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Approach



**COLD
WET *and*
DANGEROUS**

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

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Editorial



Starting in late June I began receiving phone calls and emails asking, “Where’s the raven?” I discovered that a lot of Approach readers have started a competition in their units to see who can find the raven on the cover first. However, for that issue, we forgot to tell everyone we left it off intentionally.

Normally there’s an aircraft on the cover, but this issue focused on stress management. We used the silhouette of a man with a dark red gradient background to emphasize the weight stress can put on someone. With so little variation in color to work with, our art director was at a loss for how to properly hide the famous bird. While no one was upset and many people used it to play jokes on their shipmates, I apologize for confusing some of you. The raven is back on the cover, so let the games continue.

This issue focuses on cold weather survival. Two articles look at ways to survive cold water and prevent hypothermia. One squadron took a closer look at their cold-water survival gear and discovered they were lacking some of the gear necessary for survival in cold weather. Could you survive in the cold weather after a crash or ditch? Do you know if your unit has the neces-

sary equipment and survival gear to give you the best opportunity to survive until being picked up? As winter arrives, take the time out to ensure you’re prepared for the cold weather ahead.

Finally, check out the feature on our new motorcycle safety magazine. It contains information on safety gear and the latest news in motorcycles. If you or anyone in your unit is a rider, you can request a copy of the magazine by emailing me or subscribing.

As always your submissions and stories are welcome for the next issue via SAFE-Approach@navy.mil.

Nika Glover

Nika Glover

Editor, Approach and Mech magazine.



Due to the nature of the of the May-June issue the Approach staff intentionally left the raven off the front cover. However, the raven is back in place and the search can continue.



1000 and 3

BY CAPT TYLER BORING

I was the copilot for the lead aircraft in a section of AH-1W Cobras. We were conducting an ordnance flight in support of JTAC training at the range. The flight was scheduled to land back at New River two hours prior to sunset, and the weather was anticipated to degrade to IFR an hour after sunset.

Upon completion of the ordnance event, we had to go to Marine Corps Air Station (MCAS) Cherry Point to de-arm our aircraft. A gun had jammed, which required extensive troubleshooting and maintenance to clear. We delayed as a section and determined everybody's crew day in order to plan for the evening. After maintainers had worked for an hour on our aircraft, we decided to send Dash 2 home as a single while we waited with our aircraft until maintenance was complete.

The weather at MCAS Cherry Point remained VFR, but the forecast at New River was already beginning to degrade (the reported ceiling was at 800 feet). There is a standing order that we can't fly with night vision goggles in IMC conditions. We were looking at the time and trying to figure out the latest we could take off and still make it into New River without needing the goggles. We anticipated that we'd have until 20 minutes after sunset. We spoke to the pilot of an aircraft that had just arrived from New River. He reported a temperature and dew point spread of one degree approximately 30 minutes prior to sunset.


Maintenance ran right up to the time we had scheduled ourselves to make it back to New River. It was just about sunset, giving us 20 minutes to make a 17-minute flight. There was a three-minute delay holding short of the runway waiting for an aircraft to land. We had our goggles out in the cockpit just in case. As we were holding short and assessing the time, we still believed we would make it back. Ceilings

started at 1000 feet at MCAS Cherry Point, gradually decreasing as we approached New River.

New River ATIS was reporting 600 feet as we were approaching course rules from the North East. The weather had a very sharp change in visibility and ceiling as we hit our first reporting point. It became readily apparent we were going to have to use our goggles to get into New River. We decided to continue because we were familiar with the area. We wanted to come in over a river that was obstacle-free and that we could follow all the way in to the airfield. We continued to the airfield and landed without event, but in violation of a standard operating procedure.

On debrief we discussed how we had painted ourselves into a corner. We knew the temperature and dew point spread of one degree with sunset approaching. We should have known that the temperature would easily decrease that one degree. When we were estimating the latest time we could land without goggles, we were using a rule of thumb that works well under clear sky conditions.

When you look at a solar illumination chart, it shows illumination for clear sky all the way to overcast, and there is a drastic decrease in illumination. Our "20 minutes after sunset" was more like 15 minutes with the low visibility and overcast ceilings.

Our decision to continue into the airfield was the safest option that we had available. If we had turned around to Cherry Point, we would have been met with numerous towers potentially obscured by the rapidly degrading weather. In the end when minutes start adding up and you start butting up against your timeline, plan on some unexpected minutes. The best option is just to hang it up for the night and fly another day. 

CAPT BORING FLIES WITH HMLA-269.

Lessons Learned From a Polar Plunge

BY LT J. TREVOR DIMARCO

Recently, VAQ-130 aviators dove into the chilly waters of Puget Sound to explore two equally accepted axioms. First, cold water makes you cold. Second, dry suits keep the body warm. Our “polar plunge” focused on the risks of flying over cold water and the options available to mitigate them. After the exercise we purchased better equipment. The training we conducted increased our familiarity with survival gear. The training also helped us make informed decisions about what to wear and carry on overwater flights.

The Plunge

The day of our polar plunge was typical for December in the Pacific Northwest, with an air temperature of 55 degrees and a water temperature of 49 degrees. Two aircrew members wore dry suits. One wore a dry suit with a liner and heavy neoprene gloves. Two unfortunate souls wore only their flight suits. All of the plungers treaded water, swam a short distance, and climbed into a life raft.

We did not leave our subjects in the water long enough to validate the OPNAV functional exposure limits, but 15 minutes was long enough to prove that 49 degrees is profoundly cold. Our original plan was to



have the flight suit-only plungers emerge from the water and start a fire on the beach. However, those two aviators, already of questionable utility, were shivering so much that we humanely provided lighter fluid.

The Training

Our squadron invited LT Marty Wright (an aerospace physiologist) and our PRs to lead survival-gear refresher training around the fire. Naturally, we began with discussion of fire-starting options. Several aircrew members carried blast matches as a simple means of creating a spark. Wright suggested dryer lint or a birthday candle as lightweight and effective tinder. We then practiced using our survival radios and seat beacons while reviewing SAR procedures. A recap of first aid procedures led to an inventory of the seat pan and medical kit. The punch line is that you shouldn't expect to open the seat pan and enter an REI store. Since a seat pan may be difficult to access after an ejection, particularly into the water, Wright suggested adding a combat dressing to our vest.

Starting a fire or treating a wound requires manual dexterity. This led to a conversation about gloves. A few of our aircrew own cold and wet protective flyer's gloves, which look like an insulated versions of the standard green flight gloves. However, no one has ever worn them in the aircraft because they are bulky and awkward. All aircrew should receive inflatable anti-exposure

mittens, which can easily fit into a G-suit pocket. They keep your hands reasonably warm, but they are awkward in the water and you must remove them to use your hands for almost any task. Our squadron elected to purchase neoprene gloves to carry in our G-suits or vests. They provide a solid compromise of dexterity and warmth, even when wet.

On the broader topic of what to wear for cold water survival, our aircrew has three different types of dry suits. All aircrew should have dry suit liners, as well as some form of thermal underwear. The squadron has both the standard long johns and dry fire tops purchased for flying in Afghanistan. We have a plethora of clothing options, each of which has a different impact on survival times, as well as heat stress and function in the cockpit.

