Reducing Mishaps - Saving Lives - Improving Readiness

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

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Mishaps waste our 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, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk. 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 enough; the time to learn to do a job right is before combat starts.

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Photo Composite

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July-August Thanks

Thanks for helping with this issue…

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Maj. Michael Rodriguez, USMC, VMFA(AW)-225
Maj. John Field, USMC, HMM-268
Lt. Bryan Hager, VP-16
Ltjg. Charles Rowland, VAW-117

On the cover: Lightning strikes on the horizon during a storm in the Persian Gulf as viewed from USS *Abraham Lincoln* (CVN-72). Photo by PH2 Aaron Ansarov.

Admiral's Corner

From Commander, Naval Safety Center

Press On

As I prepare to turn over command of the Naval Safety Center to RADM George Mayer, I want to reflect on my two years at the NSC helm. In May of 2003, all of DoD was challenged to reduce mishaps across the board by 50 percent before FY06. We're approaching the end of the period covered by this daunting challenge, so let me offer my perspective on our Navy and Marine Corps efforts.

To date, our overall mishap-reduction program has yielded mixed results...in some areas we are doing very well, in others there remains work to be done to change our culture. The two-year challenge provided us with a focal point and while the short-term goal had its purpose and we have seen some successes, we must also look toward long-term mishap-reduction and eventual elimination in all areas. Fifty-percent reduction is a good place to start, **but the end state goal is ZERO mishaps.**

Let's reflect on our results. While the numbers are important, they are not the only measure of our successes or shortcomings. Changing our cultural mindset from the misconception that hazards and mishaps are "part of the job" takes time, and as a result some of our shortfalls are cause for frustration.

On the other hand, we have made some very strong progress. Our mishap-reduction efforts have led to incorporating initiatives and adopting procedures and a mindset that have changed our Sailors' and Marines' safety culture. Today many are analyzing the risks and making prudent decisions on every level—not always—but more and more often.

The below aviation mishap rate figures are examples of safety progress. However, this data is a mere snapshot from a short timeframe. Long-term trends will provide a better perspective.

To get a broader picture of our status in reducing mishaps, to include aviation, afloat, ashore, off-duty and motor vehicle mishap statistics, visit: http://www.safetycenter.navy.mil/statistics.

We are also squarely in the Critical Days of Summer time period when Sailors and Marines take leave, travel and enjoy summer's recreational opportunities. Unfortunately, this too often means an increase in off-duty injuries and deaths. **This does not have to happen**, for when you practice proactive leadership and assess the risk factors for yourself and your personnel, you may very well be the factor that prevents an injury or saves a life in your command. One Sailor or Marine just might avoid having a mishap because a supervisor asked one extra question, took interest and an extra moment to discuss someone's liberty plan, or grabbed the car keys to keep a drunken shipmate from driving—that's progress.

I urge you to revisit our updated website and use resources specifically designed to help your summer safety programs. Keep the press on as the summer turns to fall, ask the extra (sometimes tough) question, and take care of your buddy. Encourage all hands to visit: http://www.safetycenter.navy.mil/toolbox/criticaldays.

In closing, I am honored to have served with a superb team of professionals, not just at the Center, but with the entire Navy and Marine Corps team who make safety their passion.

The numbers alone don't measure our progress. In time, the actions we take today will yield measurable benefits in the future. Be safe.

RADM Dick Brooks

HOW ARE WE DOING?

Aviation (Rates = Mishaps Per 100,000 Flight Hours)

Class-A Flight Mishaps (FY05 thru 13 July)

Service	*Current Rate*	*FY04 thru 13 Jul*	*FY05 Goal**	*FY02-04 Avg*	*Fighter/Attack*	*Helo*
USN:	10/1.33	10/1.26	10/0.88	19.7/1.77	3/1.53	4/2.80
USMC:	7/2.33	12/4.50	7/1.94	14.7/3.96	5/4.23	2/1.38

** Goals based on FY02 baseline.* *rate above goal.* *rate below goal.*

Aircraft Investigations

What's Up With That 60-Minute Phone Report?

Just as you are putting the finishing touches on your CNO Aviation Safety Award submission, the duty officer calls and you hear those words you have been dreading since completing ASO school, "One of our aircraft just crashed!"

You race to the duty office with your mishap binder and begin the checklist. One of those items is a phone report to the Naval Safety Center. You've already notified everyone in your chain of command; why and what does the Naval Safety Center need to know in the first hour anyway?

You call the Naval Safety Center (dial 757-444-3520 and punch 1 or dial 757-444-2929) while everyone you have notified up to this point is asking a hundred questions: who? what? where? any injuries? The aircraft accident investigator at the Naval Safety Center has the answers for all these questions. The primary mission of our experienced investigators is to help you as the squadron safety officer investigate your mishap.

Your call to the Naval Safety Center allows us to quickly determine what assistance you'll need. Our investigator will use a boilerplate form (available at: http://www.safetycenter.navy.mil/aviation/investigations) to get specifics about your accident. As a general rule, an investigator will be sent to assist on Class A mishaps. Once on scene, he does not "take over" your investigation but assists you in the critical early stages. If an investigator is not sent to the site, we will assign one to answer your questions.

How long will our investigator remain on scene to assist? The short answer is as long as you need him, whether a few days or a few weeks. The NSC investigator will help you collect evidence and determine which components should be sent for engineering investigation (if required). He also will accompany the critical exhibits through the EI process as the AMBs direct liaison. Our investigator remains in contact with and is committed to the AMB up to SIR release, providing additional services and coordination as necessary, including a SIR draft review.

Another service we offer is flight-data analysis. Many of our aircraft have nonvolatile memory that is available post-mishap, some by design, such as FDR, CVDR (black boxes), and other sources, such as mission computers, maintenance computers and radar. Our flight-data analyst can extract electronic data from various sources and present this evidence to AMBs.

If you have questions about the services of the Naval Safety Center's Aircraft Mishap Investigation Division or want information about joining our team, contact Cdr. Bob Standley at (757) 444-3520 (DSN prefix 564), ext. 7233, or email: Robert.Standley@navy.mil. Our investigations have ranged from the space shuttle to mishaps in such locations as Kenya and the Arctic icecap. More information can be found on our website at: www.safetycenter.navy.mil/aviation/investigations/.

Mishap-Free Milestones

HS-10	12 years	63,098 hours
VP-30	41 years	407,000 hours
HMH-465	15 years	40,000 hours
VP-45	36 years	226,000 hours
VAW-113	38 years	74,700 hours
VPU-2	23 years	58,700 hours

ORM Corner

The Drill —We Lost an Aircraft

By Lt. Chris McKone

"I have just learned that we lost an aircraft."

This was the statement presented to the members of Patrol Squadron Sixteen by the new commanding officer during quarters. The squadron duty officer just had rushed into the room after receiving a phone call saying that a squadron P-3 had ditched on a training mission.

Courage and proper training are essential to successfully navigate through a crisis. Although courage is the more illustrious of the two traits, it is difficult to instill and even harder to evaluate. We all hope to possess courage, but we never can be sure we have it until the need arises. Training is the one variable in a crisis situation that can be controlled, and, therefore, its value never can be overestimated. Courage may be the soul of the American military, but training is its backbone.

The VP-16 personnel in the room that morning did not know it yet, but the safety department had devised a way to test each and every one of them with regard to courage and training.

My crew, combat aircrew (CAC) five, was scheduled for an antisubmarine-warfare (ASW) training flight, beginning early in the morning. Nothing seemed out of the ordinary as we prepared to fly. The preflight had gone a little long because of minor equipment problems, but we still tried to meet our briefed takeoff time. With this in mind, I was a little annoyed to see our aviation-safety officer making his way up the ladder as we prepared to strap in. Anything he had to pass surely could wait until we returned.

