THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

# approach

July 2003

## CHOP THE PROP,
Not the Sailor

## Stuck Throttle In Paradise

## Bad-Weather CV Approaches

# approach

**The Naval Safety Center's Aviation Magazine**

**July 2003** **Volume 48 No. 7**

**On the cover** Tomcats fly in formation before landing aboard USS *Kitty Hawk* (CV 63). Photo by PH3 Todd Frantom.

**On the back cover** VFA-87 pilots returning from Operation Iraqi Freedom at NAS Oceana. Photo by Fred J. Klinkenberger Jr.

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## Mission Statement

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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## July Thanks

Thanks for helping with this issue…

LCdr. Willard Burney, VF-2
LCdr. David Gleeson, HSL-49
Ltjg. Neall Williams, HSL-47
Lt. Przemyslaw Kaczynski, VAW-116
Maj. Scott Payne, 2nd MAW
LCdr. Bruce Hay, VAQ-139
Ltjg. Jonathon Styers, VS-24
LCdr. Jack Freeman, VF-143

# Flounder One

Lt. Pat McCormick

After four months of Operation Enduring Freedom flights, our five-hour missions had become routine, and we weren't dropping ordnance. Each day was Groundhog Day, with similar kneeboard cards, short briefs, routes, tankers, and debriefs in CVIC. The comfort level was high enough that non-section leads were allowed to lead missions over Afghanistan, with a designated mission commander as a wingman.

The launch, join-up, S-3 tanking, and transit feet dry were uneventful. We arrived at a KC-135 about 20 minutes before sunset, our first scheduled tanker in country. I had finished tanking and was waiting for my wingman to gas when I got a hyd 2A caution. We detached from the tanker, turned south toward mom, and decided to make the next scheduled recovery.

The FA-18 hydraulic system is composed of two separate systems, hyd 1 and hyd 2; each has two circuits, A and B. System 1 exclusively provides power to the primary flight controls. System 2 powers the primary flight controls, the speed brake, and non- flight-control items (the hook, refueling probe, nosewheel steering, anti-skid, normal brakes, and the landing gear). Five isolation valves prevent a hydraulic leak in an accessory system from draining fluid or pressure from the flight-control actuators. A reservoir-level sensing (RLS) system detects leaks in the system and tries to isolate the failed circuit by systematically shutting it off.

My wingman and I started to read the PCL. The hyd 2A caution was confirmed with the failure of the refueling probe to normally extend. There was no reason to jettison my single 1,000-pound JDAM, but we eventually

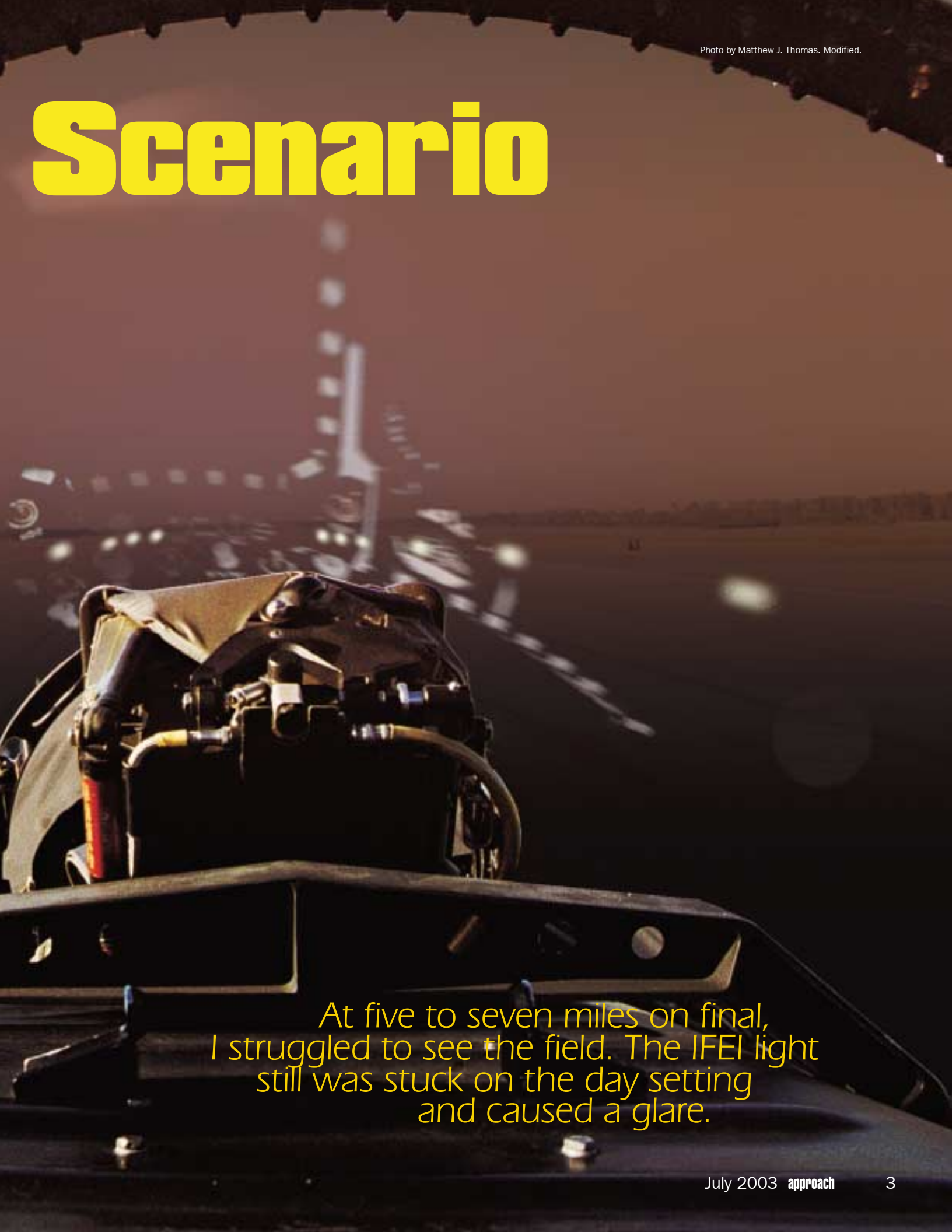


Photo by Matthew J. Thomas. Modified.

# Scenario

*At five to seven miles on final, I struggled to see the field. The IFEI light still was stuck on the day setting and caused a glare.*

would have to emergency extend the landing gear. Twenty minutes later, I got a hyd 1A caution, with an ail-off caution, and the right aileron X-ed out—in addition to the hyd 2A caution.

Unfortunately, the PCL does not address procedures for the 1A and 2A caution combination, other than a schematic of the lost flight controls. We declared an emergency and headed directly to the ship. The ship was 35 minutes away, while Jacobabad, Pakistan, was only 25 minutes away. It would be dark by the time we reached either. My wingman and I felt the combination of arresting gear, LSOs, instrument approaches, and having the jet back on the ship were worth the extra few minutes. The E-2 tried, unsuccessfully, to coordinate a transit through Iranian airspace, so we had to alter course.

Fifteen minutes later, the hyd 1A caution cycled to hyd 1B. My left digital-display indicator (DDI) cautions indicated: hyd 1B, hyd 2A, ail off, flaps off, rudder off, FCS, FCES, with no leading-edge flaps, right aileron, right rudder, or right stabilator. This hydraulic-failure combination also is not covered in the PCL, other than the flight-control-system-failure schematic.

> I made a radio call, saying I was losing control. I considered ejecting because I was sure the jet would tumble once it left the pavement.

My wingman already had confirmed hydraulic fluid was streaming from the root of the left wing. I worried if the system was cycling to isolate the leak on the system 1 side. It might only be a matter of time before all the fluid was gone, and I would lose both 1A and 1B. The hyd 2 system might have a similar leak, but it hadn't cycled yet. I also wasn't going to count on hyd 2.

In case I had to eject, I tightened my straps, put the extra water from my helmet bag into my G-suit, and stowed everything in the cockpit. We immediately turned for Jacobabad, not wanting to bring this configuration to the ship at night. With the leading-edge flaps failed, the approach speed would be higher, and the jet would have to be flown at less than seven degrees angle-of-attack, rather than on-speed. My wingman coordinated with the controlling agencies, while I looked up each caution in the PCL and thought about landing in Jacobabad.

At 80 miles from the field, I noticed several electrical irregularities. The integrated fuel and engine-instrument (IFEI) panel would not dim to the night setting. Heading pointer or navigational queuing was not displayed in the heads-up display (HUD). Additionally, the system would not waypoint designate a point in the air-to-ground master mode.

When I was 50 miles out, I erased all classified data from the JDAM and jet. My wingman briefed the field layout, elevation, runways, MSA, ESA, as well as the approach we would make to minimize the chance of taking ground fire (Jacobabad had been attacked with rockets just weeks earlier). He also coordinated with the tower for crash crews. We turned off our position lights, and I kept on my formation lights but very dimly. We also went through the NATOPS procedures for the flaps-off caution with failed leading-edge flaps. I would need to stay below seven AOA on the approach.

At 10 miles from the field, the hyd 1A caution came back on. The left DDI now showed hyd 1A, hyd 1B, hyd 2A, FCS, FCES, ail off, flaps off, and rudder off. The FCS page showed the LEF, right aileron, right rudder, and right stabilator still all failed. This pattern agreed with the PCL's diagram for these hydraulic failures. We crossed the field at 1,500 feet, perpendicular to runway 15 to get a look at it.

