet and recognized a lack of cabin airflow through the vents. My personal checklist for any Environmental Control System (ECS) situation is to ask first: “Can we breathe?” Second, I ask. “Are we pressurized?” OBOGS was still working and the cabin pressurization was stable at the expected 8,000 feet.

Next, it was time to relay what was going on to my EWO. “I’ve lost airflow. ECS airflow. Confirm you have lost airflow?” He replied, “Affirm, I’ve lost ECS airflow.”

Being well outside normal operation for the system and not knowing whether we would possibly lose cabin pressurization, we decided to forego the mission, notify our lead what was going on, descend below 10,000 feet, and get the jet safely on the ground.

Funny thing about late winter in Washington – there is typically a cloud layer hovering low across the entire state. With a lack of self-contained precision approach capability, available airfield options become quite scarce on the eastern side of the mountains. After a brief conversation, we decided to take the
jet west over the Cascade Mountains and back to Naval Air Station Whidbey Island. We received the clearance to take the lead and started coordinating with air traffic control for our new flight plan. In the descent passing through 11,000 feet, I felt a massive surge of airflow come through the vents with the built in test (BIT) page showing an environmental control system degradation alert (ECS DEGD).

A few moments later, I started getting a significant headache in my forehead and behind my eyes. Voicing the new symptom to my EWO, we acknowledged the possibility of hypoxia and executed the associated boldface. Our wingman coordinated a climb to get within radio range of squadron base and informed them of all events and our game plan and to activate the possible hypoxic event procedures. We elected to fly toward the local holding point to ensure all procedures and checklists were complete, and we were ready to land. Due to cloud layers, we commenced a precision approach radar (PAR), which degraded to a visual straight-in once below the weather. The emergency oxygen bottle lasted up until we turned to final – almost 20 minutes. Landing rollout and taxi were uneventful. Aviation medical determined that I was hypoxic and all applicable procedures were followed.

The most notable strength and weakness during the flight was our tactical crew coordination (TCC) between the aircrew in our jet to our wingman. We effectively performed our procedures, developed a game plan and followed it through. Hindsight is 20/20, and we could have emphasized to our wingman that our checklists were completed and our intentions regarding section integrity once back to the local area. This additional crew coordination may have lessened our wingman’s desire to “climb in our cockpit” and provide assistance. With that said, the adage “aviate, navigate, communicate” still applies. Take care of the proverbial “snakes in the plane,” get the jet pointed where you want to go, execute checklists, let others know what is going on and how they can help, and return safely.
Helicopter Maritime Strike Squadron 46 Detachment 3 (HSM46.3) completed significant training during a six-week workup embarked aboard USS Mason (DDG 87). Both the detachment and ship’s company conducted training exercises that provided valuable experience for both the aircrew and ship while increasing integration and familiarity for future operations between the two. Mason and HSM 46.3 stepped out of the typical workup comfort zone by coordinating and executing a hoisting exercise and an open ocean search and rescue (SAR) jump exercise. HSM 46.3 delved into the appropriate publications, procedures and best practices to develop and lead training for the safe and successful completion of these two events.

HSM 46.3’s Cutlass 771 launched from the deck of Mason with the first of three crews and prepared for hoisting operations. The boat team from Mason launched their rigid inflatable boat (RIB) and got into position for the first simulated rescue. The “casualty,” a mannequin, needed to be transferred via a rescue basket from the RIB to the flight deck of Mason after a simulated helicopter visit board search and seizure (HVBSS) mission gone wrong. The potential complications with a mission of this nature were thoroughly briefed.

The RIB team maneuvered into and held position for the hoist, undeterred by Cutlass 771’s downwash and sea spray. While expertly holding this position, they retrieved the lowered rescue basket, safely placed their injured mannequin inside, then ensured the basket remained steady on its way back up to the helicopter using a trail line.