The Risks

Choosing what to wear requires analysis of the risks for a particular flight. At Naval Air Station Whidbey, our most common overwater flights take us to the W-237 off of Washington's Olympic Peninsula, where the average winter water temperature is 50 degrees. The Port Angeles Coast Guard Station provides Alert 30 search and rescue. The distance and terrain they traveled to reach the W-237 yields projected response times from 75 to 90 minutes, depending on weather and the location of the survivor.

Assuming it could take at least 30 minutes to locate



and rescue a survivor that yields a potential exposure of 120 minutes. A quick glance at the SAR TACAID water chill chart indicates that without a dry suit, time results in a 50 percent chance of dying. Intuitively, climbing into the raft would reduce exposure and increase survival times, but we will assume that either injury or malfunction prevents that.

Our squadron SOP reflects these rescue and survival times by requiring dry suits when the water is below 60 degrees and aircraft are operating more than 25 nautical miles from shore.

To determine an appropriate combination of dry suit, liner and underwear for a specific water temperature, there are two notable sources: NAVAIR and OPNAV. NAVAIR 13-1-6.7-2 (Aircrew Personal Protective Equipment) provides a simple answer in Table 5-9. The same table should appear in the ALSS NATOPS when it is released. For water temperatures below 60 degrees, the table prescribes a dry suit over a liner and long underwear.

For aircrew who are looking to prevent heat stress and bulk in the cockpit by delving deeper into the tables, OPNAV 3710.7U, Figure 8-1, provides a matrix of body



(U.S. Navy photo by Mass Communication Specialist 2nd Class John Hetherington/Released)

U.S. Sailors with VAQ-130 test their cold water survival gear during an exercise designed to teach them about the limits of their survival gear.



(U.S. Navy photos by Mass Communication Specialist 2nd Class John Hetherington/Released)

TOP and BOTTOM: U.S. Sailors participate in a polar plunge to test their squadron's cold weather survival skills. The Sailors tested their cold water gear by taking a plunge in cold water and testing the amount of time it took to be rescued while in gear. The process taught them about the strengths and weaknesses of their quipment. They were able to determine what type of equipment was best for certain conditions and what gear they needed to purchase for the future.

fat, water temperatures and flight clothing that yields functional exposure time in minutes. For an example, I will use myself. A flattering estimate of my body fat percentage puts me at 17 percent. If we read down the left side of the table, we find the 15-18 percent

body fat section and the 50 degrees water row.

Reading across that row shows that my CWU-86 alone affords a maximum of 105 minutes of protection, which is less than our estimated rescue time. A liner extends that protection to 195 minutes, while the long underwear yields 225 minutes. Both exceed our rescue time although they are less than the NAVAIR table prescription of both a liner and long underwear. A pragmatic reading of the data indicates I could wear a dry suit and liner with a reasonable expectation of survival. This combination would save me the heat stress of long underwear in the cockpit while still mitigating the exposure risk.

VAQ-130's polar plunge proved that cold water is cold. It also drove us to reacquaint ourselves with our survival gear and purchase a few additional items. Most importantly, an examination of rescue times, heat loss and environmental factors allowed us to analyze the risk involved in flying over cold water and make informed decisions about how to dress for survival. 🦅



LT DIMARCO FLIES WITH VAQ-130

SURVIVING THE COLD

BY LT JON HILL

On January 8th, 2014, a MH-53 crashed into the frigid waters off the coast of Virginia. Tragically, three of the five crew members were killed. The following week, an F/A-18 crashed into the same coastal waters. The pilot ejected and was unable to enter his life raft. He was hypothermic following his rescue.

These two events highlight the dangers of operating aircraft over cold water and have brought a renewed focus on cold water survival among the naval aviation community.

With water temperatures below 50 degrees Fahrenheit or when the wind-chill-corrected outside air temperature is 32 degrees Fahrenheit or less, OPNAV 3710.7U mandates aircrew wear anti exposure suits.

The two main dry suits issued to aircrew are the CWU-86 and the OTS-600. Recce features of the CWU-86 include a horizontal zipper that closes around the waist. The OTS-600 can be easily identified by the diagonal zipper which closes across the chest. Although these suits are similar in purpose, there are very important differences in survival time and time of useful consciousness once exposed to cold water. In addition to these dry suits, air-

crew members are issued mesh liners and long underwear. The green and white mesh 23/P liner is worn beneath the CWU-86 dry suit. The standard, waffle-weave, cotton, long underwear 43/44P can be worn under either the CWU-86 or OTS-600 dry suits. These two products have a profound effect on survival time in the water.

During every flight, the aircrew brief search-and-rescue procedures and on-scene-commander responsibilities. We hear it regularly, but what are the details of the rescue operation? Consider the following example when calculating the estimated time aircrew can expect to spend in the water and, most importantly, estimating how long it will take the trauma unit to arrive.

Say the rescue base is located 75 nautical miles from the mishap aircrew position, the SAR helicopter crew is on stand by and the MH-60T "Jayhawk" is the closest available rescue asset. We will also assume the trauma unit is at the rescue base. How long could you survive in the frigid water? From the initial mayday call on guard or through ATC to the district SAR office, it's five minutes. From the district SAR dispatch to the MH-60T takeoff off, it's 30 minutes. From the rescue base, 75 nautical miles at 135 knots ground speed, to the mishap location, it's 34 minutes. Single unit "Victor Sierra" search pattern for four square miles and rescue hoist, it's 30 minutes. Collectively, from the time you enter the water to the time the rescue swimmer hoists you out is one hour and 39 minutes. The en route time from mishap location to the trauma unit is 34 minutes. Given these estimates, the time from entering the water to arriving at the hospital is two hours and 13

minutes. These times are minimums and can increase due to the weather and extended search times.

Two and a half hours, in a perfect scenario, from the time of your mishap to medical care is significant; just think, how many times has the mission you've been conducting taken you well over 75 miles away from the primary SAR base?

Chapter 8 of 3710.7U, Aeromedical and Survival, contains a chart entitled Cold water immersed functional exposure limits by type of exposure protection. Refer to figure 5. This chart shows varying combinations of dry suits and undergarments and provides estimated

suit, aircrew functional time is nearly doubled to around 150 minutes. The OTS-600 dry suit by itself in the same conditions has a functional time of less than 135 minutes. Note the impact of the inner surface fleece of the OTS-600, functional time is increased 45 minutes compared to the CWU-86. Adding in the 43 and the 44/P cotton waffle-weave long underwear to the OTS-600 extends functional time to about 285 minutes. We can clearly see the benefit of wearing liners as well as the increased level of protection offered by the OTS-600 dry suit and long underwear combination.

The estimated functional time is great information,

“Let’s face it, if you’re unconscious in a normal sea state, your chances of survival begin to approach zero.”

“functional time” based off body-fat percentages and water temperatures. Functional time is the predicted time of useful consciousness, but let’s face it, if you’re unconscious in a normal sea state, your chances of survival begin to approach zero. For our analysis of predicted survival times we will use a 15-18 percent body fat, 45 degree Fahrenheit water temperature and dry suit and undergarment combinations typically worn by VFA aircrew. Starting with the CWU-86 dry suit only, in 45 degree water we see the expected functional time of aircrew is less than 90 minutes. When we add the 23/P, green and white mesh liner to the CWU-86 dry

but let’s take it a step further and compare the information we know about the SAR effort with expected survival times in cold water. From there, we can determine where survival time equals estimated rescue time. We’ll represent this as a distance that aircrew can use when planning over-water flights. Our goal will be to find out how far a rescue helicopter can fly before a survivor loses consciousness. The fixed time items for a rescue effort are the dispatch (five minutes), takeoff (30 minutes) and estimated search and hoist time (30 minutes), which totals 65 minutes.