Unfortunately, he said our flight was canceled, and we were part of an elaborate drill that would benefit the crew and the squadron far more than the flight could have. We were told to man our respective positions, make an "off deck" call to base, and then egress the aircraft. After sliding down the flaps in our survival vests and helmets, we were transported to the base water-survival facility, which, to our dismay, recently had reopened after a complete renovation. We were not to have any contact with our squadronmates in an effort to ensure the illusion of our airborne status. Our new skipper's first quarters was kicking off.

Once at the pool complex, we were brought up-to-speed on the intent of the exercise. My

ORA Corner

Please send your questions, comments or recommendations to:

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11-man crew and I were to conduct a drill on water survival, while the squadron ran a commandwide mishap drill. To best simulate an actual ditch, we were asked to perform all the tasks involved in the water-survival course. These tasks included dunker egress (my personal favorite), full flight-gear swim, raft boarding, and a helo-hoist recovery.

Our water-survival drill was conducted with no classroom briefs, so my crew would be evaluated in a real-time scenario. We were armed only with the knowledge we had retained from previous refresher training. The scenario was designed to be as realistic as possible, including simulated injuries and the challenges those injuries presented during the egress, survival and rescue phases. My crew was evaluated on our ability to egress from a downed aircraft and to use the survival gear provided within the raft. Our ability to perform as a team also was evaluated. The focus of this portion of the exercise was to use my crew as a cross section of the squadron to determine if an aircrew could perform their duties in the event of an actual ditch. We did extremely well, and the exercise exceeded its intended goal.

While we enjoyed our unexpected refresher on water survival, the rest of the squadron had its hands full, dealing with the aftermath of such a catastrophic event. The best way to investigate an organization's preparedness is to develop a practical examination that is unexpected and realistic. Unknown to our crew, the skipper had told the squadron our aircraft had ditched, and survivor status was unknown. This information was not preceded by the well known, "This is a drill," but merely laid out to the squadron as fact.

After allowing such a thought to sink in for a minute, the skipper told those at quarters it was a drill, and the squadron would be evaluated on its ability to employ the mishap plan. In those few seconds, the CO had accomplished something extremely difficult. He had managed to test the courage of those within his command. Each individual in the room, for a brief moment, was forced to come to terms with the fact they had a job to do under the worst possible circumstances. Now that their courage had been tested from within, it was time to move on to the more tangible phase of the exercise, to test our squadron training.

The mishap plan was set in motion, and virtually every member of the squadron had a part

to play in implementing it. The major players involved were the duty office, the aircraft-mishap board (AMB), the emergency-reclamation team (ERT), maintenance control, the security detail, and the casualty-assistance-calls officers (CACO). Each of these teams had specific duties to be performed in a timely manner to make sure the proper information could be gathered, retained and disseminated. The duty office became a hub of action.

Within an hour, the mishap plan had been ripped apart as folks flooded the duty office to grab "their tab" of the plan. One of the valuable lessons learned during the course of the drill was to make the mishap plan more accessible by creating separate binders for each critical team. Smaller, individualized binders would have alleviated the extra burden on an already task-saturated duty office. The duty officer also learned to recruit extra personnel early and often. By grabbing additional officers and petty officers to act as runners, phone talkers, and recorders, the load further was reduced and information flow to the skipper improved.

Other areas of concern identified by each team leader during the afternoon all-hands debrief included:

• An outdated mishap kit (Polaroid versus digital camera).

• Uncertainty of an accurate manifest for the flight, because of pen and ink changes to the flight schedule.

• Uncertainty of exact inventory of classified material aboard.

• Security detail was unsure whom they could allow near the simulated wreckage site.

• Emergency-reclamation-team members were unsure of some of the avionics gear and its location aboard the aircraft.

• Maintenance control was slow to lock down NALCOMIS and to obtain an accurate "All tools accounted for" call.

• Aircrew page 2s were in need of update.

• No accurate listing of command CACOs existed.

We used this drill to improve our mishap plan. We now have a new mishap kit with digital cameras, GPS receivers, and hand-held radios. Our ERT has held training on the various P-3 avionics suites. Improved procedures for making sure accurate personnel manifests and crypto and ordnance load-outs now are in place. Admin conducted a thorough review of all page 2 data, and a listing of all CACOs has been placed in the SDO's Pre-Mishap Plan binder. I would guess that our lessons learned could be applied to many other aviation squadrons.

A foundation of our squadron always has been, "To stop striving forward is to atrophy…so press on to be the best!" Not challenging yourself or those you lead to improve certainly will hinder success when the time to perform arrives. We never again want to hear the skipper utter these words, "We have just lost an aircraft." But, if we do, Patrol Squadron Sixteen now is better equipped to handle such a catastrophe with courage and proper training.

Lt. McKone flies with VP-16.

HIT 'Em Where It Hurts

By LCdr. Steve Morgenfeld

Thirty-foot seas, more than 30 degrees of roll, and more than 100 knots of wind across the flight deck.

Were we stuck in yet another typhoon on this cruise? Well, no. We actually were tucking tail and running in the other direction. After weathering two typhoons over the past month and a half, the ship had no desire to turn the typhoon hat trick. I would have had no problem running north from the typhoon, except we were supposed to be steaming south to Okinawa. We had to return a borrowed helicopter to our sister squadron, HSL-51 Warlords, stationed in Atsugi, Japan. Okinawa rapidly was becoming a dot on the horizon behind us as we escaped to the north.

Fortunately, we had embarked our sister squadron's turnover crew before leaving the area. Rather than turning over the aircraft in Okinawa, our new plan was to turn it over while on the ship.

Two days later, we were scheduled to be just offshore Atsugi. From there, the other crew could conduct a short flyoff, instead of a long cross-country flight home from Okinawa. Our flight from the storm made the aircraft turnover and subsequent ferry flight to Japan much easier. The additional personnel embarked on the ship from our sister squadron meant several trips ashore to transport everyone home. To make the evolution go quicker, once the borrowed helicopter left the deck, we pulled our helicopter out of the hangar and loaded the pax.

The plan was to fly in formation to Atsugi and take a small detour over Yokohama for a quick photo session. Everyone was looking forward to this good-deal flight on the tail end of our six-month deployment. The only glitch was that we were a bit pressed for time because the ship was ready to head east for the transit home to San Diego. To have time for a bit of sightseeing, we would fly faster than usual. We conducted our preflight brief, and, after everyone was comfortable with the evolution, and all hazards were mitigated and well within acceptable limits, we took off.

Once we launched in our det helo, we started our post take-off checks. One of the very last items on the checklist is the health-indicator test, or HIT check. It's a quick test to determine if the engines are providing an acceptable amount of power. Engine turbine-gas temperature (TGT), altitude, and outside-air temperature are all factored into the check. After recording all of the parameters, I was ready to hit the charts and make sure we were within limits when we received a radio call from the other helicopter. Sidetracked, I checked in with them and forgot about the charts.

We rendezvoused with the other helicopter and began our high-speed-formation flight to Atsugi. Along the way, I concentrated on monitoring my young H2P's

After flying for about 20 minutes, it dawned on me that I never had run the numbers from the HIT check.

formation-flying skills. The beautiful Japanese coastline and silhouette of Mt. Fuji also kept my mind occupied. After flying for about 20 minutes, it dawned on me that I never had run the numbers from the HIT check.

I opened my checklist and consulted the chart. The operating temperature on our No. 1 engine was one degree outside the approved window. Hmm, one degree—that couldn't be a problem, could it? It even was one degree cooler than it should have been. Who's ever heard of an engine failing because it was running cooler than prescribed? Besides, these HIT checks always are within limits. We probably just wrote down a wrong number or happened to record the TGT when it momentarily was in flux. At any rate, even if the HIT check is out of limits, the NATOPS procedures only state that a VIDS/MAF should be created after completing the flight. NATOPS doesn't give any guidance on landing criteria or extended flight. I figured after we dropped off our pax in Atsugi and were transiting home, we'd do another HIT check on the No. 1 engine. I was confident it would be within limits.