Cutlass 771 departed and made its way, with the survivor, back to Mason to transfer safely to the deck. First, one of the rescue swimmers was deployed to the flight deck while the helicopter hovered. Once on deck, the rescue swimmer gained control of the trail line and used it to steady the
HSM 46.3 and Mason coordinated a time in their schedules to do open ocean SAR jumps a few days later. After again consulting the applicable SAR and training publications, the members of the detachment came up with a concise concept of operations and communications procedures still in alignment with directives. Open ocean jumps are rarely executed in the HSM community because of the challenges to meet the stringent SOP requirements. Typically, tasking and ship participation are the biggest hurdles to overcome. Fortunately, this was not the case, as Mason was supportive of the training. HSM 46.3 and the Mason team prepared to set the standard.

The event started out with the three volunteer pilot “survivors” entering the RIB and heading out 500 yards on the ship’s port beam. Cutlass 771 again launched, this time with all three rescue swimmers on board. First, the rescue swimmers performed their requisite jumps and direct deployments, cycling through the crew chief, rescue swimmer and “survivor” stations. Then, the three pilot “survivors” jumped from the RHIB into the water with one rescue swimmer from the helicopter staying with them for overall event safety. Cutlass 771 reset and conducted a daytime SAR approach to affect the rescue. The plan was to rescue each “survivor” using two rescue methods: rescue strop and rescue basket. Using multiple rescue methods adds significant value and insight for both the swimmers and “survivors.” The rescue basket is effective and feels more comfortable and less disorienting in the rotor wash. The rescue strop, also known as a horse collar, is more efficient for rescues, but it is uncomfortable. The survivor has to be willing to fight the urge to protect themselves with their hands as well as the tendency to reposition themselves in the strop away from the spray and waves. The natural reactions of a survivor using the rescue strop run counter to what the swimmer needs them to do to get them in the strop and conduct the rescue safely. Normally, the rescue strop is not used for injured survivors.

Our training came in handy. Just two days after the SAR jumps, Mason received a distress call from a downed aircraft. Had it not been for the distance from the downed aircraft, HSM 46.3 would have been the most qualified crew in the strike group to handle the rescue, a testament to the importance of being prepared and willing to execute training in a non-standard environment in order to assist.

Creating time in the schedule to go above the minimum training requirements can be extremely beneficial. With the lessons learned, Mason and HSM 46.3 will be able to push updates to the procedures and publications dealing with hoist and SAR operations based on actual experience. Improving those procedures will make future training and rescues throughout the community safer and more efficient.
There I was... When Good Tanking Goes Bad

By LCDR Kyle Vandegriff

So there I was, on the wing of the KC-135 at night in southern Iraq with no way to tank. The tip of my refueling probe had just been ripped off. This was most unfortunate. Let’s take a step back and examine the series of events leading up to the loss of our probe and discuss how events unfolded during our divert to Al Asad Air Base.

This was my fourth flight in support of Operation Inherent Resolve (OIR) and was a night hop providing airborne electronic attack. I was no stranger to air operations in Iraq, having flown about 40 sorties in support of Operation New Dawn during the first EA-18G deployment in 2010-2011. In fact, I had been part of an expeditionary squadron that was based in Al Asad. During that deployment I learned some important lessons behind the tanker. Chief among those was: Always hang onto extra gas if you can, never make a play for the basket (because that’s how things break) and avoid the Iron Maiden at all costs!

Tonight we were fragged for a seven-hour flight originating from and returning to our ship in the North Arabian Gulf. The tanking plan called for joining with the first tanker for a drag to our working area, followed by hitting a different tanker for our mid-flight gas and then a third tanker for a 45-minute drag out of country. All-in-all, my flight was fragged for a little over 40,000 pounds apiece. The weather was briefed to be cloudy up to 28,000 feet over most of western Iraq, with a cold front moving in from the west.

We met our KC-135 on time for the drag in-country. During the transit our jet had significant issues taking fuel into the external tanks. There was an outstanding gripe on the aircraft that called out a fuel transfer issue from the external tanks. Periodically fuel would just stop transfer-
There I was… When Good Tanking Goes Bad

ring, which would necessitate moving the appropriate external fuel switch to override (ORIDE) to get the fuel moving again. Tonight we had the opposite problem – fuel would not transfer into the tanks. We backed out of the basket and attempted plugging several more times, to no avail. Next, we backed out and moved the external tank switch to “stop” and back to “oride” several times before plugging again in earnest. At this point with no fuel in the external tanks, we were getting far enough from our primary divert that we needed to make a mission go/no-go decision. I flipped the external tank switch back and forth like a wildman and told my electronic warfare officer (EWO) I would give it “one more shot” before turning back and letting our wingman continue on the briefed mission. Lo and behold, we were finally able to get some gas into the externals, albeit slowly. Eventually we were able to top off and continued onto our primary tasking.