We will first take a look at the CWU-86 dry suit

since, in the above example, we know it has the shortest functional time compared to the OTS-600.

In the above scenario, a survivor wearing the CWU-



The two main dry suits, shown above, are issued to aircrew to help prevent hypothermia. The green and white mesh 23/P inner liner is worn beneath the CWU-86 dry suit. The standard, waffle-weave, cotton, long underwear 43/44P can be worn under either the CWU-86 or OTS-600 dry suits. These products have a profound effect on survival time in the water.

86 dry suit with no liner has an estimated functional time of less than 90 minutes. With 65 minutes of fixed time items, and 90 minutes of functional time we are left with 25 minutes of transit time for the rescue helicopter. At 135 knots ground speed, the MH-60T will cover 55 nautical miles in 25 minutes. Think about the implications of this situation. How often have you flown over water and been greater than 55 nautical miles from your primary SAR base? In theory, even if you survive your mishap, are able to remain afloat, and a near flawless rescue effort is made, if you are outside of 55 nautical miles while wearing a CWU-86 dry suit with no liner, your chances of surviving 45 degree water are nearly zero.

There is a more optimal situation, and your liner is the answer. The functional time for the CWU-86 dry suit and 23/P liner combination is less than 150 minutes which gives the rescue helicopter 85 minutes of travel time.

That equates to nearly 193 nautical miles, a much preferred situation. Figure 6 is a graphical overlay of the W-72 working area used by aircraft from NAS Oceana and NAS Norfolk.

The red rings represent the CWU-86 dry suit with no liner and are an estimated distance of 55 nautical miles from the SAR base while the orange rings represent the OTS-600 with no liner and are an estimated distance of 155 nautical miles from the SAR base.

The northern red ring and the northern orange ring represent the distance where survival time equals rescue time if SAR assets are launched from NAS Norfolk.



The southern red ring and southern orange ring are distances from USCG station Elizabeth City, N.C. With this graphic you can clearly see, if aircrew are wearing a CWU-86 dry suits with no liners, their chances of surviving a cold water immersion in 1-3B eastward are nearly zero and the OTS-600 with no liner only covers you through half of 3C and 2D.

In months when the risk of a post-mishap, cold-water immersion are high, mission commanders must use ORM, especially for night flights over open water or when water temperatures are below 50 degrees Fahrenheit. There is also the opportunity for safety depart-

ments to reexamine survival gear and ensure aircrew are provided with the most up to date equipment, including vest-mounted orange rescue streamers for increased visibility, HAU-12/P exposure gloves and the HGU-32/P exposure hood.

Your ability to survive in cold water after a mishap rests solely on thorough preparation of your survival gear and an understanding of the benefits your gear can provide. Next time you are going on an over-water mission, take the extra time to put on your liner. 🦅

LT HILL FLIES WITH VAQ-131

COLD WATER IMMersed FUNCTIONAL EXPOSURE LIMITS BY TYPE OF EXPOSURE PROTECTION

		CWU-86 OR CWU-62/P SERIES ¹				MULTICLIMATE PROTECTION SYSTEM ¹						OTS-600 ^{1,2}	
		86 or 62/P	86 or 62/P, 23/P liner	86 or 62/P, 43, 44/P underwear	86 or 62/P, 23/P liner, 43, 44/P underwear	86 or 62/P, MCP LH underwear	86 or 62/P, MCP MH underwear	86 or 62/P, MCP LH & MH underwear	86 or 62/P, MCP MH liner	86 or 62/P, MCP MH liner & LH underwear	86 or 62/P, MCP MH liner & LH underwear	OTS	OTS & 43, 44/P underwear
CWU-86 or 62/P Dry Suit		X	X	X	X	X	X	X	X	X	X		
OTS-600 Dry Suit												X	X
CWU-43-44/P Underwear				X	X								X
CWU-23/P Liner			X	X	X								
MCP Ltwt Underwear					X	X			X				
MCP Mdwt Underwear						X	X						
MCP Hvywt Liner								X	X	X			
	Water Temp °F												
8% Body Fat	35	≤ 30	≤ 40	≤ 75	≤ 150	≤ 40	≤ 90	≤ 105	≤ 135	≤ 150	≤ 240	≤ 40	≤ 165
	40	≤ 30	≤ 75	≤ 90	≤ 195	≤ 75	≤ 120	≤ 135	≤ 165	≤ 180	≤ 300	≤ 75	≤ 195
	45	≤ 30	≤ 90	≤ 120	≤ 255	≤ 90	≤ 150	≤ 180	≤ 210	≤ 225	≤ 360	≤ 90	≤ 225
	50	≤ 40	≤ 120	≤ 165	≤ 330	≤ 120	≤ 210	≤ 240	≤ 270	≤ 285	≤ 340	≤ 120	≤ 285
	55	≤ 40	≤ 165	≤ 225	≤ 340	≤ 160	≤ 300	≤ 315	≤ 300	≤ 240	≤ 240	≤ 150	≤ 345
	60	≤ 105	≤ 240	≤ 315	≤ 360	≤ 225	≤ 320	≤ 360	≤ 360	≤ 360	≤ 360	≤ 225	≤ 360
11 to 14% Body Fat	35	≤ 30	≤ 40	≤ 75	≤ 150	≤ 40	≤ 90	≤ 105	≤ 135	≤ 150	≤ 240	≤ 40	≤ 165
	40	≤ 30	≤ 75	≤ 90	≤ 195	≤ 75	≤ 120	≤ 135	≤ 165	≤ 180	≤ 300	≤ 75	≤ 195
	45	≤ 30	≤ 90	≤ 120	≤ 255	≤ 90	≤ 150	≤ 180	≤ 210	≤ 225	≤ 360	≤ 90	≤ 225
	50	≤ 40	≤ 120	≤ 165	≤ 330	≤ 120	≤ 210	≤ 240	≤ 270	≤ 285	≤ 340	≤ 120	≤ 285
	55	≤ 40	≤ 165	≤ 225	≤ 340	≤ 160	≤ 300	≤ 315	≤ 300	≤ 240	≤ 240	≤ 150	≤ 345
	60	≤ 105	≤ 240	≤ 315	≤ 360	≤ 225	≤ 320	≤ 360	≤ 360	≤ 360	≤ 360	≤ 225	≤ 360
15 to 18% Body Fat	35	≤ 30	≤ 40	≤ 75	≤ 150	≤ 40	≤ 90	≤ 105	≤ 135	≤ 150	≤ 240	≤ 40	≤ 165
	40	≤ 30	≤ 75	≤ 90	≤ 195	≤ 75	≤ 120	≤ 135	≤ 165	≤ 180	≤ 300	≤ 75	≤ 195
	45	≤ 30	≤ 90	≤ 120	≤ 255	≤ 90	≤ 150	≤ 180	≤ 210	≤ 225	≤ 360	≤ 90	≤ 225
	50	≤ 40	≤ 120	≤ 165	≤ 330	≤ 120	≤ 210	≤ 240	≤ 270	≤ 285	≤ 340	≤ 120	≤ 285
	55	≤ 40	≤ 165	≤ 225	≤ 340	≤ 160	≤ 300	≤ 315	≤ 300	≤ 240	≤ 240	≤ 150	≤ 345
	60	≤ 105	≤ 240	≤ 315	≤ 360	≤ 225	≤ 320	≤ 360	≤ 360	≤ 360	≤ 360	≤ 225	≤ 360
19 to 26% Body Fat	35	≤ 30	≤ 40	≤ 75	≤ 150	≤ 40	≤ 90	≤ 105	≤ 135	≤ 150	≤ 240	≤ 40	≤ 165
	40	≤ 30	≤ 75	≤ 90	≤ 195	≤ 75	≤ 120	≤ 135	≤ 165	≤ 180	≤ 300	≤ 75	≤ 195
	45	≤ 30	≤ 90	≤ 120	≤ 255	≤ 90	≤ 150	≤ 180	≤ 210	≤ 225	≤ 360	≤ 90	≤ 225
	50	≤ 40	≤ 120	≤ 165	≤ 330	≤ 120	≤ 210	≤ 240	≤ 270	≤ 285	≤ 340	≤ 120	≤ 285
	55	≤ 40	≤ 165	≤ 225	≤ 340	≤ 160	≤ 300	≤ 315	≤ 300	≤ 240	≤ 240	≤ 150	≤ 345
	60	≤ 105	≤ 240	≤ 315	≤ 360	≤ 225	≤ 320	≤ 360	≤ 360	≤ 360	≤ 360	≤ 225	≤ 360
≥ 27% Body Fat	35	≤ 30	≤ 40	≤ 75	≤ 150	≤ 40	≤ 90	≤ 105	≤ 135	≤ 150	≤ 240	≤ 40	≤ 165
	40	≤ 30	≤ 75	≤ 90	≤ 195	≤ 75	≤ 120	≤ 135	≤ 165	≤ 180	≤ 300	≤ 75	≤ 195
	45	≤ 30	≤ 90	≤ 120	≤ 255	≤ 90	≤ 150	≤ 180	≤ 210	≤ 225	≤ 360	≤ 90	≤ 225
	50	≤ 40	≤ 120	≤ 165	≤ 330	≤ 120	≤ 210	≤ 240	≤ 270	≤ 285	≤ 340	≤ 120	≤ 285
	55	≤ 40	≤ 165	≤ 225	≤ 340	≤ 160	≤ 300	≤ 315	≤ 300	≤ 240	≤ 240	≤ 150	≤ 345
	60	≤ 105	≤ 240	≤ 315	≤ 360	≤ 225	≤ 320	≤ 360	≤ 360	≤ 360	≤ 360	≤ 225	≤ 360