I made an easy left turn to downwind and talked through the emergency-gear-extension procedures. With the gear down, the aircraft

handling significantly degraded, resulting in altitude deviations from the 1,200 feet we tried to maintain. At one point, I got down to 900 feet and received a "watch your altitude" call from my wingman.

At five to seven miles on final, I struggled to see the field. The IFEI light still was stuck on the day setting and caused a glare. My wingman talked my eyes onto the field; I noticed the HUD instrumentation was not all present. The AOA indication was intermittent, even with the velocity vector outside the E-bracket, and the digital VSI was missing.

Just two miles from touchdown, two of my displays, the left DDI and MPCD, flashed and went blank as mission computer 1 failed. I brought the HUD up on the right DDI but now would have limited warnings-cautions. Jacobabad's runway 15 did not have a glideslope indicator or centerline lighting. I stayed below seven AOA until I felt deck rush, as I sank between the runway-edge lighting. I had a difficult time determining when I would touch down, and the lack of VSI didn't help. Flying fast without an AOA indication made me feel the nose would hit first; however, I was unsure of the controllability if I flew onspeed or tried to reduce my VSI near touchdown by flaring.

I touched down near the eight board at over 150 knots and took one large hop before the jet settled onto the runway. The jet tracked fairly straight and seemed controllable. Just before the five board, I made sure the pressure was off the brakes and pulled the emergency-brake handle. The aircraft immediately swerved hard to the right at about 105 knots. I used rudder, stick, and brakes to keep the jet from sliding sideways or departing the runway.

I made a radio call, saying I was losing control. I considered ejecting because I was sure the jet would tumble once it left the pavement. I didn't pull the handle because at the rate the jet was swerving, it might be off the pavement and tumbling when the seat fired. After the corrections, the jet tracked back across the runway to the left side. I corrected back to the right and did the same one more time to the left. The aircraft stopped near the four board. I told my wingman I was safe on deck.

My left main gear indicated a planning-link failure, with a flashing light and gear tone. It turns out the left main wheel was bent sideways 20 degrees from the side forces during the swerving.

Although I was safe on deck, our problems were not over. My aircraft could not be towed from runway 15—the only runway—because the ground crew did not have a tow bar that fit the Hornet. My wingman had enough fuel to orbit for 30 to 45 minutes before he would be forced to land on a taxiway. Bluetail (an E-2C) had relayed the events to CVIC, where our CAG and squadron CO were listening. They already had contacted our Navy-liaison officer at the combined-air-operations center in Saudi Arabia to get a tanker moving our way. My wingman plugged with a 1.9 and returned to the ship for a night trap.

The investigation determined the electrical-hydraulic valve on the hydraulic-drive unit that actuates the leading-edge flaps had failed. The valve leak allowed the fluid from hyd 1B and 2A to drain out of the jet. The mission computer (MC) 1 failure appeared to be independent and could account for loss of instrumentation and electrical oddities. The maintenance data showed the right aileron worked after hyd 1A cycled to hyd 1B, although the FCS X never cleared. The MC 1 failure may have accounted for Xs not clearing and for hyd 1A caution returning, although the 1A circuit appeared to be working. MC 2 failed on start the next day when maintenance began repair work.

From looking at the tire marks, the jet touched down between the nine and eight boards, and the tire skid marks started between the six and five boards. After less than 50 feet, there were two marks where both tires exploded, followed by over 1,000 feet of skid marks going back and forth across the runway up to where the jet stopped.

Three circuit-hydraulic failures nearly are unheard of in the FA-18, and that, combined with an MC 1 failure, could be a first. Several points are worth discussing, along with possible changes to our PCL and procedures.

The Hornet community long has been aware of a tendency to blow tires when using the emergency brakes. Our simulators do not accurately simulate blown tires or the emergency brakes. A blown tire in the simulator is benign, while a blown tire at high speed in the jet can be violent and uncontrollable. The simulators should be corrected to allow realistic training.

Pilots should give serious thought to the risks involved with using the emergency brakes at high speed. With a reasonable chance of blowing a tire, should you wait to use the emergency brakes until you're below a speed where the jet won't flip if a tire blows and you depart the runway? If so, what is that speed, and should it be quantified with an additional warning-caution in NATOPS? The obvious risk here, depending on runway length, is not stopping and going off the end of the runway but at a much lower speed.

The PCL should be updated to include procedures for each combination of hydraulic-circuit failures. There are only 14 possible combinations.

From the in-flight-engine-condition-monitoring-system (IECMS) data, the erasing of the classified JDAM data exactly looked like an FCS reset. Does it command the same reset? Be aware that NATOPS states an FCS reset with an LEF failure may aggravate a split-flap position.

Also, consider who should land first in a situation like this. Had a tanker not been available, risk would have increased for another mishap if my wingman had been forced to land wherever possible.

Ultimately, sound decision-making and good crew coordination got the jet on deck with minimal damage. Maintenance got the jet back on the ship in less than 48 hours. Flying in a hostile and unknown area, with so few divert fields without arresting gear, is rare. Flying under these conditions with major multiple emergencies is even more rare. When you fly around the ship, carefully consider bringing a failing aircraft into a hostile, unfamiliar field at night, without all the familiar amenities: instrument approaches, familiar controllers, centerline lighting, and arresting gear.

Lt. McCormick flies with VFA-131.

# VT-3

# BRAVO Zulu

You can avoid a mishap if you remove one link in the chain of events—a fact 2ndLt. Kyle Roberts, a Marine Corps student aviator assigned to VT-3 at NAS Whiting Field, knows very well. He effectively removed that critical link and prevented a mishap, saving an aircraft and possibly a civilian maintenance pilot.

While serving as wheels watch during training, 2ndLt. Roberts observed a T-34C turn base for landing to the duty runway. The required "gear down and locked" call was made to the tower, but, upon rolling out of final, 2ndLt. Roberts noticed the gear was up. Not sure if the pilot intentionally was waiting to lower the gear during a simulated low-altitude power loss, 2ndLt. Roberts waited until it was evident the pilot intended to land. 2ndLt Roberts then initiated the wave-off lights and radio call, which the pilot followed. The aircraft later landed without incident.

The outstanding professionalism and attention to detail displayed by 2ndLt Roberts helped prevent a mishap.

# About Another Hour

Photo by PH2 Shane McCoy

*By LCdr. Charles C. Moore II*

A jet occasionally may try to tell you something during preflight. Like most JOs, I know that when the jet is talking, it may not say what I want to hear. My crew recently experienced our jet trying to talk to us while on a mission supporting Operation Enduring Freedom.

I had been in theater only for a few weeks, and the missions hadn't yet taken on a "Groundhog Day" feel. The majority of aircrews remained enthusiastic about the operations in this unfamiliar theater. This mission was my crew's second one, and we certainly felt proactive.

Normal package, element, and individual crew-briefing routine preceded the mission. Man-up, start, and taxi to the catapults went smoothly, and the Prowler acted ready for the day's assignment. Crisp, clear weather conditions prevailed as the yellowshirt taxied us to tension at the holdback. All motor and auxiliary indications looked good during the run-up and wipeout. We saluted and waited for the catapult to fire.

The holdback parted, and off we went. Moments later, while we raised the gear and initiated a clearing turn, the master-caution light flashed. I glanced at the annunciator panel and saw a steady HYD SYS light. The hydraulic gauges told the rest of the story: The right combined gauge was buried at zero pressure.

Hydraulic pressure in the Prowler comes from a classic Grumman split: tandem-actuated flight and combined system. Each motor drives two pumps, one for each system. I barely had told the crew of the master-caution light when

the light blinked out. The annunciator light and the pressure gauge showed the pump had climbed back to the advertised 3,000 psi. After a brief discussion with the crew, we pressed.

Our discussion had focused on the momentary dip to zero psi on one hydraulic pump—none of us ever had seen that. I tried to tax the jet's hydraulic system with hard turns on the level-off. The hydraulics never wavered, neither did our resolve. Finally, we decided the cat shot probably had induced the indications, alleviating any of our lingering concerns.

From an aircraft-systems perspective, the rest of the mission was uneventful. After six hours, we arrived in the overhead for a standard Case I recovery.

Following the arrestment and sideline for a pushback, the flight-deck chief emphatically signaled for a shutdown of the port engine. We shut it down and disembarked. We discovered the entire belly of the aircraft awash with hydraulic fluid, and the troubleshooters said the flight-hydraulic reservoir was empty.

While the cockpit indications never had wavered for the flight-hydraulic system, a small leak slowly had atrophied the system. The only fluid left was in the lines.

Our Prowler went to the hangar bay for the night to repair the leak. The jet was given life through a hydraulic jenny to verify the system integrity. While confirming the flight side of the hydraulic system, the maintainers discovered the combined-hydraulic reservoir had blown an end cap. The blown cap posed contamination and leak risks, which could have occurred at any time.

We discovered the entire belly of the aircraft awash with hydraulic fluid, and the troubleshooters said the flight-hydraulic reservoir was empty.

Ironically, only a few crews would have handled the circumstances differently. The vast majority of our crews said they would have continued the mission as we did.