Mid-flight tanking on the Multi-Point Refueling System (MPRS) went without a hitch, and the external tanks took gas like a champ. In accordance with the OIR baseline special instructions (SPINS) and good headwork we called up command and control (C2) 20 minutes prior to our fragged aerial refueling (AR) time to check on the status of our tanker. We were informed that our fragged tanker was unavailable and we needed to transit to a new tanker in a different AR track 25 minutes away from our current location. This track was also 20 minutes in the wrong direction from the boat and our satellite divert, Al Asad. It took about five minutes to communicate this information to our wingman and get the flight rejoined.

As we started flowing southwest at 25,000 feet, we entered a standing cloud bank. The tanker was supposed to be at 26,000, so we saliled forth and waited to see what the weather ahead held for us. After checking in with the tanker, it became evident
that they had climbed to 28,000 in the tanker track, looking for clear air. TAC C2 cleared us to 27,000 to join the tanker. Reaching 27,000, we were still in the clouds, so I elected to climb to 28,000 to get in clear air for the tanker join. As it turns out, the tops were between 28 and 29,500. However, the tanker was not permitted to climb above 28,000 due to airspace restrictions.

After some back and forth negotiation with the tanker, we were finally able to get them heading east, which allowed us to join on them and flow toward both better weather and the carrier for our scheduled recovery time. I screwed up the tanker join and wound up a mile in trail. This cost us fuel and time. As we were closing on the tanker they entered a solid cloud bank at 28,000. It was now about 10 minutes after our originally scheduled AR time.

Finally in port observation, we were cleared to the starboard MPRS pod. Prior to this my EWO informed me that it required 5,000 pounds of gas to get to Al Asad. I had not done a proper preflight divert fuel study for this area of Iraq, because I had not planned to be here. My EWO meant to communicate that departing the tanker with a 5.0 would get us on deck with a 2.3. I thought he was telling me that we would burn 5,000 pounds enroute to Al Asad. We were at about a 7.5. So to my thinking we had plenty of time... but not that much time.

The cloud we found ourselves in was quite turbulent. The only other time I had experienced this severity of turbulence behind the tanker was while tanking on a KC-135 MPRS north of Libya and they flew us into a thunderstorm. During that mission there was some loud clanging and banging on the refueling probe due to turbulence, but it held fast. I had no reason to believe this time would be any different.

approach Radar (PAR) to runway 09L. We executed the approach in a 30 knot right to left crosswind until just prior to touchdown.

The runway is quite long (13,000 feet) requiring minimal braking. However, the taxi light burned out during the landing rollout. With the probe already extended, the probe light did a great job of lighting our way once I slipped my night vision goggles on. Soon, a follow me truck met us and brought us to our parking spot. Thank you, Air Force!

Communications with our wingman indicated that the probe tip was not in the basket, as they were able to take fuel once exiting the cloud bank. Postflight inspection revealed that the tip had been thrown free and had impacted the leading edge of our right vertical stabilizer, causing quite a bit of damage. True to its nature the Super

‘...it was immediately apparent that our probe had sheared.’

I stabilized behind the basket and noted that it was oscillating up and down what I estimated to be 8-10 feet at a time in a regular predictable cadence. My theory with MPRS had always been that if you can get in the basket with minimum drama, the rest is easy. My first approach to the basket had us climbing to meet the basket rather than driving straight and level. I backed away when I realized it wasn’t going to work out. I started my second approach a little lower and drove straight in as the basket was moving from high to low. The probe made contact 1-2 inches at 2 o’clock from the bullseye. A small bit of nose influence and we made solid contact. No need to make a play for it.