Note 1: All clothing configurations include aircrew safety boots, standard wool socks, HGU-84/P helmet, CWU-27/P flight coverall

Note 2: OTS ensembles are configured for tactical flight and also include CWU-33/P survival harness, PCU-56/P toran harness, CSU-138/P anti-G suit

3710-F04b

Just Another Cross-Country Weekend

LT BECCA SMITH

Jet-setting is one of the highlights of advanced helicopter training, and one cross-country weekend, we found ourselves in Atlanta, Georgia. It was Sunday morning and we were fat, dumb and happy. It had been a successful, albeit rainy, weekend and we were three short flights from home. A large storm was west of Atlanta and north of South Whiting Field (KNDZ), so we planned to head south to avoid it and then west to KNDZ.

Everything looked good on preflight and start-up. I was smug because the other two crews we were with had to service their hydraulic and transmission systems. That's when the holes started lining up in the proverbial block of Swiss cheese.

After receiving ATIS and calling for clearance, we switched to ground to inform them we would be requesting a present-position takeoff. They switched us to Tower and I requested takeoff. Crickets. I requested again. Crickets. I switched back to Ground. Crickets. By this time, my comrades had finished their servicing and had started up. I switched to UHF and contacted them on the discrete frequency we had discussed.

After a series of attempts, we determined that we could transmit on VHF, but not receive. I asked another pilot to inform Tower that our aircraft would be shutting down to troubleshoot and to cancel our clearance. I

also told them not to wait on us and that we would see them back at KNDZ.

After shutting down, I called maintenance and the CDO. Since I had a working UHF, they both recommended I plan a route that would accommodate UHF-only communications. My students and I pulled out the charts and approach plates. The only route we could find was to head west to Montgomery (KMGM) and then south to KNDZ.

I was apprehensive because ceilings were forecasted to remain low for the duration of the flight as a result of the storm. To get to KMGM, we had to fly IFR for the entire route, and the last thing I wanted to do was go lost comm while IMC. We discussed the possibility but decided that we had no reason to believe that the UHF would stop working. After all, they were two completely separate systems. We filed IFR, started up, got clearance and took off using the UHF radio.



Shortly after takeoff, we found ourselves squarely in the clouds with heavy rain. No big deal. The mighty TH-57 is an all-weather aircraft. As we continued west, we started having issues communicating with approach on UHF. I asked one of my students to look up a VHF frequency for approach on the off chance our VHF fixed itself. We plugged in the frequency and it worked. There was no avenue of fame, yet.

I explained to the controller the nature of our radio issues. He gave us a handful of UHF and VHF frequencies to try. The only one that worked was the VHF frequency we had initially used to contact him. My students and I began discussing what we would do if we lost contact with him and whether we should turn back to Atlanta (KPDK) or continue on to KMGH.

As I was about to inform approach that we wanted to return to KPDK, approach asked us if we were in a turn. I looked at my RMI and my copilot's RMI: they were steady. My observer was following along in the

back with fore flight and informed us it looked like we had completed a 270 degree turn. He instructed us to look at our magnetic compasses and sure enough, our magnetic compasses were showing a 120 degree difference in heading. We manually slaved the RMIs and made several attempts at troubleshooting. The RMIs began spinning.

We were still IMC, had unreliable radios and appeared to have lost our directional gyro. I thought we should declare an emergency, and my students agreed. My copilot pressed the magic button, and I declared an emergency with approach. I told him the nature of the emergency and requested vectors back to KPDK. We had only been airborne for about 30 minutes, and I assumed KPDK was our closest and best option.

The weather had been fine when we took off and had been forecasted to stay the same. Approach said there was an airport that was 10 miles away with an ILS (West Georgia Regional, KCTJ). My copilot looked it

up in the approach plates to see if we could do it. The ceilings were low, but we had the approach plate and the weather, so we accepted.

As approach vectored us, we divvied up responsibilities. My copilot was responsible for figuring out our roll-out headings on the magnetic compass and calling them. She also briefed the approach and kept me honest with heading. My observer, who was eagerly sticking his head between the seats and white-knuckling the crossbars, helped by calling out my altitude and airspeed deviations.