Our flight to Atsugi went without a hitch. The trip through Yokohama en route to the base was well worth the high speed of our formation flight. After we bid farewell to our friends, we started our transit back to mom. En route, we recalculated the HIT check on the No.1 engine; it still was out of limits, not by much, but definitely still out. We tried a third time with the same results. We had no other secondary indications of problems in the cockpit, and we rapidly were approaching the ship.

"OK," I thought, "I'll write up the VIDS/MAF after shutdown, and maintenance will take a look at the engine. It's probably just an air leak or something, not serious. They'll probably just have us do an extra engine wash and try the HIT check again."

We landed without incident. I wrote up the gripe and went inside for movie night.

The next morning, I received a call from our det maintenance chief. "Sir, do you have a minute? I'd like to show you something," he said.

I wandered down to the hangar to find all our ADs huddled around the aircraft—never a good sign.

"We checked out the No. 1 engine after you landed last night. I can't believe it didn't fail on you," the chief said.

I only could muster a faint, "What?"

The chief turned the radial drive shaft—the shaft that powers the engine's auxiliary gearbox. It sounded like he was shaking a silverware drawer. Obviously, the gears inside were eating themselves. He then pulled out the drive shaft and showed it to me. Aside from the damage to the gears, the shaft had two separate areas that were significantly chafed. I started to get a sinking feeling in my stomach, a feeling that probably should have been there that afternoon, while I still was in the aircraft.

This episode raised quite a few questions in my mind. Was the performance of the engine on the HIT check truly indicative of impending failure, or was it just coincidence? The engine was, after all, only out of limits by one degree on the cool side. Should I immediately have brought the aircraft back after realizing we were out of limits? NATOPS doesn't require it. If this happened to me again under similar circumstances, how would I react? Did I let myself get distracted from the checklist and feel rushed to keep up with the other helicopter? That's obviously the case.

So, what did I learn? First, the "rush" we felt to get our pax on shore and return to the ship never should have interrupted my checklist. The perceived pressure we felt almost was entirely self-inflicted. There was no excuse for not completing all checklist items before continuing on with the flight. Second, the HIT-check procedures probably need revamping. Because the checklist doesn't call for a landing as soon as practicable after a failed HIT check creates the impression the situation isn't particularly grave. That may be the case in most situations, but we proved differently. Was the HIT check telling me the engine was self-destructing? Until we get the results back from the engineering investigation, we won't know for sure. It would be an incredible coincidence if the engine just decided to chew itself up at the same time we randomly failed a HIT check. Dismissing failure indicators as pure coincidence is a surefire way of getting yourself in trouble.

Fortunately, we got back on board. The engine was changed, and we were back in the flying business the next day. Our flight easily could have turned out differently. If the engine had failed in flight, at the very least, we would have gotten to "tour" a civilian Japanese airport as we diverted to a one-engine landing. At worst, we could have had a tragic end to our "good deal" flight with a full load of passengers on board.

LCdr. Morgenfeld, flies with HSL-49.

The strength of this sea story is the identification of perceived pressure to get the job done right now, as briefed. But perceived pressure, as this aviator points out, does not always come from the belief those higher in the food chain expect everyone to get whatever is scheduled or directed done—right now, as briefed. More times than not, we do it to ourselves. Evaluating the mission, following procedures, and responding to abnormalities in ways that allow us to bring the aircraft and our crew or passengers back safely is what we are paid to do—it is the professional thing to do. Next time something is NQR (not quite right), sit back and ask, "Is the pressure I feel to get the job done now, coming from outside or inside of my flight helmet?"—Capt. Ken Neubauer, Director, Aviation Safety Programs, Naval Safety Center.

Confusion in Tension

By Cdr. Yancy B. Lindsey

The end of a long day of fleet carrier qualifications (CQ) was near, and I only needed one more night trap. We had the gas and time, so things were looking up. The CQ had been conducted in-and-around numerous flight-deck-certification flights, which, if you've ever experienced them, are long and grueling ordeals. To make matters worse, it's extremely easy for noncertifying aircraft to interfere with certifying aircraft. This situation leads to long delays for fleet pilots waiting to fit in traps here and there.

As I taxied onto cat 2, for what would be my final pass of the night, all I could think about was getting around the pattern, finishing up, and heading to the wardroom for some well-deserved mid-rats. We got into tension, and everything looked good. I turned on my external lights to signal the catapult officer we were ready to launch.

But, my final launch of the night was not to be. A suspend signal from one of the squadron's troubleshooters was followed shortly by the catapult safety petty officer stepping in front of the aircraft and waving the throttle-back signal. Next came a radio call from the Air Boss in the tower, without any amplifying information, telling us our troubleshooter had called us down. We folded our wings and taxied back to our parking spot. Once the plane was chocked and chained, our flight-

deck coordinator came into the aircraft. He said we were downed because our starboard-wingtip light was burned out. A wingtip light? That's why we were suspended and sidelined just one trap short of being CQ complete? I couldn't believe it. How could a burned out wingtip light down an aircraft?

With not enough time remaining in the CQ period to change the light and still finish, we shut down the aircraft and headed to mid-rats. I didn't give the incident any more thought and moved on to other more pressing matters.

I'd forgotten about that incident until about four months later, during a critical phase of COMPTUEX. I was standing a squadron watch in the carrier's air operations, with a critical night-mission flight in tension on the catapult. As I watched on ship's TV, I could tell something wasn't quite right. It took forever to shoot the aircraft. Then I realized why: The catapult safety observer was stepping in front of the aircraft, giving the throttle-back signal. The Air Boss came on the radio and asked the crew if they were up or down. The crew's response, "I guess we're down."

They spun off the catapult and taxied to a parking spot. As their aircraft was chocked and chained, I asked them about their downing discrepancy. Their response, "A burned out wingtip light."

I couldn't believe it—not again. This time, I needed to know why we were interrupting an inherently dangerous evolution for a burned out light.

I did a little research. I talked to my maintenance control, to the LSOs, and other pilots. I also read my aircraft's NATOPS, CV NATOPS, LSO NATOPS, and OPNAVINST 3710.7T. Nowhere could I find conclusive proof that a wingtip light was required for carrier flight operations, or that it was a downing discrepancy for my T/M/S of aircraft. It's true, the LSO's preference would be to have both wingtip lights operable. These lights allow them to determine the orientation of the aircraft's wings at night during landing. However, one operable wingtip light and the indexer lights in the aircraft's nose would provide a similar means to determine wing orientation.

The more I talked to folks about these incidents, the more I realized there are other discrepancies or situations that can cause a troubleshooter to down an aircraft when, in reality, the aircraft is safely flyable and should be allowed to launch. Naval aviation is dangerous enough without eliminating all known discrepancies and confusion from complex evolutions, such as a carrier launch. The last place you want to be out of sync with your troubleshooters is in tension, on a catapult, at night. At that point, everyone involved in the launch, aircrew and ground crew, needs to understand the process, sequence of events, standard signals, and downing discrepancies. Suspending a catapult shot is a high-risk evolution, which is mitigated through standardization and training. Inconsistency and confusion must be removed to the greatest extent possible. I had an initial opportunity to remove that confusion and failed to do so. Fortunately, I was given a second chance.

Here's your chance. Have your pilots and NFOs discussed the launch evolution with your troubleshooters? Are you all on the same page with regard to downing discrepancies and when an aircraft should suspend and not suspend? If not, you need to have that discussion. My general rule (and I believe it's a good one) is, if there's a doubt, there is no doubt; suspend the launch. The discussion I propose will help to remove some of that doubt and carve another piece of risk off of an inherently dangerous evolution.