Within two seconds of contact, the basket had ripped away taking our probe tip with it. So much for my theory. Post flight tapes study revealed that we hit a pocket of violent turbulence at the same time we made contact with the basket. Because we had begun the approach slightly low the basket swung up and away from us, which I judged to be a good thing. In the darkness, it was immediately apparent that our probe had sheared. At this point, although surprised, we didn’t waste any time departing the tanker and getting Al Asad on the nose. As the tanker once again cleared us for contact on the starboard pod, we informed our wingman via the boom frequency that we lost the tip of our probe in the basket and we were diverting to Al Asad.

Coming off tasking we had already spun Al Asad as the active waypoint. Because of the prior challenges taking fuel compounded by sketchy weather and a lower than desirable fuel state, my EWO had preemptively opened his divert pack to the appropriate page. However, the airfield frequencies in the divert pack that had been issued to us were woefully out of date. Luckily my EWO and C2 were on their game. We queried C2 for the current weather in Al Asad (clear) and the controller gave us all of the frequencies we needed. As briefed, we went through the entire ship to shore checklist to ensure that we would not miss anything on our approach to landing. Once everything was organized, I made a comment to my EWO to the effect of “well, sorry about all this, man.” He responded with “Don’t worry about that right now, let’s just get the jet on deck.” Excellent point! An American controller provided us with a Precision Approach Radar (PAR) to runway 09L. We executed the approach in a 30 knot right to left crosswind until just prior to touchdown.
Hornet airframe flew perfectly during the divert. A right engine inspection by maintenance personnel confirmed that no parts or pieces had been ingested into the engine. Still, we weren’t going anywhere for a while.

Happy to be back on deck for now, we pulled circuit breakers after a long search for the APU’s breaker, inserted pins and taped up all open orifices on the jet with the help of Air Force maintainers to prevent dust particulates from getting inside the aircraft.

After hundreds of hours flying the EA-18G, I was pretty disappointed by the turn of events. Still, there were some useful lessons I re-learned the hard way. If you’re alive and breathing, then the situation you find yourself in is solvable and there is no need to go to general quarters. Slow is smooth and smooth is fast. That mentality could have been brought to bear with more intention during the last hour of our flight.

A few lessons to consider:
• Flying permanently as part of a two-man crew, it is easy to assume that you can split preflight planning duties. This is not the case. Each crewmember should plan the entire flight as if flying alone. Only in this way will you consider the widest range of contingencies and plan appropriately for them. If I had done more thorough preflight divert planning, or if I had simply looked at my flight performance advisory system (FPAS) fuel on deck in Al Asad, I would have realized that we had plenty of time to let the turbulence die down a little before attempting tanking. Worst case, we could divert and recover aboard ship the following day.
• Nail the tanker join every time. The botched join forced us to pre-contact in turbulent weather when we could have done it in calmer, clear air with more gas in the tanks.
• Make all communication as clear as possible, whether it is internal or external to the cockpit. Doing so would have improved our tanker join, ensured that the EWO and I were on the same page with respect to our divert fuel, and could have cut down on unnecessary internal comms during the divert.
By RDML Peter Garvin
Commander,
Patrol and Reconnaissance Group

“LL-897, cleared direct COTAP (a navigation point on approach to Cecil Airport), maintain 2,000 feet until crossing COTAP, cleared for the RNAV (area navigation) runway 18L at Cecil.” I heard the radio call from Jacksonville Approach as we closed in on my first ever touch and go in the P-8A and admit that I was thrilled to be back in the cockpit, flying with an old shipmate, CDR Jason Gmeiner, the Officer in Charge of the P-8A Fleet Introduction Team. Earlier in the flight, I was able to observe our professionals conducting aerial refueling with an Air National Guard KC-135. To say I was stoked is an understatement.