I had done plenty of no-gyro PAR and TACAN approaches with students in VMC, and I naively thought that a failed card ILS in the clouds would be as easy as a VMC no-gyro PAR. I could not have been more wrong. I also assumed that my students had already completed

their failed-card training hops. Strike two. Upon reaching final, I turned to intercept and went full deflection almost immediately. I held my altitude and informed approach that I was executing a missed approach and requested vectors for another attempt.

My observer, still white-knuckled, mentioned that we should request “no-gyro” vectors. I relayed the request to approach, they obliged and our workload was instantly cut in half. As we snaked and slithered through the pattern and turned onto the final approach course, confidence built in the cockpit. With the help of my students, I was able to maintain something that resembled the course and glideslope of the approach we were attempting.

As we got closer and the ILS became more sensitive, the CDI began to walk out. We were about 200 feet above decision height, right at the base of the clouds, and the rain on the windscreen was nearly blinding. Our focus had subconsciously shifted from an aggressive partial panel scan to looking outside the aircraft for the airport. Before we knew it, I had gone full deflection again. Our confidence quickly

turned to doubt. My copilot referenced the Atari-era GPS and said we were about a half mile from the airport. Holding our altitude and heading, we frantically scanned in front of the rain-distorted windscreen.

Just as we were about to admit defeat and go missed approach for a second time, I looked to the right and left of the helicopter. At 7 o'clock and no more than 50 yards, I saw the huge, white approach end numbers. There were a few choice words, followed by “runway in sight.” We turned, landed and shut down without any further incident.

We climbed out of the helicopter. A wave of relief swept through us as we realized the gravity of what we had successfully battled through. When the maintenance representative arrived the following day,



Photo courtesy of HT-8

From left to right, LT Becca Smith, ENS Carrie Rose and ENS Jason Weeks pose for a photo after a flight. The three faced trouble during a missed approach during a training session.

we discovered that our all-weather aircraft's avionic compartment was a veritable swimming pool, and the source of our faulty equipment.

During the debrief of the events, we all agreed that our success was as a direct result of solid CRM. The student-instructor hierarchy had been left at the door during the emergency, and all three of us had equal stakes in finding a place to land. We made a few missteps along the way, but our ability to swallow our pride, accept critique and offer guidance to each other helped us successfully navigate to a safe conclusion of a less-than-textbook situation. 🦅

LT SMITH FLIES WITH HT-8.



Phone a Friend

BY LT TOM MCKENNA

In mid-April, we sent two planes down to Barksdale Air Force Base (AFB) in Louisiana to play with the Air Force and participate in Green Flag, an exercise to train coordination between ground troop movements and close air support. We'd also provide air operations in maritime surface warfare training for the 75th Fighter Squadron and instruct them on the concept of composite warfare commanders and command and control at sea.

Only one of two planes got there on the first day. Our plane went down while we were doing the pre-taxi checklist. Our maintainers did their best to fix the issue on the spot, but it was something that required more time than they had. As we found out the next morning, it would still take a few more days to fix the issue. We finally left in the backup plane a day later than we planned. We stopped over in Millington, Tenn., to refuel.

On final of a GPS approach into Millington Regional airport, we got a master caution light with no corresponding secondary indications. It was as if our flight was being manipulated by a certain Hawkeye simulator instructor who strikes fear into the hearts of lieutenants and captains alike. This very scenario is beaten into us to the point where a master caution with no secondary causes the hair on the back of our necks to stand. We had a flickering prop pump light. This can indicate something as benign as being a bit low on propeller hydraulic fluid, or it could be some-



Photo courtesy of VAW-126

A U.S. Navy Sailor conducts a maintenance inspection after the aircrew noticed a master caution light.

thing as serious as the first indications of a major prop leak or a failing pump. Whatever the cause, the worst case scenario could lead to the dreaded E-2 prop “fail to feather.”

That’s not what we had, however. The emergency procedure is titled “Propeller Pump Light(s) – Steady,” which is an area of debate in the community when it comes to only a flickering light. The lights themselves indicate a lack of adequate propeller hydraulic pressure coming out of the main and standby pumps. So for many, a flickering light – quickly on and then off again – indicates a transient condition. The fact that the light stays out indicates the system is still mostly operating as it should. A

steady light, however, indicates a full failure of one of the prop pumps, and the procedure is tailored for the worst case scenario of a massive leak of propeller hydraulic fluid.

A single transient flicker is extremely rare. In most cases, the light flickers for a second, and then off again over the course of many minutes. Sometimes the light stays on at low power conditions, but extinguishes as the power lever for that engine advances. The nature of the flicker tends to entice the crew to go down the rabbit hole of troubleshooting, to see what conditions, if any, cause the light to come on, even though there’s nothing to remedy the situation in the air besides shutting down the engine. In most cases, the crew typically elects to

secure the engine via the “prop pump light(s) – steady” procedure if this flickering condition persists. With the low ceiling, the good power and control that we had with the propeller, and the fact that we were no more than a minute or two from landing, we elected to land and deal with it on deck. We landed with the prop pump light flickering once more on final, and then a few more times on deck.

Once we shut down, we called our maintainers. Since the closest maintenance support was a six-hour drive away, we were in a position to service the propeller system ourselves – something covered by NATOPS, but rarely ever practiced. We opened NATOPS to Chapter 3 and found that the servicing procedures wouldn’t work. It wasn’t from operator error, but rather due to outdated procedures. When we spoke with our maintainers, we learned the procedures they use are the ones in the NP2K (our propeller system) publication, which dwarfs the half page section in our NATOPS. With that new bit of information, it was clear that we would have to stay

After this second fluid-level check, we found that we were within operating limits and declared the aircraft safe for flight. After eating a few slices of leftover pizza and holding a NATOPS brief, we manned up and flew the last leg to Barksdale AFB. Our maintainers told us the following day that our troubles were caused by normal parasitic fluid consumption by the propeller system.

We have two big take-aways from this two-day ordeal. The first is common in our line of work: the feeling of “get it done despite the costs” that we easily fall into. There was a self-imposed pressure to get to Barksdale, which was pushing us to fatigue. We were jumping through far more hoops than normal and getting stressed out by it in the process. Only one of our aircrew was scheduled to fly on the next day, and the flight schedule could accommodate having only a single airplane available that day.


The second takeaway is more problematic. NATOPS can be out of date or misaligned with maintenance publications. Many of the procedures,

If you’re performing an action on deck outside your comfort zone, it’s still best to call a maintainer even if you have the most up-to-date information at hand.

on the phone with the maintainers and have them talk us, step-by-step, through the procedure.

We were lucky that a Hawkeye seats five people because every one of us was needed to get the job done. I was on the phone with our maintainers relaying instructions to the CAPC, who had his hands full at the controls (it’s a two-hand job). One person acted as a plane captain to relay information between us in the cockpit and an aircrew member on a ladder who was the one actually checking the hydraulic level in the prop system. The fifth aircrew member held the shaky ladder that the airport let us borrow. This was all just to check the level of the hydraulic fluid.