Cdr. Lindsey is the executive officer of VAW-117.

Standardizing the criteria for suspending a catapult launch would eliminate confusion and reduce risks. As we went to press, VAW-117 was working to resolve this problem.—Ed.

FAST TRACK to Nowhere

By Ltjg. Marc Henderson

While assisting with a maintenance evolution aboard one of our squadron's aircraft, I overheard a disturbing conversation between two enlisted personnel. One said, "Hey I got my car back from the shop the other day... It's running really great... I took it out on the highway and had it up to 135 mph... ."

I was frozen—I had absolutely no idea what to say, or even if I should say anything. After all, anything I said surely would "go in one ear and out the other." Thoughts danced in my head about being labeled as the "un-cool" guy whom junior folks couldn't share things with because they feared my lecturing them. On the other hand, I recently had been appointed as our squadron's ground-safety officer. It now was my job to make sure our people stayed safe. How could I do my job without losing the trust of those I'm responsible for—or worse, being "un-cool"?

In the split second it took me to mull over the options in my head, the young Sailor telling his story added, "...It was only for about five minutes."

At that point, I chose to walk away—yes, I took the easy way out. As I turned and stepped off, one of them asked, "What's wrong, sir?"

I didn't answer him, but I thought to myself, "If I pretend I didn't hear, and I don't hear anymore, I can pretend it never happened." I assured myself he must have been exaggerating, and I figured that, either way,

"Hey I got my car back from the shop the other day... It's running really great... I took it out on the highway and had it up to 135 mph... ."

the Sailors were sure to become safer after our squadron safety stand-down planned in a few days. I didn't need to make any waves—I just tried to let it go.

Our safety stand-down came and went. One of our speakers was a state trooper who lectured about driving safety and road rage. In my mind, I let the issue go.

Not even a week later, I received a call, saying that two of our Sailors had been in a car crash. It had been estimated their car was traveling 100 mph when it left the road. The car stopped when it hit a telephone pole—wrapped in barbed wire and chain-link fence. "Was my storyteller involved in the accident?" I wondered. "If he was, could I have prevented it by saying something to him before I walked away? Was I in some way responsible for the accident?"

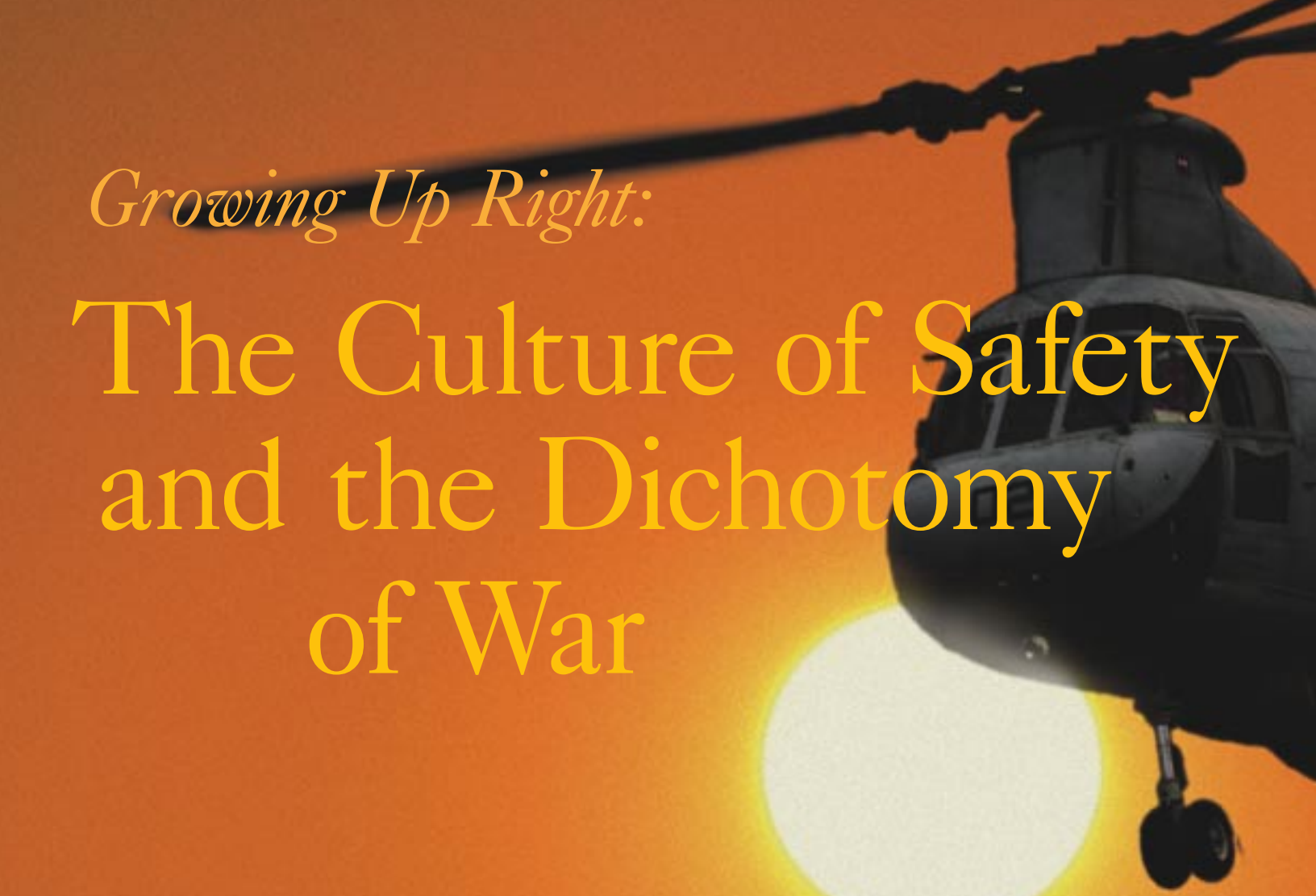
I found out the victim wasn't my storytelling Sailor, but that fact didn't clear my conscience. From the scuttlebutt I've heard and the number of flashy street-racer cars I've seen around base, I know that speed is a growing issue in the safety of our Sailors.

We have to convince them that speed kills, but how? It took maturity and experience to teach me that driving faster than the posted speed limit doesn't usually save more than a few seconds. Those seconds can make the difference between having a costly or deadly accident and arriving safely.

"Everyone is a safety officer" is something I've heard for years. What I haven't heard too often is that it applies off duty, too. It's up to each of us to remind our friends, our peers, our subordinates, and our leadership whenever we think they are being careless. For many, it takes repetition. If we hear something often enough, we eventually begin to believe.

My experience reminded me that it's wrong to turn your back on issues you know are dangerous. Your voice may be the only link between a shipmate returning home safely or colliding with a telephone pole at 100 mph.

Ltjg. Henderson flies with VP-46.



Growing Up Right:

The Culture of Safety and the Dichotomy of War

By 1stLt. Matthew R. Crouch, USMC

The night air is cool, a sweet relief from the scorching heat of the daytime, strength-sapping temperatures in the low 100s. Calm pervades the flight line; nary a bird spinning, skid or PHROG. Suddenly, the serenity is pierced by the distinct tone of a ringing bell. The Red Dragon flight line springs to life—mechanics, avionics troubleshooters, and aircrew emerge from the squadron spaces like so many bees from a hive. Cries of "Urgent CasEvac!" can be heard reverberating through the area. Thus begins the race against time—the race to save a fellow warrior.

This is my first deployment, my first war. I arrived in Iraq in August, with just under 400 hours of flight time. I was a relatively experienced copilot with high-light and low-light night-vision-goggle qualification, just enough time in the air to have developed bad habits, yet still be malleable. The six months spent flying CasEvac (casualty evacuation) during Operation Iraqi Freedom II will be my formative flight hours—the basis from which all my habits, both good and bad, are forged.