With thousands of hours in the P-3, I was immediately struck by how technologically advanced the P-8A flight deck is in comparison to the Orion. While the P-3, derived from the 1960s era Lockheed Electra, is a very safe and capable warbird with an impressive array of high-tech sensors, it is fundamentally a hand flown, fly by the seat of your pants aircraft. In my experience, the flight computer inputs on the P-3 are more of a suggestion that often needs to “catch up” to the aircraft when being flown by an experienced and tactically savvy crew. On the other hand, the P-8, which is derived from the commercial Boeing 737, is designed from the ground up with extensive automation in mind. The centerpiece for the pilots is the flight management computer and multi-function control display unit (FMC/MCDU), which controls all navigational functions, radio tuning and mission interface functions. This unit receives pilot input and provides data to the enhanced digital flight control system or more simply, the autopilot. As with most automated systems, the autopilot is only as good as the input provided by the pilot and will, right or wrong, fly you to where you tell it to go. In my 30 years of flying, I’ve never heard of an autopilot receiving a flight violation.

As I prepared to shoot the approach into Cecil under clear skies and 10 miles visibility, my co-pilot rapidly punched data into the flight management computer to feed the autopilot the information needed to fly the approach. On any other day the autopilot would have easily, and quite perfectly, flown the jet to the final approach fix and beyond. It would have done so on this day too if I hadn’t already been established on extended

Is Automation Eroding Our Skill as Pilots?
centerline with the runway in sight. Old habits die hard and I immediately disconnected the autopilot and hand flew the jet to touchdown.

The P-8, like many modern aircraft, is chock full of the latest innovations to reduce two-pilot workload and avoid miscalculations that can result in at best a flight violation, and at worst a mishap. It is a marvel of modern technology, and this flight, except the take-off, plugging the tanker, and the landing, was almost totally managed by the flight computer. However, by keeping our heads up and out of the aircraft, we quickly had the landing environment in sight and didn’t hesitate to revert to hand flying the approach. My point is that, while we are lucky to have state of the art technology to augment and assist pilots, we must be wary of complacency and, worse yet, automation dependence. The P-8 flies perfectly well with direct pilot to control inputs, which in some specific situations can be faster, safer and more appropriate than being head-down managing the computer. This can be true in the terminal area or in the middle of a tough tactical problem where a return to datum is time critical. So, to ask the obvious questions regarding the P-8: Are we relying too much on technology and allowing the aircraft to fly us, or are we flying the aircraft? Do we forget those unassailable lessons we learned in primary to first, aviate, then navigate, then communicate?

In 1997 American Airlines Flight Academy released a training video called “Children of the Magenta Line,” presented by Captain Warren VanderBurgh, who spoke to the dangers of “automation dependency.” In the video, Captain VanderBurgh refers to pilots blindly following the “magenta line” that provides computer-generated course guidance on the pilot’s display. He cites examples of pilots who allowed their aircraft to unintentionally fly to the edge of the flight envelope by relying too much on automation. He recalls aircraft accidents in which the pilots lost situational awareness as they became task saturated while managing the automation system instead of simply flying the aircraft. These incidents often occurred when an unexpected change in clearance was issued by air traffic control during a critical phase of flight, and instead of being pilots, they defaulted to becoming automation managers.

We all recognize that technology is influencing all aspects of our lives, perhaps even more so with the newest generation of naval aviators. While being technologically astute is undoubtedly a desirable quality in
today’s aviators, I am concerned that this new culture may create an environment that allows our flying skills to atrophy. This is an issue that is here now and will continue to grow, particularly as those with prior P-3 experience are supplanted by younger pilots and Naval Flight Officers (NFO) who only know the P-8.

When properly balanced and working hand in hand with advanced technology, fundamental flying skill proficiency will ensure we are safe and effective on station or in the pattern. We cannot allow ourselves to be lulled into relying on technology to solve every problem. Put simply, we must be brilliant on the basics. Fortunately, I am confident that our training regimen at the fleet replacement squadrons, wings and squadrons guard against this very tendency by forcing our crews to think out of the box and recognize when the machine is not providing the right answer. Our time-tested and highly standardized upgrader training model that takes us from nugget to plane commander (or TACCO) guarantees that yesterday’s lessons learned in blood are not forgotten. The bottom line is that, despite the tremendous benefits and superiority of the P-8A Poseidon, overreliance on technology can easily lead to complacency. We must do everything necessary to keep our aircrew connected both physically and mentally with the aircraft.