Through this in-depth process, we found that the hydraulic fluid was indeed low – it didn’t even register on the short dip stick. We used the on board PON-6 to pump hydraulic fluid into the propeller system and redid the 5-man process all over again.

limits, and characteristics of the aircraft have undergone extensive study and revision in areas that aren’t traditionally exposed to the aircrew. Whenever there is a change to a start limit or EP in NATOPS, all the pilots and NFOs take notice of it. But who among us commits to memory a new type of dip stick published in a maintenance pub? The fact that our maintainers use different publications than the aircrew, and that their documents and procedures update at a faster pace than our own, exacerbates the issue. Occasionally, NATOPS needs to be back-filled with the current maintenance procedures in order to give the aircrew the best possible information at hand. If you’re performing an action on deck outside your comfort zone, it’s still best to call a maintainer even if you have the most up-to-date information at hand. 

LT MCKENNA FLIES WITH VAW-126.

SITUATIONAL AWARENESS: When you think you have it, but don't



BY LT JEROME TEER AND LTJG JOSEPH IZZO

It was the last week of our three-week Air-to-Surface Strike Fighter Advanced Readiness Program (SFARP) at NAS Fallon. We were scheduled for a night Close Air Support (CAS) flight with a live GBU-16 in support of a joint terminal air controller (JTAC) qualification course. My WSO and I had flown five CAS events in the previous three weeks, and the mood was light after the brief. We were confident and ready to execute the mission.

We launched late (after our lead), proceeded to B-17 in the Fallon Range Training Complex and contacted the fires controller, Punisher 99. Reporting to Punisher 99, we were tactical administration complete, visual and in communication with our lead. We were cleared to switch to our JTAC, punisher 02, who cleared us into the same altitude block as our lead. Lead instructed us to hold cross circle on a hard altitude of 12,000 feet and give our full CAS check-in to Punisher 02.

Our lead had already expended his live GBU-16 and conducted a simulated attack, as we were setting up for our live GBU-16 attack. Punisher 02 passed the game plan for the next attack: "Neutralize tanks in the open, one simulated GBU-16 from Fast Eagle 51, one GBU-16 from fast eagle 52, 90 second spacing, ground-based laser, Type 2 control, bomb on coordinate." Following the game plan, punisher 02 passed the 9-line and we began setting up for the attack.

I followed my normal habits. I confirmed we would make the TOT and calculated that we had a little over five minutes to execute the attack. I was in a position to set my spacing from lead, so I moved on to my next habit. I pulled out the imagery provided and plotted the coordinates on my chart to verify the target location within the B-17 range. My WSO began entering in the 9-line on the CAS page and plotting the coordinates on his chart as per normal tactical crew coordination (TCC) procedures. Those were the last procedures we executed correctly.

My WSO began his read back of the intended coordinates using the key words "from my system." The proper way to execute the read back of the target data is from the sublevel of the HSI display. Reading from this sublevel ensures the data is actually in the aircraft systems, and we have the proper target coordinates entered. However, my WSO incorrectly read back the data from the CAS page and not from the HSI sublevel. A benefit of a two-seat cockpit is having four eyes and two brains working a problem. This was not the case that night, because my execution of the procedures failed at this point as well.

I did not review the HSI sub level during his read back to QA our system setup per TCC. The target waypoint was never designated because neither one of us checked our aircraft system. In the four minutes remaining to our TOT, we failed to follow procedures, missing key checks that would have alerted us that our intended

target was not designated situational awareness (SA).

Just prior to pushing and setting up for our attack, we looked at the advanced tactical forward looking infrared (ATFLIR) display to see where we were designated. The ATFLIR was in a narrow field of view, not allowing for a proper target area QA. We mistook what we saw for what we expected to see in our target area per the brief. Had we taken the time to do a proper QA by increasing the field of view, we would have noticed several key features that would have alerted us it was not our target assigned by the JTAC.

Most notably, the coordinates where the ATFLIR was designated were not the coordinates of the target passed in the 9-line. It was a bomb on coordinate attack, and my WSO had not moved the designation so the coordinates should have matched. As we continued our attack run, we ran through our air-to-surface checklist.

My WSO did his checks and reported he was “checks complete in the back, waiting for master arm, and TDC,” which is standard for a two-seat crew. I ran through my checklist, placed my TDC to the HUD, and placed the Master Arm switch to ARM.

I reported, “Checks complete in the front, we are armed up.” However, we were not checks complete, because neither one of us QA’d the designation. The HSI display would have shown us the wrong target designated, and after we reviewed our tapes, there was no doubt according to the ATFLIR display that we were not in the target area.

I allowed the SA display and my spacing to take all my focus. As we pressed for our attack, I didn’t QA the designation on the ATFLIR, nor did I obtain positive identification (PID) of the target, which is required per training rules to release live ordnance. My WSO focused on not making an error in ordnance system set up and switchology so he, also, never looked at the ATFLIR display. Ten seconds prior to release, having received a cleared hot, and I released our live GBU-16, thinking we had good SA. My WSO executed the appropriate JLASE communications, as I executed an offset to the right.

The bomb hit 1.5 miles short of the target, about 100 meters south of our echo point. For those familiar with the B-17 complex, 100 meters south of the runway apex is a part of the range where live GBU-16s are not authorized. I was looking outside after the release, again, never looking at the ATFLIR display. The first indication I received that the bomb did not hit the intended target was when our lead asked the JTAC

where the bomb impacted. I remember my first thought being, “What’s he mean, ‘where did the bomb hit?’”

This first thought demonstrates the worst type of incorrect SA. My WSO and I thought our SA was high; however, the exact opposite was true. We allowed our SA “bubbles” to shrink, allowing the most important thing to fall outside our SA. Procedures and training rules are in place for this specific reason. Had we followed the procedures properly and abided by training rules, we could have caught the multiple errors we made in time to correct them. The bomb hit dirt, 1.5 miles away from any friendly forces or range personnel. That wasn’t the case in the 2001 mishap in the Udairi Range. It has been difficult moving past the feelings of “what if?” I could not imagine the feelings of “what did I do?” which was definitely a possible outcome that night.



(U.S. Navy photo by Mass Communication Specialist 3rd Class Paul Kelly)

Aviation ordnancemen assigned to the Eagles of Strike Fighter Squadron (VFA) 115 arm a GBU-16 Paveway II on an F/A-18E during flight operations aboard the aircraft carrier USS George Washington (CVN 73).

In the Super Hornet community every flight is a training flight. Even the benign airway navigation flights, we plan tactics to practice along the route. We train constantly for a reason. When the time comes that our buckets are full, hanging on to the stabs and trying to catch up, or we are low SA and don’t realize it, it is our training and our adherence to procedures and training rules that will keep us and others safe. 🦅

LT TEER AND LTJG ISSO FLY WITH VFA-41.

There are **old pilots** and there are **bold pilots** but there are no **old bold pilots**

BY MAJ CP CRAIG, USMC (RET)

When I was a young midshipman at the University of Florida in 1976, my roommate's father sent a plaque with the following words on it to him for his birthday: "There are old pilots and there are bold pilots but there are no old bold pilots." He and I were soon to be commissioned (he to the Navy and I to the Marine Corps). Both of us were slated for flight school. My roomie's dad was a naval aviator with a considerable amount of flight time in multiple aircraft; he had served several combat tours over North Vietnam. He also had completed a tour as a carrier air group (CAG) commander.

In short, he knew naval aviation. The only thing I knew was that I wanted to wear those wings of gold. When my roomie's dad sent him a message about aviation and safety, I also got the message.