The opinions about flying in combat, specifically how it differs from peacetime flight, are as varied as they are numerous. If there are identifiable ideologies among these assertions, they can be broken into two distinct categories: belligerents and conformists.

The **belligerent view** believes that safety takes a distant second to operational readiness and performance during wartime. This view is represented by the following remarks, heard around flight lines throughout the theater:

"I get to do things here I never could do at home…I know it is dangerous, but we are in a war…"

"I press to get in every landing…wave offs are not a good idea; it just gives the bad guys another chance to shoot at you…"

"I've expanded my 'comfort zone;' everybody has… we have to…we are at war, people's lives are at stake, we are no longer 'just training'…"

"I'd rather have a mishap than get shot."

Unfortunately, this attitude is not limited to the aircrew. It can be prevalent among maintainers and aircrew alike:

"I need to get this done now… sure, I would not do it this way at (MCAS Miramar, San Diego, Calif.), but we are in Iraq."

"It does not matter if it is safe, as long as I get the job done…"

"Speed is more important than safety right now… we're at war…the rules have changed…"

In contrast, **conformists** subscribe to the view prevalent on my flight line, exemplified by the large sign hanging over our ready door. Emblazoned on the red sign in yellow 12-inch block letters is the missive, "No S@#$$% Flying."

What does "No S@#$$% Flying" mean? Simply, it means war changes very little. It means that the aviator's greatest threat still is himself. Limitations, standard-operating procedures, tactics techniques, and procedures established during training all exist for a reason; use them.

Three cases in point, two of which I was part of, and one I observed while writing this article:

1. On the evening of Oct. 20, the Red Dragons received a call to launch in support of an urgent CasEvac. Our crew responded in typical fashion. We raced to the aircraft, readied for flight, and had the rotors turning in less than five minutes. By minute six, we were taxiing for takeoff to our pickup zone, the Surgical Shock Trauma Platoon Hospital (SSTP), located at the other side of our camp. During the start-up sequence, the aircraft radios developed a high-pitch squeal of medium volume. We still could communicate over ICS and over the radios (with moderate annoyance) with the controlling agency and our wingman. Initially, we considered the degraded communication merely an inconvenience.

Fate or fortune was smiling on our crew that evening. As we set down on the pad at the SSTP, the whining radios developed a louder squeal, and ICS and radio comms became intermittent. A brief discussion between the crew and an assertive crew chief led us to the conclusion we were out of the fight. A quick

call over our squadron common frequency let our wingman know he had the mission, and the aircrew in the turning backup would be his wingman.

2. Later that month, on Oct. 30, I was the copilot on a CasEvac mission that launched only minutes before our shift changeover. As day turned into night, our aircraft set down on the CasEvac pad at our camp. Flipping down my night-vision goggles, I was preparing the cockpit for night flight as the radio came alive, "Mercy 01, this is Firestriker (our camp SSTP), the patient is crashing, stand by."

We never will know for certain what might have been, but I do know I am being exposed to an effective safety culture, one that is molding its young pilots.

The waiting game began. The medical staff at the SSTP returned the patient to the operating room, trying to stabilize him. After 40 minutes of spinning on the pad, the decision was made. The helicopter aircraft commander, after considering our typical 14-hour crew day had been extended by an hour, and that executing the mission would have pushed our day to 16 hours, decided the oncoming night crew should spin-up and relieve us.

3. Finally, on the evening of Nov. 11, a night with questionable visibility and pilot reports of "It's dog S&*$, but workable," our ready room came to the consensus that no launches would be made unless in response to urgent CasEvacs. This decision meant canceling the nightly "milk run," which moves routine and priority medical patients from battalion-aid stations to higher-level care facilities.

Each of the aforementioned scenarios, taken on their own, may not be noteworthy. However, taken together, I believe they demonstrate clearly the culture of safety that is being fostered in one Marine Corps squadron. Although you never can prove a negative, I submit the actions taken in each of the three instances detailed above broke the "mishap chain."

We never will know for certain what might have been, but I do know I am being exposed to an effective safety culture, one that is molding its young pilots. These pilots stand to return to this war two and three more times and to be safety conscious, despite the threats inherent in war.

Ultimately, the question all of us are asking, from maintainers to aircrew, is, "How are we going to operate in the wartime environment?" I believe the best answer is "business as usual." Maintenance standards and procedures should remain unchanged. Flight procedures should not vary. Develop solid and thorough SOPs, using operational risk management (ORM); the benefits will become apparent.

Successful performance is wrought from a legacy of coherent planning. ORM, properly implemented during peace, develops effective and functional standard-operating procedures (SOPs). Successful training, conducted thoroughly and frequently enough to habituate squadron personnel, is derived from well-established SOPs. Effective training breeds familiarity and confidence, producing the skills essential to performing and surviving in combat.

Young pilots should be fostered in an environment that teaches the cliché, "You practice like you play." Applying the lessons of training, specifically the fundamentals of flying taught in the safety of a training environment, engenders safer, more effective flying in a combat zone. After all, it's not a cliché because it is false. A pilot who learns to think and act in that environment will be a capable combat pilot and a competent flight leader. A pilot who grows up in this type of environment will grow up right.

1stLt. Crouch flies with HMM-268.

The Longest Delay

By Lt. Stephen Allum

I had completed the best possible JO tour with the VS-24 Scouts: two combat cruises filled with moonless, overcast night traps, unforgettable port-call memories, and other squadron functions to reminisce on later in life. However, my last encounter with the "War Hoover" was anything but enjoyable.

It was late July 2003, and I was scheduled to fly with a good friend—call sign "Mr. Gadget" for this article. Our typical "routine, good deal" flight was scheduled to last only a couple of hours, and then return to NAS Jacksonville. What could go wrong? It was morning and VFR. We were two senior JOs with plenty of S-3 experience, and squadron NATOPS instructors. The first part of the flight went as planned, with no problems or surprises. Then we encountered the dangerous part of the flight: the airnav home.

When we reached our final cruising altitude of FL190, the No. 1 bleed-leak light came on. This light means an over-temperature condition in excess of 127 degrees Celsius in the vicinity of an applicable bleed line. This condition generally is caused by a broken or cracked line, seal or fire in the environmental-control system (ECS) compartment. We secured the No. 1 bleed-air switch according to NATOPS. But, the second we closed the No. 1 bleed-air system, the No. 2 bleed-leak and APU bleed-leak lights illuminated, while smoke entered the cockpit. We continued with the remaining immediate-action items of donning our O2 masks and securing the No. 2 bleed-air switch.