The maintainers couldn't predict how long the combined system would have lasted. They were adamant, however, that I was minutes from losing the flight hydraulics. The loss of both sides of the Prowler hydraulic system means a lost Prowler—not a pleasant outcome.

Concise and definitive systems knowledge is necessary to navigate a mysterious scenario such as this. Early in the flight, our crew analysis boiled down to two simple facts. We had checked with the PCL and found no specific emergency procedure for the single hydraulic pump's momentary fluctuation, and we attacked the system early with the loaded turns and constant monitoring. We QA'd one another to make sure we hadn't overlooked any vital information. Second, there was no way to predict, nor any reason to expect, the other hydraulic system would spring a leak. We would have found that out an hour later.

LCdr. Moore was the operations officer with VAQ-139 at the time of this event.

*As we corrected to centerline and bunted the nose, we saw something that surprised us: A Hornet was on our runway starting his take-off roll.*

# "Cleared to Land...

*By Lt. Brian Paudert and Lt. T. J. Dierks*

With a storm front moving through Virginia Beach, we knew when we arrived at the squadron our good-deal, section low-level obviously wouldn't happen. Weather called for low ceilings and light precipitation throughout the morning, so we discussed a backup plan. The weather probably would prevent any AIC as well, so we decided to go out as singles and jump into the GCA-box pattern. We were flying the F-14B Tomcat with a new and improved HUD—what could go wrong?

We were cruise-experienced although the two of us had flown together only once before. We thoroughly briefed the flight and discussed what we expected from each other. Sitting at the holdshort and waiting for take-off clearance, we noticed a steady stream of GCA traffic to the left runway, with departing traffic using the right. We weren't the only ones with the box pattern as a back-up plan. After departing on the right runway, we saw that the weather was close to the forecast: a light, scattered layer around 300 feet, 500 feet broken, and multiple layers above. We were cleared into the GCA pattern and shot our first approach with no problem. We decided to fly a couple more approaches and to get on deck with plenty of gas.

Our next time around, we heard a new voice as our final controller, and he obviously was new to the job. They were having a hard time locking us up with ACLS, but we told them to try it all the way down. The controller told us to stay clean, and he would call our dirty. As we skimmed along the top of the undercast layer at 1,500 feet, both of us forgot we still didn't have our landing gear down. We quickly were brought back to reality when, at five miles and 1,500 feet, we still were clean. We lowered the gear, and the RIO told the controller.

Three miles from the field came fast as we got in the proper configuration and tried to slow to on-speed.

We heard a "start your descent" call (not standard) and realized we were high, inside of three miles, and still at 1,500 feet.

If it had been night, and we had been behind the boat, we would have been more concerned, but we were daytime, and we had lulled ourselves into complacency. We needed a seven- or eight-degree glide slope to work it back down and to have a slightly high VSI. Just inside of two miles, we heard the first "you're above glide slope" call, followed by, "Can you make it?"

Those calls gave us a heads-up that we were a little higher than we thought, but we answered we'd make it over the runway for at least a low approach. We decided to set a four-degree glide slope and to take whatever that descent gave us. We were then cleared for a touch-and-go on the left, which we answered with, "Roger, cleared to land on the left, three down and locked." We broke out at 400 feet, inside of one-quarter mile, and lined up right.

As we corrected to centerline and bunted the nose, we saw something that surprised us: A Hornet was on our runway starting his take-off roll. We initiated the waveoff and told the approach controller about the conflict. Our standard climb-out instructions were to climb straight ahead on runway heading until passing 1,000 feet, then turn left to the downwind. Quick aviator geometry determined flying this route would keep us right on top of the Hornet pilot, who had no idea we were there. As we climbed toward the overcast layer, we immediately turned left to deconflict and to get separation between the jets. We both popped out on top about the same time, with about 2,000 feet between us—the Hornet never saw us.

We decided to full stop the next approach, and, this time, we were more determined to be better aviators and to pay closer attention. Our original controller was back for the next approach, and it went like clockwork.

What happened? After debriefing maintenance and getting out of our gear, there was a message from the tower chief waiting for us. He explained the problem to us and why there was a Hornet sitting on the runway where we were cleared to land. There were two sections of Hornets waiting to depart, and the controller thought it would be faster to put one section on each runway, the left and the right. That plan would have been fine and would have worked smoothly, but the section on the left decided to do a radar-trail departure without telling the tower. The chief said he had monitored the whole situation from the tower but had misjudged the timing between the departing and landing traffic.

There are other things to consider. Why were we given clearance to land with a jet sitting on the runway? Regardless of how long the Hornet took, standard procedures should have been followed. When the tower realized the spacing wasn't going to be enough, why weren't we waved off? The tower owns that airspace, and they monitor the final control frequency. The whole situation could have been avoided if the controller or the tower chief had taken action. No one with authority made any proactive decisions, and, even when we alerted approach to the problem, their only response was, "Roger." Also, the controllers didn't recognize the conflict on climb-out. One situation was avoided, only to create another.

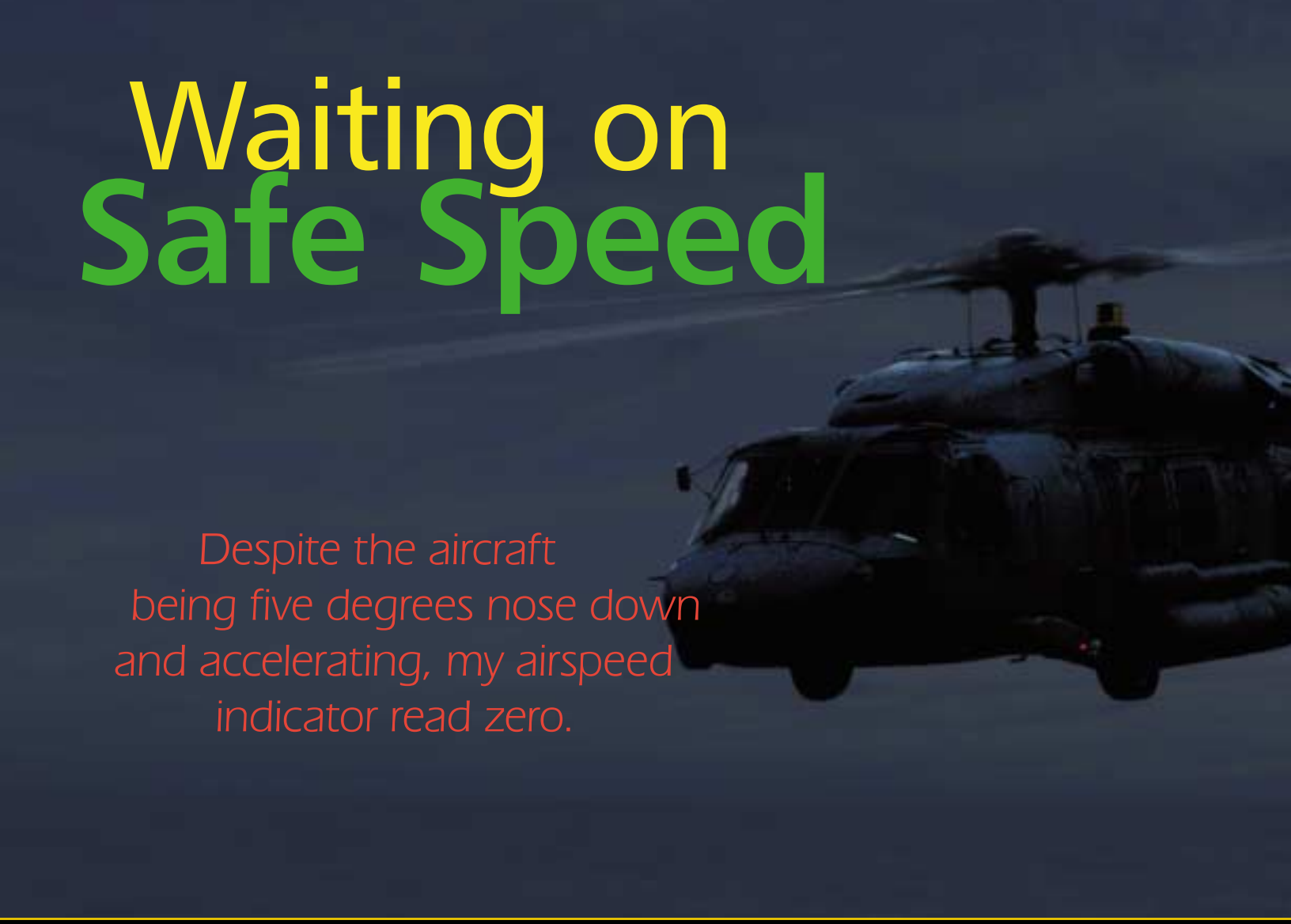
# Can You Make It?"

All of these issues aside, we are responsible for making decisions that directly affect our aircraft. What did we do wrong? We definitely fell behind the jet in terms of situational awareness. We were busy with other things that should not have been occupying our thoughts. Maybe these things didn't directly come into play with the Hornet on the runway, but we weren't doing our part to stay ahead of the jet.

Relying too much on an inexperienced controller allowed us to get way out of parameters for an approach into marginal weather. We, as aircrew, need to understand the higher state of vigilance necessary in these situations. We've all read enough of these stories to know complacency has no place in the cockpit, no matter who is controlling us. Our situation wasn't at night, behind the ship, with a pitching deck, but the flight still was more interesting than it needed to be.