Recently there have been two Class A aviation mishaps in the Marine Corps that have hit the news media. These events stir deep memories for me. Visiting a mishap site looking for remains is not good. Making a casualty call is never good. Attending a funeral or memorial service for a squadron mate is just as bad if not worse.

Grieving is for the family.

Our job is to ensure that the funeral is completed with full honors and respect for the deceased. The squadron doesn't get the luxury or chance to grieve.

When you get to be old, you get to remember and to grieve. Perhaps I wanted to send the same message to my son who is now a naval aviator. So what does an old aviator have to offer on this subject of aviation safety?

When I was a nugget, the bold pilots would regale all of us youngsters with "there I was" stories at the bar during Friday happy hour or purple alerts. However, the real professional education came at the hands of the old pilots who would calmly walk us through events during training or in-flight emergencies. They would chew our rear ends off for stupid stunts. Other than the amount of time spent at the bar, I am sure that today has changed little from the traditional methods of instruction.

Looking at the FY15 Class A mishap data from the

Naval Safety Center, I was shocked at how well we are doing this year compared to my early days of naval aviation. I can think of at least one squadron that had the current Marine Corps-wide mishap rate all to itself in one year. There is a difference today. The Navy and Marine Corps have newer and better aircraft (although some airframes are old and are definitely showing their age). We have better training of pilots, aircrew, and maintainers.

As an organization, the personnel who make up naval aviation think of safety, risk and hazard analysis on a daily basis and take positive steps towards elimination, reduction and mitigation. Life is safer and better. Tell that to the two squadrons that made recent casualty calls and conducted mishap and JAG investigations. The funerals to come will be even tougher.

As we wind down combat operations and return to a normal cycle of training and deployments; naval aviation is in danger of increasing mishaps of all classes. Prior to the current OIF and OEF, the U.S. had not been in a protracted period of engagement and combat operations since the Vietnam War. Perhaps we need to visit the past in order to more clearly see the future.

In the mid to late 1970s, as we left Vietnam, our aviation mishap rates began to soar. Why? I think that many of these mishaps had human error as the primary causal factor. The vast majority were pilot or aircrew error. Yet, that statement provides the “what” but not the “why.”

What causes an experienced and seasoned aviator, maintainer and aircrew to do something off the wall or out of the ordinary that leads to a mishap?

Some of those who I knew and observed and who lost their lives in Class A mishaps did so because they developed an attitude of “I am good.” Ever hear someone say, “I fly the airplane to its limits and to my limits?” The airplane’s limits are easy to find. They are clearly stated in the aircraft’s NATOPS Manual. A pilot’s limits are not as clearly defined or written down. My first TBS and flight school classmate to perish was a newly minted PQM in the AH-1J. He was flat hat-



ting down a river bed in Greece with a non-rated Navy battalion surgeon in the front seat. This was information that came out in both the mishap and JAG manual investigations. The recovery aircraft that went to this mishap also crashed and was a Class A. Why? That aircraft commander “knew” he could get into the LZ. In both cases, the pilots were noted by their squadron mates for their “attitude.”

During the very first WTI that I was assigned to an F4 crashed into the side of a mountain in the Chocolate Mountain Bombing Range. While, lying below altitude restrictions at an airspeed that was too fast, I actually heard this mishap pilot at the Yuma Officer’s Club say to his friends, “I fly the airplane and myself to the limits.” It was apparently, not a true statement because the limits of the airplane and pilot were exceeded.

Instead of thinking you’re “good,” you should know your limits and watch out for an attitude that could get you into trouble. 🦅

Editor’s Note: Major CP “Cracker” Craig, USMC, (Ret) is a former naval aviator and previous contributor to Approach. He was a UH-1N pilot and logged flight hours in numerous other naval aircraft. He retired with over 4,500 flight hours. He is currently a full-time faculty member at several universities where he teaches on Homeland Security and quantitative statistical analysis for business.



U.S. Navy photo by Mass Communication Specialist 2nd Class Clifford L. H. Davis

BY LT SARAH DAVIS

We were transitioning from a night combat mission to heading home. I was thinking about what type of omelet to order at midrats when our crew heard a distinct starburst sound over the ICS. In the E-2D, we are trained to note this sound and associate it with a transition in the ICS routing, possibly indicating an issue with the fiber channel network switch (FCNS). The FCNS routes all ICS crew stations together. To complicate matters, each ICS crew station has different radios' audio signals routed through it. In short, if you lose one crewmember's ICS station, you also lose the ability to use one or more radios.

As the starburst sound was heard by all crewmembers, it was odd not to hear from one of the most opinionated members of the crew, our chatty copilot, until the radar operator (RO) noted on the advisory caution and warning system (ACAWS) readout that we were seeing multiple "FC ACO-CP" and "FC CP-ACO" messages. Recalling our NATOPS knowledge, we discussed that the lost ICS crew station may be switched to an emergency mode of EM-1 or EM-2 to talk on radios one or two, respectively, and communicate with other crew members with the push-to-talk emergency ICS. However, this will also disable any radios associated with that station. For the copilot, the V/UHF-3 radio is associated to his or her ICS crew station along with UHF Guard and the MMR marker beacon.

Through the pilot, we were able to determine that the copilot was hearing all communications but unable to transmit over ICS. After a brief discussion, the air control officer (ACO) suggested we use our squadron tactical frequency to test if he was able to transmit on the radio. It was confirmed he could not. He double-checked all cord connections and all switches then reset his ICS station and attempted to communicate using the emergency

ICS push-to-talk button with success. This was a good solution for communicating within our plane but still did not allow him to make radio calls. While we were troubleshooting, we were also getting closer and closer to our recovery time. A sense of urgency was upon us to determine the safest way to continue if the copilot remained unable to transmit on either ICS or the radio.

In a plane where the pilot and copilot are completely separated from the three crewmembers in the

safety-of-flight radio communications would use the one radio that the pilot could talk on and the crew would be required to communicate using emergency ICS push to talk for the remainder of the flight.

Our final decision was whether he would use the EM-1 or EM-2 emergency setting. It was suggested he might try EM-2, but the RO quickly pointed out that switching to EM-2 would mean he could only use UHF/VHF-2 to communicate on. That would become prob-



combat information center (CIC), ICS plays a major role in our tactical crew coordination and safety of flight communications. It is particularly important when landing on a carrier, because NFOs are mostly blind to what is happening, relying solely on narration from the copilot and a small readout display of altitude, heading, speed and DME. The copilot is also heavily relied upon to make all radio calls for the pilot while he or she focuses on the landing in a carrier environment. Though this was a prime situation to fulfill a Hawkeye NFO's dream to finally "call the ball" and communicate with the LSOs that course of action was deemed unsafe.

After a discussion amongst crewmembers over emergency ICS, we decided that the copilot should switch his ICS crew station to an emergency setting to retain the ability to talk on at least one radio. All necessary

lematic in a carrier environment where L-4A is linked through radio 2, using it to tune into ACLS. The crew agreed and the copilot switched to EM-1, continuing the flight without issue using his emergency ICS and UHF/VHF-1 to communicate.

As a mission commander in training, this was the first real CRM scenario that I had to orchestrate. With a crew that had sound NATOPS knowledge and who executed our emergency in accordance with our brief, a potentially stressful situation in a night carrier environment turned into a great learning moment. Our crew debriefed afterward in depth and concluded what many aviators before us have: good CRM is essential to a successful and safe flight. 🦅

LT DAVIS FLIES WITH VAW-125.