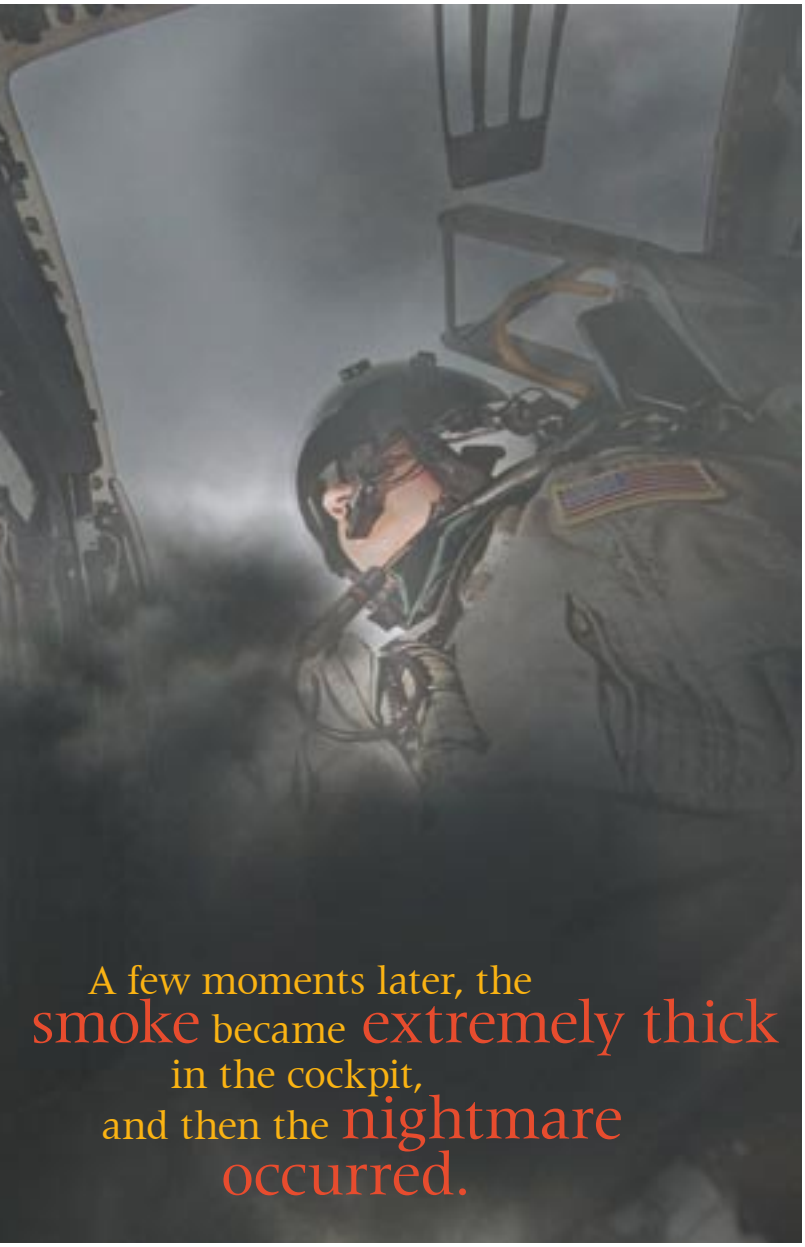
While watching the clock, waiting for the lights to extinguish and smoke to clear, I remembered this warning in NATOPS: "Simultaneous illumination of the No. 1 and No. 2 bleed-leak lights may indicate an ECS compartment fire. In this event, the crew should be alert for secondary indications that would confirm a fire, such as smoke or fumes in the cockpit." Mr. Gadget reached for his PCL, and then the fun really began.

Waiting for at least one of the three bleed-leak lights to extinguish, the No. 1 hyd-level light illuminated (which meant less than two gallons of fluid remained in the No. 1 system). Smoke continued to fill the cockpit, so Mr. Gadget and I began to perform more boldface procedures for smoke or fumes removal, including securing the air conditioning, opening the auxiliary vent, and dumping cabin pressure. The results were limited, and the smoke remained. We had reached a four-minute wait in the PCL

on the bleed-leak procedure for the lights to extinguish.

Then I made the call I thought I never would have to say, "Atlanta center…Scout 7…declaring an emergency…we've got some bleed problems and smoke in the cockpit."

I moved the transponder dial to "EMER," and Mr. Gadget dialed in 7700. Then the master-caution panel illuminated the cockpit with more "attention-getting" lights, including: wing unlock, speedbrake caution, trailing-edge flaps locked, and the transition light in the landing-gear handle (handle still in the up position).



While looking down at the master-caution panel—I was reminded of Chevy Chase's house in "Christmas Vacation"—I knew we were in serious trouble. I saw the ECS-fire light. Center did an outstanding job vectoring and descending us to our nearest divert and satisfying all our requests, but, unfortunately, the situation only got worse.

While in the descent to a lower altitude, we saw the No. 2 hydraulic gauge decrease to zero, followed shortly by more stick pressure on the controls to maintain straight and level. I performed the aircraft-failure-to-respond-to-control-inputs boldface. But, more smoke began to enter the cockpit, and the jet went uncommanded into its emergency-flight-control system (EFCS). The EFCS is an automatic changeover that takes place when total hydraulic pressure drops below 800 psi. It is completely mechanical and, with the aid of the independent trim system, is like driving your car with no power steering.

This was not our day. I told the warrior sitting beside me, "We're in EFCS, and I'm securing the hydraulic servos."

The jet still was controllable, but we avoided big angle of banks and high airspeeds. Center assisted us with a long straight-in, so we could lose altitude without using speedbrakes, maintain control, and finish required checks for emergency extension of gear and flaps. As if we weren't busy enough, our navigation and several instrument displays quit working; then, our radios and ICS went silent. Mr. Gadget yelled me a vector to our intended point of landing (with his hand-held GPS on his knee), but we didn't make it.

A few moments later, the smoke became extremely thick in the cockpit, and then the nightmare occurred. The control stick lost all stiffness and went completely limp in all directions, while the aircraft remained in straight and level flight. The stick had no inputs to any of the flight controls.

You have got to be kidding me! I looked up and saw that the hydraulic servos remained in the off position and that we were passing 10,000 feet. We had a failure of the flight controls while flying in EFCS? Where is that EP in the PCL? What else could we do to extinguish this fire and save the aircraft?

Realizing we were descending, and the jet relatively was straight and level at a fairly slow and safe airspeed,

I looked at my COTAC, while moving the control stick in all directions (the jet remained level), and just shook my head "no." He signaled with his arm—a signal I barely saw through the smoke—for the ejection.

I waited for his left arm to get in position, and then I leaned back, pulled the ejection handle, and had the longest .96-second delay in my life.

Time compression had us believing our seats had failed. Now what? Would I have to blow the canopies, use the emergency-restraint release, and jump out, pulling my D-ring? I then saw an orange flash, heard a loud bang, and got propelled out of the aircraft. After being beaten and tossed around in the airstream, everything suddenly went completely quiet and in slow motion.

I looked up and saw a good chute. I inflated my lobes, and then looked down—I saw trees. "Oh, this is going to hurt," I thought.

I kept my visor down, mask and gloves on, and secured my seat pan. Looking to my right, I saw Mr. Gadget in his chute with his hands up. Wanting to land with him, I engaged the steering risers, pulled down on the right handle, and began to travel toward him. Unfortunately, the wind at altitude had me pass behind him and to his right just before hitting the ground. As I looked up at the horizon, I heard tree branches snapping, and I felt a few tugs to the left and right. My feet hit, I released my Koch fittings, and rolled on the ground to a stop.

The flight gear and patches came off, while I reached for the beacon in the seat pan. "Wait," I thought, "I'm in the U.S. not in combat."

I pulled out the "triple beacon radio" (unfortunately, I didn't triangulate our position) and got in comms with Mr. Gadget. Thank God, he was all right. I grabbed my whistle and blew in short bursts to help guide him to my position. He soon walked up with only minor abrasions on his face and arms.

Once again, Mr. Gadget came through. He reached in his pocket, pulled out his cellphone, acquired a signal, and called the squadron.

We had gone down in Georgia's thick pine forest. We gathered our gear, walked to higher ground to a more open area for visual rescue, and waited for a helicopter.

Throughout the next four hours, we lit several smoke and flare signals, but the smoke dissipated each time in the trees before rising high enough to be effective. I referenced north with the compass, drank water, and got in touch with several civilian aircraft on the radio, but they soon got out of range. Mr. Gadget, however, was able to reach the Georgia State Patrol rescue helicopter on the radio while I got more smokes ready. It was the orange and white parachute stretched over trees and shrubs, though, that acquired their sight. What a relief! They vectored a search team through the woods to us, then rushed us to the nearest hospital.