Lts. Paudert and Dierks fly with VF-143.

# Waiting on Safe Speed



*Despite the aircraft being five degrees nose down and accelerating, my airspeed indicator read zero.*

By Lt. Jon Clemens

Our WestPac deployment, in support of the JCS Battle Group, had begun four months earlier and had been grueling. The dynamics of Arabian Sea operations, schedule changes, and the increased number of flight hours kept everyone on their toes. Our crew just had received waivers for flying over 100 hours in January, with no end in sight. Operation Enduring Freedom pushed us to the max.

Most of our missions took place between midnight and 6 a.m., and this flight was no exception. With the brief and preflight completed, the ship called away flight quarters. I strapped in while the helicopter aircraft commander (HAC) took a final walk-around. Because nothing noteworthy occurred during preflight, I assumed the aircraft was ready for flight. We progressed through the checklists, engaged the rotors, and were set for launch. Our aircrewman made one last walk-around to arm the chaff and flare dispensers and the Hellfire missiles. We were ready for a green deck.

"Beams open, green deck, lift," came over land-launch from the LSO. We pulled into a hover, checked the gauges, and slid to the aft edge of the flight deck. We checked the gauges again, pedal turned, and, with one more check of the gauges, the HAC raised the collective to depart. I backed him up as he pulled in power.

"One, two, three positive rates of climb, waiting on safe single-engine airspeed and the stabilator to program," I said.

The HAC pushed the nose over to accel-

erate. I kept my eyes on the gauges to call flight parameters. Despite the aircraft being five degrees nose down and accelerating, my airspeed indicator read zero. I cross-checked the HAC's airspeed indicator with mine and noticed his airspeed fluctuated between 30 and 50 knots. "Still waiting on safe speed," I added.

Passing through 150 feet, I didn't have any airspeed indication, and the HAC's indicator still was fluctuating. The HAC and I couldn't figure it out. The HAC selected doppler to read groundspeed, and he continued the climb-out to 1,000 feet. The stabilator received mixed inputs from the pitot tubes, so it remained programmed 20 to 25 degrees down, causing an excessive nose-down attitude.

I suggested we turn on the pitot heat. The HAC agreed, thinking salt ingestion might be the problem, and the heat would clear the tubes. I turned on the pitot heat just as the HAC decided to return to the ship and troubleshoot. The HAC also wanted to brief the LSO on our problem. Just after we started to return, the airspeed indicators began to work.

We couldn't figure it out, but, since our problems seemed to be over, we discussed whether to continue the mission. We had our airspeed back, the stabilator was functioning normally, and the aircraft was flying fine. We were back to normal.

Suddenly, I smelled something like fried noodles. Thinking the AW had cracked open his dinner, I asked him what he was eating.

"I'm not eating anything," he replied.

The HAC and I wondered what was up. As we continued to fly, the smell became more pungent, like an electrical fire. We searched the cabin, but couldn't locate the source of the odor.

As the HAC slowed the aircraft to eliminate the fumes, we realized the smell had begun after I turned on the pitot heat. I trained the forward-looking-infrared radar (FLIR) onto the pitot tubes, and, to our surprise, the covers still were on the tubes. The heat had melted through the covers and caused the overpowering fumes to fill the cockpit. In haste, we had missed a small, yet crucial preflight item. The HAC terminated the hop, and we called the ship to set up for recovery.

While the HAC is responsible for the safe and orderly conduct of flight, all crew members are responsible for safety and using ORM. "I'm just a 2P" is not a valid exception to the rule. We failed to pay attention to detail on our preflight and missed the pitot-tube covers. ORM university states, "change is the mother of all risk."

Given our op tempo and the repetitive nature of our flights, we unknowingly had allowed ourselves to fall victim to the second mother of all risk: complacency. We fell victim to "looking but not seeing."

Lt. Clemens flies with HSL-47.

# ORM Corner

# Bad-Weather CV Approaches

By Lt. Brian Schrum

Trapping aboard the carrier has to be the most thrilling challenge experienced by carrier-based naval aviators. The last 15 to 18 seconds of a flight are intense. However, the Case I, II, or III approach leading up to the ball call, at three-quarters of a mile, requires as much concentration and discipline as the trap. Perfecting the skills to operate in this environment puts aviators to the test each day and night, in all weather conditions.

During our squadron ORM sessions, we learn how to identify hazards and risks, make risk decisions, implement controls, evaluate our changes, and offer recommendations to avert disaster and foster a safer evolution. I hope this article spurs ready-room conversations on a topic not often discussed during preflight briefs or squadron LSO lectures: Low-ceiling and low-visibility approach hazards. A recent air-wing recovery showed how inclement weather caused havoc to an unprepared naval aviator and LSO.

I had not given much thought to approach minimums during a Case III arrival to the boat until, as an LSO, I experienced the mass confusion

ORM Corner

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that can occur during bad weather. We often work in a benign weather environment, but we always should be prepared to handle weather contingencies.

We were deployed on board USS *George Washington* (CVN 73) in the Northern Arabian Sea, in support of Operation Enduring Freedom. It was the end of July, and CVW-17 had finished our first week of ops. Throughout the week, a low-pressure system dominated the area with ceilings at 1,000 feet or less, and visibility at two to five miles with mist and haze. Because of the poor weather, we conducted Case III approaches every recovery.

A Case III approach is flown when the weather is less than 1,000-foot ceiling or five-mile visibility, or during night CV operations. The approach typically consists of marshalling aircraft behind the ship at various altitudes and distances. Each aircraft is given an approach time to sequence to the deck in a safe and expeditious manner. Pilots fly a standard-descent profile, dirty-up, and intercept a 3.5-degree glide slope at three miles—that should lead to an on-and-on start. Once inside seven miles, pilots can reference ILS (bull's-eye) and/or ACLS (automatic-carrier-landing system or "needles") to guide them. If the pilot does not have either ILS or ACLS, he then relies upon CATCC (carrier-air-traffic control) azimuth and glide-slope calls, plus his self-contained approach numbers, to get him to an on-and-on start. On

a standard flight, pilots will use all of these aids to get aboard. If one aid is malfunctioning, the approach may be off parameters. If we factor bad weather into the mix, a pilot could have their hands full, as they did on our LSO team's particular wave day.

During these poor conditions, the CAG and squadron paddles step up and keep their fellow aviators off the ramp. Normally, paddles only passes "roger ball" and the occasional "power" calls to approaching aircraft. But, under degraded conditions, a paddles talk-down can be a rewarding experience. Such was the case that July afternoon when weather conditions suddenly deteriorated to one-quarter-mile visibility and ceilings at 350 feet or lower.

Our team was scheduled to wave a midday recovery and found the weather to be a safety factor. Paddles made the call for all aircraft to have their taxi light on, so the aircraft would be visible earlier. Before the first plane arrived at the ball call—at one and a half miles—we would break out and make an arrestment. CATCC called the first jet on and on at three-quarters of a mile, and told the pilot to call the ball. "Clara" was all we heard. Cricket…. Cricket….

The hairs on the back of our collective necks stood straight up. We heard nothing for two or three seconds until, suddenly, a jet appeared out of the haze, only moments away from taking a trap. CAG paddles gave appropriate calls to the pilot and received good responses; he safely trapped. Great, we have one aboard and seven more to go. We brought three more aircraft down before the weather closed in on the ship, and we went below minimums. With more aircraft left to land, we thought about our options. The ship was working blue-water operations, and our nearest suitable divert airfield was 200 miles away.

Aircraft were returning from long missions, some with ordnance aboard, which presented us with low-fuel states and maximum-trap weights. Fuel was airborne but in short supply. The next event's launch was on hold while the ship and air-wing leadership decided what to do. Vulture's row saw more action as people wanted to watch the excitement and experience the deteriorating weather. Meanwhile, four aircraft tried to break out and finish the recovery.

Let's stop right here and ask the question, "With the weather minimums continuing to drop, just how far along an approach can we wave an aircraft without a paddles contact?"

"Paddles contact" refers to a call the LSOs can make to "grab" an aircraft from CATCC and talk him down to the landing area. To help answer this question, here are some ORM controls for the bad-weather hazard:

1. Weather minimums for our approach.
   a. For an ACLS approach and ILS with PAR monitor, the minimums are 260 feet, one-half-mile visibility.
   b. If ACLS and ILS are not working, minimums are 660 feet, one and one-quarter miles for jets and 460 feet, one mile for props.
2. CAG and squadron paddles experience levels.
3. Individual pilot training and experience levels.
4. CATCC equipment and crew experience.
5. LSO platform equipment.
6. Ship's instrument-approach equipment.

What was the status of these controls during our recovery? Approach minimums, like those we fly with at our destination airfields back home, are hard and fast. Just like at the field, if we don't see our landing area and cannot complete a safe landing, we wave off—as mandated in OPNAV 3710. Both CAG paddles were on the platform, providing experienced inputs throughout the event. The pilots were mostly cruise-experienced and made informed, judicious decisions as the pilots-in-command. CATCC was doing its best to provide glide slope and azimuth calls and had been working Case III control for two months of our cruise. The LSO-platform equipment operated properly, with the exception of the LSO HUD used for platform correlation of the ACLS. With this subsystem inoperative, it took away one item the LSOs could have used to help wave the aircraft. Finally, bull's-eye was down as the ship was awaiting a part to fix it. Four aircraft remained airborne, and we contunued to push our approach minimums.