The benefits of modern technology and intelligently employed automation allow our aircrews to think more tactically, to position the aircraft properly and to stay ahead of our adversaries. Providing aircrews the decision space to do this is not a luxury. It is an imperative that is key to winning the high-end fight. We must quickly recognize when abdicating to technology and automation becomes a hindrance, and when it is time to just fly the aircraft. Fly, Fight, Lead and Win!

‘We must be wary of ... automation dependence.’
A P-8 Poseidon flies over USS Carney (DDG 64) during an air defense exercise. Navy photo by Mass Communication Specialist 1st Class Fred Gray IV.
Bravo Zulu

Sailors and Marines Preventing Mishaps

Cpl. Tatiana Dickey
As H-1 flight line mechanic, Cpl. Tatiana Dickey identified a difficult to notice, significant crack in the main rotor yoke of an AH-1Z during a routine inspection under freezing temperatures. Further operation could have resulted in a catastrophic material failure. Dickey prevented a mishap and kept the squadron safe to complete its mission.

ABE2 James Acosta
Petty Officer Acosta noticed an unusual sound as the arresting gear cross deck pendant returned to the battery position. Inspecting with only a flashlight in the dark, he discovered a broken leaf spring, requested a combat FOD walk down and the missing arresting gear pieces were found in the vicinity of catapult three.

ABE2 Troy Grove
While performing a catapult three water brake inspection during catapult maintenance, ABE2 noticed a broken metallic object in the catapult three water brake tank. He informed the Aircraft Launch and Rescue Equipment chief. Upon further inspection, Grove discovered more damage that could have caused a catastrophic launch failure.

ABEAN Tavionne Prince
ABEAN Prince discovered a 1/4-inch crack on a 3/4-inch weld on the number two wire terminal socket during pre-flight checks. The discovery led to immediately stripping and re-welding of the wire just before recovery operations were to begin, allowing prompt return to proper readiness for flight operations.

MMN2 Matthew Rodriguez
Twice, while picking up materials and parts for scheduled maintenance, MMN2 received parts that contained asbestos, but were not properly sealed in plastic zipper storage bags. In both instances, he notified personnel to ensure the materials were stored in the correct type of storage bag, preventing the airborne spread of asbestos fibers.
AWO3 David Rojo
While performing an interior preflight, AWO3 Rojo noticed a portable oxygen bottle was charged without having a broken sheer wire or safety wire. He notified the mission commander and plane captain of the P-8A. This ensured the faulty oxygen bottle was replaced before takeoff, preventing a potential mishap.

ATAN Steven Hunter
While performing a routine pressure box conditional inspection, ATAN Hunter discovered a loose bushing still installed from a torque drive unit removal the day prior. This bushing could have fallen freely out of the pressure box, potentially causing a FOD hazard on the flight line. He recovered the bushing and returned the part to maintenance control.

AM3 Monica Fresnido
While directing a plane after dark, AM3 Fresnido discovered a blinking barrier blocked movement. AM3 stopped the movement to calculate a safer route. The new route would come too close to a bulldozer parked at the end of the barriers. By cancelling the plane move, AM3 prevented aircraft damage.

AME3 Alexander Matthews
While approaching an aircraft at night in zero visibility, AME3 Alexander Matthews noticed a broken wooden grounding strap and the metal grounding attachment lying nearby. After recovering all the pieces, he called Quality Assurance to report all pieces were accounted for, preventing loss of an engine due to possible FOD damage to aircraft.

AM1 Steven Berger
After a P-8A Poseidon aborted its takeoff, AM1 Berger determined the nose wheel steering metering valve was failing. In the process of troubleshooting, he discovered the nose wheel steering cables were over torqued by 70 psi, which caused rudder unresponsiveness, the cause of the aborted takeoff.

AOAN Taitana Williams
After clearing a flight control area, AOAN Williams noticed an inattentive Sailor near control surfaces and held the flight control system’s initiate built-in test until the Sailor departed the area. On the same launch, Williams removed all personnel when Sailors began walking directly into a danger area as an AGM-65 Maverick was being armed.
‘There’s no point to writing all this if there were not lessons to be learned.’

– CDR Cade Hines