The total time from declaring the emergency with ATC to our ejection was only about four minutes. A lot of NATOPS procedures were performed in the jet and crew coordination was essential. A former skipper explained it best this way, "I have an opportunity for self and mishap examination that will allow me to formulate my thoughts on leadership. Use this as a learning experience to teach others. Realize sometimes you can do everything right and still lose the jet." Yet, another friend (in his own caring ways) explained that I only needed a couple of more jumps to acquire my jump wings. Hooyah!

Everyone did their part to make sure we returned to our friends and families, and we are forever grateful. But, special thanks go out to HS-3 for flying us back home. Even off the boat, they still provide top-notch search and rescue.

Lt. Allum flew with VS-24 at the time of the mishap. He now flies with VAQ-129.

AMB Analysis

By Lt. Jon Styers

Postflight analysis by the AMB revealed that a major fire occurred in the ECS compartment. In the immediate vicinity of the heat-source center are various wiring harnesses, hydraulic lines, bleed-air ducting, and an APU fuel line. As the fire grew, damage spread forward and possibly into the aircraft tunnel. Further investigation detected a hydraulic leak, which could have been atomized under pressure, resulting in a mist that can be ignited at temperatures well below its flash point. The atomized fluid was ignited by heat from the hot No. 1 bleed-air duct, resulting in an uncontrollable fire in the ECS compartment.

Lt. Styers was the VS-24 aviation safety officer. He now flies with VT-10.

Crew Resource Management and Real-Life Incidents

By Cdr. Bob Hahn and LCdr. Deborah White

Every issue, *Approach* runs stories in which aviators make CRM errors. These stories have comparatively happy endings. Some real-life incidents don't end that way. Here are brief descriptions of two of them.

A tacair pilot was part of a 4 v 4 Air Intercept Control flight at night. He was unable to rendezvous after being airborne for just eight minutes. He also made atypical and nonstandard radio calls. Four minutes later, he said he felt ill, so he remained on CAP during the tactical part of the flight, after which the flight leader rejoined with him. The Hornet pilot quickly became incapacitated and crashed into the ocean without trying to eject.

He had been feeling ill before the flight but hadn't told anyone. Although he was above 10,000 feet for 22 minutes, he wasn't wearing his mask during the join up. After flight lead had joined up, the pilot started a gradual climb, then nosed over. Flight lead called, "Wake up! I think you are hypoxic" and "Get your nose down."

Apparently, cabin pressure had failed; the pilot was hypoxic. There were a few examples of good CRM during the flight: He mentioned he felt ill, he opted not to continue the tactical part of the flight, and flight lead asked about hypoxia. Nevertheless, myriad CRM breakdowns and other errors proved fatal.

The second mishap involved Dash 2 of a helicopter section on an NVG simulated troop insert into an unprepared landing zone. It was the squadron's first NVG desert mission since returning from deployment in Japan. The helo pilot had 570 hours in model. An instructor, with 2,450 hours in model, was the pilot in command but not at the controls. The pilot didn't maintain the designated 15-second interval from the lead aircraft. He was unable to perform a no-hover landing, stirring up dust, and he couldn't see the ground at 20 feet. During an improper waveoff, the left skid hit the edge of a gully and the helo crashed.

Before this flight, because they were in a hurry, they hadn't done their NATOPS crew-coordination brief. The instructor had told the pilot that he would speak up if anything was wrong: In other words, silence equaled consent. They didn't discuss brownout landings and wave-off procedures.

Again, there were a few examples of good CRM. Communication during parts of the brief was good, the pilot announced when he had lost sight, and the crew chief made two calls for power. However, again, numerous CRM errors proved impossible to overcome. Waveoff procedures were delayed. The instructor didn't adequately back up the pilot, and the pilot never asked for help.

Statistics continue to show that human error is the largest contributor to mishaps—approximately 90 percent. An analysis of recent Class A mishaps identified poor decisions, miscommunication, degradation in situational awareness, inadequate mission analysis, and lack of assertiveness on the part of crew members as just a few of the failures that helped cause these events.

We place great emphasis on NATOPS ground and flight-training programs, instrument ground-school tests and flight evaluations, EP exams, tactics and limitations quizzes. Yet, by and large, we don't put equal emphasis on the human factors skills that tie these aviation-knowledge bases together and put them into practice.

We must improve the employment of CRM skills in the brief, through all phases of flight, and into the debrief. We must fully exploit CRM training and ingrain CRM in every simulator and every flight. CRM must receive the same level of emphasis as our NATOPS, instrument and tactics training programs.

Practicing CRM maximizes mission effectiveness and minimizes aircrew preventable errors. It also optimizes ORM by embedding and emphasizing it in the skill sets of mission analysis and decision making. The Safety Center is currently working with CNAF to revitalize the current CRM training program. Every pilot, NFO, and aircrewman in the fleet can help by revisiting and reemphasizing our CRM programs.

Cdr. Hahn directs the USN/USMC CRM Program and the School of Aviation Safety, Naval Aviation Schools Command. LCdr. White is an aeromedical psychologist at the Naval Safety Center.

Crew Resource Management

Situational Awareness

Assertiveness

Decision Making

Communication

Leadership

Adaptability/Flexibility

Mission Analysis

BEYOND LIMITS

We shut off the right engine,
did the checks,
but, when it came time to restart,
nothing happened.

By Capt. David de Carion, USMC

We only had a few weeks left in our six-month deployment to Iwakuni, Japan, and we were enjoying a relatively nice—for Iwakuni—Friday afternoon. The maintenance department was catching up and getting the jets ready for our departure, and we needed a Pro A on aircraft 7.

My weapon-system officer (WSO), "Gary," and I briefed, walked, and started the A card. We took off in our Hornet and headed to the Lima area, about 20 minutes out. The card went smoothly, all the way until the 15,000-foot checks—which thankfully since have been deleted.

We shut off the left engine, did our checks, and got it restarted. We shut off the right engine, did the checks, but, when it came time to restart, nothing happened. The rpm's momentarily started to increase, but then they dropped to zero—great. I turned us toward the area's exit point, started to climb, cranked the right again, and still nothing. Gary broke out the book, and I tried a third

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time to get the engine to turn over—still nothing.

We decided to try a windmill start. At 17,000 feet, I put the left throttle to mil and nosed it over. At 14,000 feet, we got a flicker on the rpm's, and, at 9,000 feet, we had 15 percent—enough to bring the throttle to idle. Finally, at 5,000 feet and 420 knots, three things happened: The bingo bug went off, we got an FCS X, and the right engine came back on-line. Gary reset the bingo bug, I reset the FCS, and we climbed to go home.

I said, "Well, I've had enough fun for one day, how about you?"

He replied, "Yeah, that's about enough excitement for me." Little did we know.

We headed back to the field, disappointed we weren't bringing back an "up" jet but glad we didn't have to declare an emergency. As we came out of the break, tower told us to check our gear; we were cleared to land. I dropped the gear, but, just when Gary was about to answer, we looked down and saw the right main didn't indicate down. Then the light in the gear handle and the gear-warning tone came on.

"You have got to be (kidding) me," Gary said. I agreed.

We told tower we only showed two gear down. They asked if we wanted to do a flyby so they could check, which we did. Tower said that not only was the right main not down and locked, it wasn't even out of the airplane—great.

We requested a climb into the delta pattern, went to half flaps, and checked our gas. We had 2,800 pounds of fuel, so we had some time. Gary already had the book out from our restart adventure, so he began to look up the procedure. I told tower we were troubleshooting but did not yet want to declare an emergency. We also told base we showed one unsafe gear, and we were going through the procedure in the delta pattern. They asked if we needed anything; we replied, "No, not yet."

Gary and I decided he'd verbally go through a few steps of the procedure and that I'd tell him what I was doing as I did it.