A COD diverted before getting the opportunity to fly the approach. A Hawkeye was given a talkdown approach by CATCC that had him flying to the starboard side of the ship, despite being called on-and-on. A judicious waveoff call from CAG paddles kept him from getting too close for comfort. Our last Hornet made his way to the ball call. After four agonizing seconds went by, with no sight of him, we waved him off. We never saw him break out of the haze but heard him climb off the port side. Fortunately, everyone had enough fuel to make it to our nearest divert field. The weather eventually cleared later in the day, and it was ops normal once again.

How far can we wave an aircraft in deteriorating weather conditions? The textbook answer is as far as the approach minimums allow. If CATCC does not hear "paddles contact" or "roger ball" from the LSOs,

CATCC is instructed to keep glide slope and azimuth calls coming until the aircraft reaches weather minimums.

What if no divert was available? Our plan was to tank every available aircraft in extremis, even calling in big-wing tanking to help until the ship found clear sea space. If a clear area was not found, and no tanking was available, then we were to bring the aircraft lower than the minimums allowed, or to have the pilot eject near the ship.

How about Hornet pilots flying a Mode 1 approach (basically an autopilot approach to the carrier deck)? The letter of the law states that even Mode 1s can only be flown to ACLS approach minimums. A deviation would require a waiver from higher authority.

After evaluating the day's events, I believe we had, and continue to have, controls in place that are more than adequate to respond to adverse-weather conditions. However, we do have to make sure the controls are operating correctly. The responsibility relies on great communication between the pilots, LSOs and the ship. As LSOs, we have to train the air wing and keep them up to speed on CV specifics, including approach minimums.

Pilots must be familiar with how far to take an approach before waving off and must have the confidence in paddles to bring them aboard when they hear "paddles contact." Through good ORM, this knowledge may save your life one day. Fly a good, solid instrument approach in bad weather; this can mean the difference between getting aboard or spending the night at your divert.

CATCC tends to take the heat for many issues regarding the Case III approach. The key to addressing any issues with CATCC is to stop by and fill out a pilot-debrief form. That stop in CATCC will get the techs on the case and repairs in the works. Timely feedback will assist the ship in making changes just like a well-written aircraft gripe.

As a paddles, I gained valuable experience on the platform, waving in adverse weather conditions. I also gained an even bigger appreciation for our jobs as naval aviators.

Lt. Schrum flies with VFA-83.

*Because of the poor weather, we conducted Case III approaches every recovery.*

# Stuck Throttle in Paradise

By Lt. Sam Messer

My second COMPTUEX was just as busy as my first one, and I rapidly approached 50 hours for the month. We almost had defeated the simulated forces of evil, and, tonight, I would pad those hours while getting good training in the mighty "War Hoover."

Before walking on my double-cycle, night, surface-warfare flight, I did a routine check of the ADB. One of the gripes concerned mismatched throttles, but the engine still had good indications across the board. I had seen a few throttle-rig gripes on previous flights, even one that had a tailpipe fire on shutdown. I figured it just was more of the same issues, and, since the gripe had been signed off, I had no problems taking the jet.

Photo by Matthew J. Thomas. Modified

The on-deck routine went flawlessly, and I was spotted on cat 4 with time to spare. When we got the tension signal, I ran both throttles to military while doing my wipeout. I noticed the No. 1 throttle didn't quite match the No. 2 throttle's position on the quadrant, and the engine was slow to spool up. The COTAC and I called out the lag, but the engines were performing fine, and we elected to launch. Seconds later, we were traveling down the stroke and into the moonless Caribbean sky.

The next few hours flew by; we were busy locating and sorting out surface contacts. Finally, we got a call to take out one of the simulated hostiles. While a couple of Hornets set up for guided bomb unit runs, we maneuvered for a Harpoon shot. We took the shot, secured the radar, and sharply turned away from the target at MRT.

Once clear, I brought back the throttles, but something I'd never seen before happened. The No. 1 engine indications were pegged at their max settings, as if I was at full throttle, but both throttles were in the idle position. I could control the No. 2 engine, but the other throttle felt completely loose, and throttle movement had no affect on the engine.

I put the needle on the nose and headed toward the ship. My COTAC began checking us through the frequencies and contacted our representative. Our TACCO got out the book and vainly looked for an EP that covered stuck throttles.

The No. 1 engine was running fine, although at the max-power setting. I figured the slowest I could get was 250 knots, even with No. 2 at idle. When our rep finally came on the radio, I told him of the situation. We also told him that to slow enough for dirty-up, we would have to shut down the engine.

The inevitability of flying a single-engine approach to the boat, on a night with zero illumination, with a cloud deck, began to sink in. Our rep asked us for a recommendation. The El Conquistador and all its appealing amenities was only a short divert away, but I snapped out of it and asked to be recovered aboard ship. The rep said to bring it aboard to and expect the first ramp time.

We were established in holding overhead, like any good Viking would be, and went through the precautionary engine-shutdown checklist. While the TACCO read the steps, the COTAC and I flew, talked on the radios, and completed the steps. The auxiliary-power unit started with no problems, so we didn't have to use emergency methods to get dirty. When we reached the step for pulling off the throttle, I pulled it around the detent, but the engine continued running at high speed.

I told the crew I was pulling the fire-pull handle—a procedure not in the PCL. It was the only way to shut down the engine. I've heard people say it takes a little while for the engine to shut down using this method, and NATOPS says securing the throttle is the fastest method. The engine seemed to shut down quickly.

With the engine secured, we finished the rest of the checklists and prepared for the approach. We had dumped fuel, and, after checking the waveoff performance and referencing our dirty bingo numbers, we dumped a little more to improve our climb rate. After we finished a quick review of the single-engine-waveoff procedures, approach called us down. I chanted a quick mantra to myself that the approach would be like the simulator. With some excellent backup from my rightseater and sugar calls from paddles, we soon were aboard and enjoying a one-eyed jack in the wardroom.

The maintainers found the pull cable that attaches the throttle to the throttle linkage in the engine pylon had disconnected. A cotter key that should have been safety-wired had come out and had allowed the attaching screw to slowly work its way out. I had, right in front of me, several indications that pointed to an impending failure, and it was a matter of time before that system would fail.

Fate chose my crew to be in the aircraft when it failed, but we prevailed, using a combination of measures. The coordination between my crew and boat personnel helped us make timely and correct decisions. I had practiced multiple emergencies and had gone over many scenarios, but I never had considered a stuck throttle. When something unusual occurs, you always can fall back on CRM, solid headwork, and good airmanship.

Lt. Messer flies with VS-24.

# CHOP THE
# Not the Sailor

*The yellowshirt tumbled across the flight deck like tumbleweed in a Texas ghost town.*

*By Lt. Jason J. Clendaniel*

The flight deck is a busy and, often, scary place. On a December night, I learned how busy and how scary it could be.

Our Hawkeye squadron just had arrived in the Northern Arabian Gulf to support Operation Southern Watch. The air wing and flight-deck personnel had worked closely for the last six months during the IDTC period and were used to seeing the same aircraft, launch sequences, and yellowshirt procedures. Today, we were launching for a quick, single-cycle hop for my left seat CAPC and myself. The plan was to get night current; our flights had been constrained by position of intended movement (PIM).

On this third and final man-up of the day, we pushed through the checks, pulled out of the Hummer hole, and taxied to the landing area. I went through the takeoff checklist as we prepared for the cat shot into the milky night. Before we pulled out of the landing area, I remember looking around at the relatively empty flight deck and saying, "We're clear all the way to the cat."

We taxied behind cat 1 and reviewed the checklists; we were complete down to wings and

Photo by PHA Michael B.W. Watkins. Modified.

# PROP,

controls. A Tomcat would launch first, followed by us. We temporarily were halted behind JBD 2, facing JBD 1 at a 45-degree angle. My pilot scanned to the left, hawking his director, while I checked and cleared to our right.

The Tomcat on cat 1 didn't launch because of a mechanical malfunction. As he started to pull out of tension, a yellowshirt walked between our plane and the JBD. The JBD began to lower, and the Tomcat came up on power to taxi off the cat.

The first thing I saw was the yellowshirt's back arch like a banana from the wind over the deck; he held his back to the Tomcat. Within a split second, he slipped off his feet and fell to the deck. I yelled two choice words and bagged the right engine with the T-handle. The yellowshirt tumbled across the flight deck like tumbleweed in a Texas ghost town. Fortunately, he was blown past the propeller by 10 feet. We quickly were tied down, the aircraft was secured, and we went to our ready room to sort out the details of this close call.

When we visited the Sailor in medical, he said he was very aware of the propeller. He kicked and clawed for his life as he slid down the deck in our direction. He had several cuts, scrapes and bruises, but, given the other possibilities, he was relieved.

The flight deck is a dangerous place. What seems routine in naval aviation easily can turn into disaster in the blink of an eye. My eyes were at the right place at the right time because we routinely brief the copilot's responsibility to keep the aircraft clear on the right. On deck, our doctrine always has been both pilots have free rein of the T-handles and brakes.

We managed to exercise what we briefed, and we are fortunate we still have our yellowshirt working with us today. I went to sleep that night knowing that vigilance and a good brief had allowed me to save a life. Never get lulled into a sense of routine on the flight deck. Keep a fast scan going, as if you were on instruments and in the goo. Always watch other aircraft and the direction their exhaust is pointing to see if it's sweeping across any of our personnel. Their world and yours can get turned upside down in a heartbeat.

Lt. Clendaniel flies with VAW–116.

# Crew Resource Management

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

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# I'm Pretty Sure He Saw Them

*By Lt. Jim Adams*

We have been learning the seven skills of crew-resource management for years. It is a basic, some say common-sense, philosophy we use to make sure a mission is accomplished safely and effectively. Failure to use CRM can result in mission failure, loss of life, or just making yourself and your crew look unprofessional. Fortunately, my crew suffered only the latter.

After spending three days on detachment, my crew was pre-flighting for our return to home plate. The junior of our two flight engineers (FEs) conducted an exterior inspection of our P-3C. As patrol-plane commander (PPC), I also did an exterior inspection. During my inspection, I saw the landing-gear pins still were installed—not unusual, since many FEs leave the pins installed until just before the planeside brief.

We were late starting engines because cargo we were taking back to home plate was delayed. We also were held up because of a fuel spill from an adjacent aircraft. In an effort to expedite our departure, I held the planeside brief while we waited for the cargo. At the brief, I normally make sure the gear pins are inside the aircraft and not in the landing gear. Since we still had time to wait, I did not direct the FE to remove the pins, figuring we would take care of it when we were ready to go.

After a delay of an hour and a half, the cargo arrived, and the emergency vehicles for the fuel spill departed. We made sure everyone was aboard, and we strapped in. The copilot read the before-start checklist, beginning with the first item, "gear pins."

Have you ever forgotten to remove the gear pins?

This checklist item requires a response from the FE and the copilot of "removed," indicating each person has verified the gear pins are inside the plane, not in the landing gear. The senior FE and the copilot each responded with "removed."

As it turns out, neither visually had checked the gear pins. Each one thought the other had seen them, when, the truth is, neither had. I also neglected to visually check the pins, assuming the FE and the CP had done so—they responded to the checklist.

We took off and realized the landing gear would not come up—the pins still were installed. We landed right away, pulled the pins, and took off again, minus a big chunk of pride.

CRM, used correctly, is supposed to keep us from making such mistakes. Here's what should have happened:

**Assertiveness.** Both the copilot and the FE had their doubts about where the pins were, but no one spoke up. Neither did I mention I had not seen them.

**Communication.** We had a big lack of communication, not only with the copilot and FE but also with the PPC and junior FE. Any one of us could have broken the chain by voicing the concern we each had been whispering in our heads.

**Leadership.** This one hits me straight to the bone. As PPC and mission commander, it is my job to make sure the crew, myself included, properly performs their duties. Overall responsibility for the aircraft and the mission lies solely with me. I failed miserably as the leader.

**Situational Awareness.** I think it's obvious: We lost ours.

There are other situations where a lack of CRM could have had more severe consequences. The combined P-3 flight time among our flight-station crew was nearly 9,000 hours; yet, we failed to execute a basic aircrew function.

On every mission:

- Keep up your guard.
- Use CRM.
- Remember the basics; they never change, no matter how long you fly.

Lt. Adams flies with VP-8.

# My Dark and Stormy Night

By Lt. Wade Iverson

We all have the "dark and stormy night" stories, or we will one day. The course of events that puts you there happens fast and without regard to your wants and desires. When the event is over, all you can do is learn from it, don't do it again, and tell others. So, we write *Approach* articles and hope others don't follow in our footsteps. It can be hard to relive the event and reveal your mistakes to the entire aviation community, but by sharing, we all can learn.

My story began on a very dark night. It was the final week of a noneventful C2X. Fragged for the 1200 to 0500 ASW alert 30, it was a tossup whether we would launch or not. I thought

Now I looked like an idiot, plus I had to go back to that dark place from which I just had escaped.

of reasons for us not to launch. We were only hours to the next phase, and I hoped the powers-that-be would realize the timing was bad. Also, the sub was very covert, and the P-3 most likely would not get any sniffs. Nonetheless, the 2300 brief time arrived, and I grabbed my crew to brief in CIC; I still doubted we'd launch.

Photo by PH1 Ronald V. Woxland, Modified

A courtesy nod of agreement from the TAO, followed by a last-minute update to the ASTAC, and we walked aft from CIC to the hangar. After pulling up a few large, white toolboxes to serve as a makeshift ready room, we settled in for the NATOPS brief. My crew had a fairly new and inexperienced H2P and AW. As such, we briefed the whole mission and spent sufficient time discussing our procedures and expectations during the takeoff and landing. After the brief, I read the book at the maintenance shop. The first flight the next morning was a CATM event, using the Hellfire-training missile to practice laser targeting.

I signed the ADB, and we headed to preflight, where we went through the first several steps in the alert checklist—to stay ahead of the "alert-30 game." The bird looked good, and, even though I would not use the CATM for my mission if we launched, I carefully looked it over. I even momentarily removed the large, yellow, seekerhead cover to check for defects in the seekerface. I then replaced the cover. I left the aircraft at the hauled-forward on the flight deck to allow the next crew to use hangar-face lighting for an easier preflight. After all, I probably wasn't launching.

With our preflight preparations complete, except for traversing the bird to the flight line, I set the crew free to hit the rack if they chose. I would be up for a while taking care of some taskers, and I would tear the crew from their slumbers if we needed to launch—slim chance. I already had crew rested, in case we did launch.

I snuck onto the detachment's office computer, between the maintainers checking e-mail, and settled into my mound of to-do lists. Several hours later, after multiple trips to combat to check on the status of the P-3's hunt, I thought it safe to return to the relative comfort of my room and rack out. Besides, we had only a few short hours left on our alert period; we were not going to launch. I let the folks in combat know where I was going and headed to the pit.

I barely had hung my flight suit on the screw that jutted out from the side of the locker by my rack and closed the curtains to shut out the

constant glow of the overhead red light when the stateroom phone rang. I looked at my watch, closed my eyes, and slowly shook my head on the government pillow I had tried to disguise with a pillowcase from home—we were launching.

We had gotten the call against my predictions, and now we had 30 minutes to be airborne—not a problem. We had been proactive by completing the brief and the preflight. All we needed was to get a brief from combat, spot the bird, fire it up, and go. After rousing my crew from their racks, I went to combat for the details on what suddenly had changed. I returned to the flight deck to prep for launch and began the chain of events that would lead to frantic power calls and the scariest moment I ever have had in a cockpit.

After all the preps, it took some time to get all the information from CIC, along with another delay getting the aircraft spotted on the deck. I thought, "What was taking so long?" Another 10 minutes lost. The bird finally was spotted, and, after one last walk-around to check tail tie-downs and engine plugs, we strapped in. I took the left ATO seat to practice the button-crunching skills and to give my copilot right seat experience.

Time to launch was getting close, but I told myself not to hurry and cause my crew to miss something. "Thorough and steady" is how I had briefed the crew earlier in the hangar, and that is what I would show them.

The flight-deck crew was a little slow in getting up, and there was a delay for the boat-deck crew. How long does it take to FOD walk a flight deck half the size of a tennis court? Another 10 minutes lost.

Finally, everything was ready to go: a red deck for engine starts. After I glanced up and got a call from paddles, I realized the HARS bar was not working. Without a visible horizon at night, all lighting systems must be working on a small boy for us to launch. I looked out the window; it was as inky black as any night gets. No light, no launch. The 35-minute mark passed with no HARS, and it looked like we were not going to launch—I was back into my comfort mode.

Spinning on deck, with half of the takeoff checklist complete and a heartbeat away from shutting down, I again started to settle into the mindset this event was going to be an exercise in futility. Again, fate stepped in just as I keyed my mike to tell paddles we were going to call it a day, or night, or whatever. Suddenly, the HARS bar illuminated the dark, and we were clear to go. I got myself back into the box. I thought, "Ready to go. Amber deck for breakdown. Review the takeoff checks…looks good, signal for chocks and chains, four chains, two chocks, personnel clear, ready." My dark and stormy night began.

The relative winds were to port, which made it a right seat takeoff. Beams open, green deck, lift. We were airborne, and, after a gauge check, a slide back, and a pedal turn, the pilot took off into the blackness. While lifting off the deck of a small boy at night, you want to see three rates of climb before nosing over the aircraft to get single-engine airspeed. My copilot either got vertigo or broke down his scan, but the needles that usually started moving up started moving down—on a dark night, with a pure instrument scan, that is a bit disconcerting.

After a few motivating "power" calls from me and a dip on the RadAlt to 45 feet, the needles again moved in the right direction. Overcompensating for power, we now were passing 350 feet with zero airspeed. A little direction was traded for a bit of airspeed, and we were OK. We had altitude, airspeed, and the comforting glow of RadAlt hold; we were ops normal.

I soon discovered everyone has a bad night, and a learning curve is a fact of life. After we called "ops normal" and quickly debriefed night-time takeoffs, I began the after-takeoff checklist.

"No problem," I told myself, "everything would be all right now. We could chalk up flight hours and return when the sun was up."