After two trips around the delta pattern, we had completed the unsafe-gear procedure, accelerated, decelerated, yawed, and pulled as many Gs as we could get out of a dirty Hornet going 150 to 200 knots. The gear didn't budge. To add to our annoyance, we kept getting an FCS X in one of the channels, which reset every time. We decided to continue resetting it, unless we were in the middle of doing something else but then later reset it.

Base came back and asked how it was going, and we gave them the update. We still had about 1,900 pounds left, so we again ran through the procedure, but, this time, base walked us through it from the big book. We decided to declare an emergency with tower, who already had notified the crash crew and had arranged to rig the arresting gear.

We completed the unsafe-gear procedure a second time, punctuated by the statement, "Well, that's the end of the checklist."

In earlier training sessions, our ASO had done a superb job informing us of recent Navy and Marine Corps fatalities with off-runway landings; we were aware of what could happen.

We knew it would have to be a two-gear landing, and it was going to turn out either really well or really bad.

We were down to about 1,300 pounds when base suggested we do a touch-and-go on the good gear to knock down the bad gear. Gary and I came up with a plan, told the tower what we were doing, set full flaps, did our new version of a landing checklist, and came in for a touch-and-go. I told him if anything started to go wrong, or if either of us didn't like where it was going, I would get us up and out of there as quickly as possible.

We did a min-sink-rate approach, and I kept up the power to give the control surfaces more authority. As the left wheel touched down, I held off the right tank (we were double bubble) with aileron. We rolled for about 1,500 feet and took off again. Our right main still showed unsafe, which tower confirmed. I did, however, have a better feeling of how the jet was going to

We had run out of time and gas, and it was time to land on our two good gear and right wing tank.

behave on just one wheel.

We had run out of time and gas, and it was time to land on our two good gear and right wing tank. We told tower we would try an arrested landing. We turned back around and set up for a low, long approach. Again, we came up with a game plan in case either of us felt things weren't going right. If we boltered, we were going to take it around. I told Gary I wasn't going to use the brake, just the nosewheel steering, because one wheel wouldn't be turning, and the other one would. We briefly discussed taking the gear off-center to compensate for the extra drag on the right side, but we decided against adding another variable to our problem. Base reminded us to safe our seats before unstrapping—good idea.

The approach went smoothly, but I set down a little too far away from the A-gear, and couldn't hold the right tank off the ground long enough. I used to believe when someone was telling me what they were thinking during an emergency or high-pressure situation, it was organized and orderly. I now know differently. As the tank began to skid on the runway, my reaction was, "Tank on ground, still controllable, gear's up ahead, not good to drag tank across A-gear, get airborne!"

I got it back in the air before we got to the A-gear. We were at 850 pounds. I told tower and base what had happened, and we were going to try again.

On downwind, we decided if this attempt wasn't successful, we'd run out of gas before we had a chance for another attempt. We probably would eject over water.

This time, as we rolled into the groove, I held a little more airspeed. We felt the hook start to drag about 1,200 feet from the gear. I kept up the power to keep the tank off the ground, and the left main touched down about 50 feet before the gear. When the hook grabbed the cable, I couldn't hold the wing off the ground anymore, so we settled onto the left main, right tank, and

right front-nosegear. We slid toward the right side of the runway, but our jet still was controllable with the nosewheel.

After what seemed like an eternity, we finally came to rest about 20 feet from the runway edge and 40 feet from the grass. As I safed my seat, I said, "Safe in the front," and

Gary replied, "Safe in the rear."

I pulled off the throttles, opened the canopy, pressed both fire lights, turned off the battery, unstrapped, and climbed out onto the left wing, jumped onto the left wing tank, and then to the ground, closely followed by Gary; both us were glad to have made it.

Many things could have gone wrong, but everything went right for us that day. Iwakuni tower did an outstanding job of alerting the crash crew and getting things prepared for us. If they asked us for something, and we told them to standby, they waited patiently until we could get back to them. They let us know when everything was prepared and waiting, and they didn't clobber the radio with extra chatter.

Base also was extremely helpful, only giving us what we needed to know. Neither Gary nor I would have thought to safe our seats after we stopped. Base had sent an LSO out to the end of the runway for us, but he chose to keep himself out of the problem, which was the right thing to do.

Gary and I had a plan each time we went around. We communicated that plan to tower and base, who let us execute without interjecting comm calls and unnecessary questions or info.

In the end, the only damage the jet sustained was to the right external tank. The right aileron was only inches off the ground but never touched. I never again will complain about being double bubble.

As we filled out our yellow sheet later that evening, I wrote a MAF, "Right main-landing tank worn beyond limits."

Capt. de Carion (pilot) and Capt. Matthew Desmond, USMC, (WSO) flew with VMFA (AW)-225.

This Hornet crew displayed sound crew-resource-management skills, not only in the aircraft but by using outside sources, as well. Several questions come to mind. How many times would you try to restart an engine? How many times should you? Is the jet trying to tell you something?

After the jet is on deck, the crew is safe (with a change of flight suits and underwear), and the sea story has been told and written, the job still is incomplete. Why did the engine not start? Why did the landing gear fail to extend? And finally, when those questions are answered, does the rest of the community know the reasons?—Capt. Ken Neubauer, Director, Aviation Safety Programs, Naval Safety Center.

HMLA-773

From left to right: Maj. Sanjeev Shinde, Sgt. Darren Hitch, Sgt. Christopher Barrett, and Maj. Ethan Andrews.

BRAVO Zulu

Crosshair 61 was Dash 2 in a flight of three during a combat flight from a forward-operating base (FOB) in eastern Afghanistan to Bagram Airfield, Afghanistan.

It was just after sunset when the flight crew prepared to land at their destination after the two-hour flight. About three miles south of Bagram, the UH-1N suddenly developed a high-frequency airframe vibration. They needed to land as soon as possible, if not immediately. The vibration was severe, and the nature of the damage (e.g., mechanical failure or battle damage) was unknown.

Maj. Sanjeev Shinde, aircraft commander, set up to land at a clearing off the nose; the crew prepared to land. Maj. Shinde broadcast a Mayday call over the common air-to-ground frequency. While on final for landing, Maj. Ethan Andrews, copilot, with Sgt. Christopher Barrett and Sgt. Darren Hitch, crew chiefs, saw the landing zone was unsuitable because of deep ruts. Maj. Shinde continued for another 50 yards to a more suitable area and made a no-hover landing. The time from onset of the vibration to landing was less than one minute.

After landing, Maj. Shinde shut down the aircraft. Because of the uncertain tactical situation, Maj. Andrews and the crew quickly exited the aircraft and established a defensive perimeter. Dash 3, an AH-1W, took overhead cover, while the lead UH-1N continued to Bagram to facilitate the recovery effort.

During the landing, Sgts. Barrett and Hitch observed the tail rotor and 90-degree gearbox wobbling severely. With the pilots manning the defensive perimeter, the crew chiefs inspected the tail rotor. They found a large chunk of material missing from the end-cap portion of one blade. This missing material made the tail rotor extremely out-of-balance, which caused the vibration. This information was relayed to the squadron maintenance department. Within minutes, the lead UH-1N returned with a toolbox.

While the pilots continued to man defensive positions, the crew chiefs quickly removed the damaged tail-rotor blade. At Bagram, the squadron maintenance department rapidly organized the personnel, equipment and parts to make the recovery. In less than three hours, at night, in austere conditions, the squadron maintenance department changed the damaged tail rotor and returned the aircraft to Bagram.

This crew weighed the risks and correctly made the tough call: Land for an aircraft emergency, despite being over unsecured territory in a combat zone. Had they delayed their decision to land, this story could have been the background for an SIR, not a BZ. —Ed.

ATTITUDES

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Schedule a safety culture workshop at:
www.safetycenter.navy.mil/culture/request.htm