Then, we got to the step reviewing Hellfire status. I did the step in the takeoff checks that called for removing the CATM cover. Right? Nope. I had stopped the checklist when the ship's HARS bar was bent. When the lighting came up so suddenly, I pulled the chocks and chains and prepped for launch. I just was doing ASW, not thinking about ASUW, and I quickly had reviewed the takeoff checklist. I now was

flying around at night, with the cover on my simulated missile posing a FOD hazard. The helmet helped soften the blow when I smacked myself upside the head. The right thing to do was to admit my mistake, recall flight quarters, and remove the cover.

Now I looked like an idiot, plus I had to go back to that dark place from which I just had escaped. OK, life goes on. I took the controls for the approach because I knew my copilot was having a bad night. Flight quarters were called, paddles got the story, and he set up to pass the numbers. It was my turn to stare into the dark and stormy night and live life on the steep, aviation-learning curve.

I still was frazzled from the takeoff and unnerved for missing the cover. Things were quiet, I briefed my copilot I would have the instruments, and he visually would have the ship. In hindsight, I should have been clearer and stated he still needed to back me up on the approach profile with numbers and checkpoints. He also needed to provide a visual scan to help me adjust for lineup. We began the approach, and the CDI indicated on lineup, but, at one mile out, the lineup lights didn't look right. After calling paddles to restate BRC, we were off by about 20 degrees. "OK, still time, let me try and fix it," I thought.

My scan broke down because I boresighted on lineup. I was a little close, so I decelerated while still correcting for lineup. I finally realized the crewman was calling 50 knots closure, and I was just 0.4 miles out. The "this is stupid" caution light came on in my head, and I decided to wave off and try again. The low-collective, nose-high attitude I had put in to help slow and correct my lineup had tilted the lift vector too far aft—my lift was gone. I had put myself into the black hole. I no longer was flying but was tail-sliding into the darkness.

If anyone has heard the increasingly panicked calls of paddles, it is not something easily forgotten. I still remember it to this day. Even while I commenced the waveoff, "Power…Power…Power!…Power!" came over the radios, and I realized how dire the situation was. I made sure my nose was level, so the power pull put the lift vector in the right direction: straight up. One, two, three rates of climb, and I caught the green glow of the flight-deck lights pass behind us through the right window. Two hundred feet, safe, single-engine airspeed, and RadAlt on—we were again ops normal.

After clearing the dryness out of my mouth and the seat cushion out the other end, we told paddles we were going to take a minute to recage and then come in for the alternate approach. We did just that: recaged, rebriefed everyone's duties for the approach, and finally made an uneventful approach to the words, "in the trap…trapped." We removed the CATM cover and made a good nighttime takeoff from the back of the boat to complete the mission.

Even while I commenced the waveoff, "Power...Power...Power!...Power!" came over the radios, and I realized how dire the situation was.

What happened? Why did it happen? What did I take away from it? Always assume you'll go flying, and plan accordingly. Never take yourself out of the "box" until you're in the rack, with the paperwork signed. Even though I had taken all the steps to make sure we would have a quick and trouble-free launch, subconsciously I had taken myself out of flying mode and out of the cockpit.

Checklists are there for a reason; make sure every step is done, every time. The one time you forget or solely rely on memory, you're gonna get bit.

Make sure everyone in the cockpit understands what their role is and what the crew's expectations are for any evolution. Good communication is critical on any team; a lack of it can be fatal in aviation. The last lesson I learned is if it doesn't feel right, try it again the next pass. Waveoffs are free, and SH-60Bs have a $25-million price tag.

Am I a wiser aviator because of that dark and stormy night? You bet. However, I would have preferred reading it in an article: I'm still picking out seat cushion.

Lt. Iverson flies with HSL-49.

# Night Respot Becomes Night *in the* Box

By LCdr. Jeffrey Ohman

The first day out of Manama, Bahrain, found our stomachs still full of schwarmas and pita bread. The air wing scheduled itself for a one day CQ-ex to get our warriors current before returning to "the show." A routine night respot would turn into my most challenging night in the box.

The air plan read "respot" as the mission—implying a basic launch and recovery—and was scheduled for a 45-minute cycle. It was a simple plan, with simple execution. That's what I thought, until I prepared to plug at a fuel state just above "barricade."

**No packing materials in sight.**

We started with a good plan, followed by a basic CV-1, Case III brief. The idea was to launch 16 airplanes, fly to the marshal stack, and recover in order. It was a clear night, with a comfortable 60-percent moon illumination. The deck was steady, and the winds true—great conditions to get back in the saddle.

**Who brought the cardboard?**

Our launch provided the first indication this might be more than the normal respot. I raised the gear and flaps and accelerated through 250 knots in the climb, then we felt an abnormal, light buffet. We didn't recognize anything out of the ordinary inside the airplane, including a flap-caution light that had been an up-gripe for over a month. We continued our climb to 10,000 feet.

After level off, we lowered our gear and flaps to troubleshoot. We noticed our Tomcat flew smoothly, when slowed to the on-speed dirty configuration. We then went clean and realized something was wrong. My RIO talked with our representative in CATCC to let the boat and squadron know we were troubleshooting but still planned a normal landing and clearing from the landing area.

**That's an interesting shape.**

The rep recommended backing up our checklist with a visual confirmation. Fortunately, our wingman was 1,000 feet below us in our marshal stack. They rendezvoused to back up our initial thought of an auxiliary-flap malfunction. Once detached, we gave CATCC and our rep an update. We chose to pull the aux-flap circuit breaker, which, in turn, raised the aux flaps for a smooth ride. Our plan was to press in the circuit breaker on our push to make sure we had a normal landing configuration.

With 10 minutes to push, we dumped fuel to place us 5,000 pounds above our max-trap fuel state. This decision was based on our short

Photo by Troy M. Latham

cycle and fuel-dump rate. I still felt good about the flight.

We commenced our descent out of 7,000 feet with a vector for our intercept to final bearing and decelerated to 225 knots. Passing 5,000 feet, we called platform, switched to our final controller, reduced our rate of descent, and checked our fuel state. I normally adjust my fuel state to 1,000 pounds over max-trap state by 12 miles. We actually stopped our dump at 1,500 pounds over, while intercepting final bearing and 1,200 feet.

We proceeded in on the final bearing; all was well for a normal recovery. At four miles out, CATCC asked if we expected any wing-sweep issues on deck, and we replied, "Negative." At three miles, we pushed over on our ACLS needles guidance. By 2.7 miles, we were directed to break out, to climb to 2,000 feet, and to turn left to the downwind.

We queried the status of our configuration when we heard the abnormal 2,000-foot directive. We were told to remain dirty because we were being sequenced to follow the last Prowler, which would push in two minutes. We still could make this work; we were looking at max-trap fuel abeam.

### Add some Styrofoam peanuts.

Established on our downwind heading, we found ourselves extended to 20 DME from the ship. The next call was to climb to 5,000 feet on a vector and to switch to marshal control.

Our response was, "Understand you're remarshaling us?" The controller replied in the negative. We told the controller we were cleaning up on our climb to fall in line.

The vectors continued for 270 degrees, with a descent back to 1,200 feet. The call for us to dirty-up came early—at 15 miles. An indicator that the controllers were overwhelmed came when they made the "stay clean through 10" call, followed by a "confirm dirty" at eight miles. We remained dirty from 15 miles in.

We calculated our fuel to be tank state on the ball call at three-quarter mile. The recovery tanker quickly rendezvoused to the hawk position by the time we reached five miles. Our focus remained on the original task of recovery.

### The lid starts to close.

We flew our pass to the flight deck, but the hook skipped the 3- and 4-wires. With that phase behind us, we found our tanker in a perfect hawk position. As I extended the probe, I glanced at the fuel—1,000 pounds over barricade fuel state. "This still is possible," I thought.

After a couple of practice attempts, we found our home in the basket. We were going to receive 3,000 pounds—good.

### Is that the sound of packing tape?

Unfortunately, the tanker already had transferred his fuel out of the air-refueling pod. Because of this, we asked for fuel faster than they could transfer. We essentially went through three "green light" periods to pick up 2,500 pounds. After leaving the tanker, we confirmed a priority fuel state and prepared for our recovery vectors.

We calculated the fuel to be just inside priority state on the ball. We told the boat our plan was to make one approach, and, if not successful, we would accept a tight vector for one more look before again reaching tank state. We delayed our dirty-up until the base leg and intercepted glide slope and azimuth in the turning descent.

*I raised the gear and flaps and accelerated through 250 knots in the climb, then we felt an abnormal, light buffet.*

The second tanker assumed the hawk, while we prepared for our return to the ship. With solid LSOs and 30 knots down the angle, we recovered without raising the net midcourt. An hour and 45 minutes later, our 45-minute respot was complete.

LCdr. Ohman flies with VF-2.

Photo by Sgt. Brook R. Kelsey. Modified.

By LtCol. Joel R. Powers, USMC

The following story unfolded on a benign spring day in the Mediterranean during Operation Desert Shield. Our squadron's MEU covered contingencies in the Med as the force buildup continued toward a conflict in the desert. With the clouds of war brewing on the horizon in the Persian Gulf, the weather off the coast of Naples was CAVU. The LHD I was stationed aboard steamed north for an upcoming exercise in France.

I was a third float captain with about 1,300 hours of flight time in the venerable CH-46E aircraft. As a young mission commander and a functional-check pilot, I was at the top of my game. Confident in my flying abilities, I knew the aircraft and its systems as well as anyone in the squadron, and I enjoyed shipboard flight operations. I had been blessed during two prior 6th Fleet deployments in the same squadron with tremendous command and JO leadership. They consistently emphasized conservatism and adherence to crew-coordination basics, particularly around the boat. Those basics would save several lives on what proved to be a not-so-benign day.

I was scheduled with a new HAC, an aggressive young pilot with solid stick and rudder skills, who needed hours as HAC to advance toward section leader. The game plan for our mission was simple: I was to sign for an aircraft, conduct a quick AFCS check off the stern of the ship, land aboard mother to sign the aircraft safe for flight, and concurrently sign it over to my copilot for a quick PMC round-robin to Capodichino. Our mission was to take a number of "brig rats" to the beach for disposition. To make our assigned launch time for the PMC run, we planned an early launch for the test portion. It was a routine profile as boat ops go. The aircraft was signed off on time, and our preflight was thorough and uneventful—the start of a great day for testing and PMC.

Our hover checks off the stern progressed smoothly, and we checked off the required blocks on the test card. After 15 minutes of hover work, we were content the aircraft was sound and landed to sign the safe-for-flight paperwork and the new Part A. Knowing my copilot would benefit from right seat HAC time, I got the CO's approval to conduct the test flight from the left seat to save time and effort before the PMC run. As we waited on spot seven for our passengers to arrive from the bowels of the island, we topped off with fuel and prepared the aircraft.

# DON'T SLICE FOR LIFE

About five minutes before our scheduled departure time, the pax emerged from the island, eight of them in handcuffs, escorted by combat cargo and a lone ship's master-at-arms representative. As our crewchief maneuvered to greet them at the rear of our helo, I thought it might be a good time to let our young HAC exercise a little judgment.

"Should we fly over water with passengers in handcuffs?" I asked. I knew the answer, but wanted to give him a chance to exercise some right seat leadership. He never had experienced this type of scenario, and he briefly was stumped.

Our perceptive crewchief quickly picked up on the game and chimed in with, "I'm not sure; I've never had passengers in cuffs before."

I echoed those sentiments, and we began a 10-minute dialogue, not only within our crew but also with the tower flower, regarding the pros and cons of conducting over-water flight with passengers in handcuffs. We had plenty of fuel, and the discussion was constructive for everyone, so I opted to let it play out; Naples could wait for a few minutes and so could the boss. Eventually, our stalwart HAC made the right decision; the handcuffs were removed for the flight, and we called for winds and breakdown with 12 souls and 1+20 for fuel.

The HAC was on the controls in the right seat as the yellowshirts held up the chocks and chains for the count. After a solid count, I gave the HAC a "two on" call and made one last visual sweep of the flight-deck environment before lifting. Spots two, four, five, and six were clobbered, and the forward and aft bone were filled with helos forward and AV-8s abeam us in the aft bone. The normal complement of flight-deck troubleshooters and deck crew was in sight and out of harm's way, so my gaze shifted inward.

As we lifted on LSE signal, squadron SOP called for the PAC to bring the aircraft to a stable hover. The PNAC checked all the cockpit gauges, called out the hover torque, and cleared the PAC to slide. Our SOP stated, regardless of LSE signals to move off spot, the PAC would not slide until the PNAC had given the verbal check and "cleared to slide" call.

Time and space merged as our HAC commenced a non-cleared cyclic slide at the LSE's urging. Chatter from the boss and the tower flower came over the radios at the same time, and I heard a significant, yet brief, muffled noise from the rear of the aircraft. The noise sounded like the familiar slamming of a crew door after the chocks are pulled, before shore-based taxiing. I called out to stop sliding. I glanced through the cockpit entrance to see our crew chief walking rearward from the crew-door area, in what appeared to be a very nonchalant manner.

Attributing the noise to an unmentioned adjustment on the crew door, I swung my gaze inward once more to the cockpit gauges. I noticed the movement of flight-deck personnel from the front of the ship toward our aircraft and another insistent signal from our LSE to slide.

The HAC called out "sliding left" and applied cyclic pressure and power to clear the deck—all without a clearance from me. I came on the controls to arrest the slide just as I saw our utility-hydraulic pressure at zero. I realized something other than a crew door had contributed to the loud noise seconds earlier.

I called out, "I have the controls," as I stopped our slide with the left mainmount over the deck edge. When I began a slide to the right and down, to place the aircraft back on spot, I saw what now looked like a major refugee movement of flight-deck personnel running toward the aircraft. The crash vehicle was revving up and headed our way.

As I landed the aircraft, I sensed a pronounced increase in the overall vibration level coming from the rear of the aircraft. I called the tower, told them we were having a utility-hydraulic problem, and we would be conducting a no-APU shutdown. I asked tower for favorable winds as I called for shutdown—the HAC did not respond. Guarding the collective with my leg, I risked cross-controlling the aircraft cyclic with my left hand as I reached down to pull back the ECLs.

I heard insistent calls of "Shut it down, shut it down!" from our crew chief. The rotors slowed and rotor rpm dropped through 88 percent. The electrical power dropped off-line because our generators no longer were effective. I asked the crew chief to manually drop the ramp and to get our passengers out the back. We watched as the rotors slowly decelerated, and thoughts of a potential tunnel strike filled our minds.

When 12 to 15 seconds had elapsed, I checked the cockpit to make sure the remaining steps associated with a utility-hydraulic failure had been completed. We watched no less than 50 to 60 deck personnel, troubleshooters, and firefighters, congregate around the nose and port side of the aircraft. Our crew chief said

we had external damage on the starboard aft pylon that appeared to be related to some type of explosion. Things had slowed down enough that I wondered what actually had occurred.

With the rotors finally stopped, the HAC and I emerged from the cockpit to find that our 200-cubic-inch accumulator (the precharge mechanism for starting our APU) had catastrophically failed near the bottom. The accumulator, which is pressurized near 3,000 psi, had broken free of both its mounts near the bottom of the port side aft pylon. It then shot up into the upper flight controls, causing severe damage to the thrust plate, collective-pitch links, and swashplate assembly. The accumulator then fell back into its normal compartment and came to rest against the still-turning, aft vertical shaft.

The force of the explosion had blown an eight-inch-diameter hole in the right side aft pylon and had showered the aft bone with metal debris. The only damage was to our aircraft. Fortunately, we had not committed to the slide and subsequent forward flight.

Postflight QA analysis showed that had we committed to the slide and forward flight, we most likely would not have been airborne for long. We would have lost control because of beveling and failure of the aft vertical drive shaft.

This event was sobering for an experienced guy like me. Suddenly, my 1,300 hours didn't seem like very many. I questioned myself hard on whether I had done things right or somehow had contributed to a mishap. As I sorted through the events, it dawned on me that had we launched on time, our failure would have occurred feet wet, at least 10 miles from the ship, and the day might not have ended as well as it did for our flight crew and passengers. We survived with some well-learned lessons I carry with me to this day.

The best preflight in the world may not save your life, but, this is not an advertisement to blow off preflights. Rather, it is an observation and an appeal to conduct every preflight like it could be your last—this nearly was mine. A subsequent EI showed a hairline fracture on the interior of the accumulator that was not visible before flight. This fracture easily could have been on the outside and out of sight or in plain view. Take the time to conduct a thorough preflight every time.

Staying alive in this business doesn't depend on any one skill, piece of knowledge, or preflight routine. It is about knowing your aircraft systems and EPs cold, knowing your SOPs cold and religiously adhering to them, effectively managing the SA, and properly coordinating the entire aircrew. Respond consciously, yet almost instinctively, as a team to trouble indications from whatever the source.

In this instance, for a number of reasons, our aircrew coordination had broken down at a critical phase of flight. Close to the deck, while launching with a major system malfunction, is not a good time to be discussing the finer points of when to slide or when not to slide. We were fortunate this was not a night evolution, and the damage was visible to those outside our aircraft. The deck personnel provided an additional visual cue as to the extent of our problems. It was not until we were well into the shutdown sequence that our LSE gave us a shutdown signal, and it was in response to a signal from the HAC.

Cross-controlling the aircraft probably was not the best way to handle our shutdown. But, given the efforts of the HAC to get airborne, as I quickly tried to figure out what had happened, it was the best option I could come up with. My SA was heightened by the urgency displayed by the "herd" of well-meaning flight-deck personnel, who ran toward us—not away from us—at a critical juncture in our flight. Our flight-deck personnel do a tremendous job every day to keep us out of harm's way. I am thankful for their professionalism, and I encourage all who fly off the boat to make them feel like the important part of the team that they are.

There was little response from my HAC during the initial phases of this event, other than a repeated effort to get airborne, despite no verbal cockpit clearance to do so. For every helicopter crew who flies off a boat and reads this article, I cannot stress enough, "Never slide until gauges and power are checked, and you are cleared to slide by the PNAC." I'm certain it saved my life and the life of my crew. I'm not the first, nor will I be the last, to reap the benefits of this pearl of wisdom.

As I return to a flying billet from a recent Pentagon tour, these lessons remain as fresh in my mind today as they did 10 years ago. I am now an "old guy," and, as I look around the ready room at all the "young guys" who can chew nails and fly in a tornado, I am reminded of my coming of age as an aviator. Special thanks to all those "old guys," whose advice and gouge served me well in an unexpected pinch.

LtCol. Powers is with HMM-266.

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Thanks