Miracle At Sea

BY CAPT MATTHEW DINEEN, USMC

In September 2014, my crew and I went to the flight line of Camp Lemonnier in Djibouti, Africa. Like many days before, we were on the flight schedule to fly back out to our ship, a San Antonio Class LPD, after we had conducted training in Djibouti. The pilot who was to be our section leader met us on the flight line as we were loading passengers and cargo, and we conducted our section brief. After some routine delay in loading cargo, we decided to launch my aircraft as a single to the ship. This would ensure we got back to the ship before sunset (which was mandatory when moving passengers over water).

After completing all preflight duties, my crew and I departed with 21 passengers. The flight was about 30 minutes, and I began trying to contact the ship about 15 miles out. Initial attempts to contact the ship were unsuccessful; however, contact was made with the tower liaison officer. Around 5 to 7 miles from the ship, the aircrew called visual with the ship, and I was able to establish radio contact with the Air Boss. As the aircraft was setting up in the port delta holding pattern, the Air Boss cleared the aircraft to cross the stern and report final for spot five.

I was the flying pilot for the entire flight and set the aircraft up on a standard approach to spot five. After my copilot completed the landing checks with concurrence from the aircrew in the cabin, I made my final voice report to the Air Boss, "Three down and locked, left seat," and was given clearance to land. I descended and decelerated on profile until approximately 60 feet AGL and 10KGS. When the aircraft was on short final, we heard a loud bang. My crew and I began to access secondary indications in the cockpit and cabin. From the left seat, I scanned the instruments from left to right and

noticed that all the associated lights indicating a No. 2 engine failure were illuminated. My copilot, in the right seat, saw fluctuating engine performance gauges as he scanned from right to left. At the time I recognized the indications of the No. 2 engine failure I immediately returned the aircraft to its hover attitude and began to pull power to arrest a rapidly building descent and closure rate with the flight deck. Just before the left side of the aircraft hit the LPD, I decided to pull away from the flight deck. This flight-control input allowed the aircraft to hit the water in its most advantageous position, tail first and upright.

When the aircraft was on short final, we heard a loud bang.

I maintained control of the helicopter until touchdown in the water, then I executed my emergency egress procedures. Training took over once we hit the water. I released my cockpit window and with the emergency release handle. The window fell out but was pushed back into the cockpit, barely missing my face as the water rushed in. I was upright in the seat and grabbed the window frame with my left hand for reference. The aircraft began to roll right. After about 90 degrees of roll, the aircraft settled out, and I was able to pull myself free after I released my harness with my right hand. It took two full strokes to get back to the surface. I did not need to use my HABD bottle and pulled the handles to inflate my lobes after I surfaced. Once I was clear of the aircraft, I immediately began to

survey the scene and look for survivors. Most of the passengers were already out of the aircraft, and we began to take count of everyone. We did a great job of working together to ensure everyone stayed afloat. A few LPUs did not inflate and I made sure that they were paired with a buddy who had a good LPU. Miraculously, the aircraft's raft came out on its own as the tail went into the water. This allowed two of the passengers, one an AH-1W pilot and the other a CH-53E air frames mechanic, to deploy and flip the 20-man life raft upright.

The scene felt very much like aircrew water survival training. People helped pull each other into the raft, and after I got up onto the raft's entry step, I ordered a head count. It was one of the most distressing, yet amazing, things that I have ever experienced. The whole time we were getting into the raft I was thinking, "There is no way everyone made it out." As the count progressed, I waited for the number to stop at something other than 25, but it did not.

All 25 Marines and sailors had made it out. After the initial shock and emotion of that realization, we triaged the wounded in the life raft while we waited for the small boats from the LPD. We sent those who were

more severely injured back in the first rescue boat. The rest of us were loaded up in the final small boat, and we headed back to the LPD.

As everyone has heard a million times, nothing we do in naval aviation is routine. Being able to react by the book was the key to saving lives.

Egress training works, it is required for pilots and aircrew but should be required for all Navy and Marine Corps personnel who regularly ride in helicopters over water.

Always have a plan. The engine failure occurred at the worst possible time, low and slow in the landing profile, so close to the ship that a standard wave off was not possible. These are parameters that we – as helicopter, tilt-rotor and VSTOL pilots – must accept to do our job. We brief as a community that we will avoid the ship to minimize danger to the deck crew and enter the water tail first to help absorb impact as we hit the water. This mishap took less than five seconds from "bang to splash," and we were able to do those two things. 🦅

CAPT DINEEN FLIES WITH VMM-263.



The Galloping Horse

LTJG JEFFREY OUIMETTE

I remember seeing a safety poster that stated, “Truly superior pilots are those who use their superior judgment to avoid situations where they might have to use their superior skills.” I remember a situation where I had one of those superior pilots.

It all started as just another normal instrument flight.

Our plan was to fly an MH-60S to Marine Corps Air Station Miramar’s airfield for multiple approaches, navigate the victor airways to MCAS Camp Pendleton, and then return to NAS North Island. Preflight, taxi and takeoff were uneventful and on time, in keeping with the flight schedule. After takeoff, we began our departure procedures and followed the instructions from the air traffic control tower (ATC), climbing to our assigned altitude.

Upon reaching approximately 6,000 feet, I began to feel the aircraft gallop. This sensation of the helicopter moving up and down ever so gently in flight was not uncommon, and I was qualified in model at the time; however, I did not have the experience to know whether or not it was normal. Since I was the most junior member of the crew and no one else had said anything, I just shrugged it off as something normal with this aircraft.

After about three or four minutes of flying straight

and level, I started noticing a change in the aircraft’s motion. I looked up and saw what looked like an abnormal blade tip path plane. I have flown plenty of straight and level, with no speed change or control input, but this tip path plane appeared to be bouncing up and down more than I had ever seen before. This, combined with the increased up and down motion, made me feel uncomfortable.

Suddenly, the crew chief called over ICS and asked if anyone felt the excessive up and down motion. I confirmed that I felt the helicopter moving up-and-down and that I noticed the tip path plane had an exaggerated jump. It appeared as if one of the blades was out of track and dipping lower than the others when it passed in front of the nose.

ATC then contacted us and gave instructions to begin our approach into Miramar. The HAC stated over ICS that he also felt excessive motion and had been waiting to see if anyone else noticed to ensure he wasn’t feeling something that wasn’t there. Deciding to knock it off, he cancelled the approach with ATC and requested to proceed VFR back to Naval Air Station North Island.


As we turned and descended, the galloping motion became more and more noticeable. We were currently abeam MCAS Miramar’s airfield looking down the coast. Knowing there would be no safe

place to put the helicopter down should the motion get to a point where the aircraft was no longer flyable, the HAC made a time-critical decision: divert. He called ATC and declared an emergency. ATC cleared all the traffic as we proceeded to the runway and landed.

During post-flight inspection, we found nothing wrong with the rotor head, rotor blades, or transmission assembly. A maintenance crew arrived and visually inspected the aircraft, also finding nothing wrong. Since the HAC was also an FCP, the decision was made to “pro and go” the aircraft back to NAS North Island after talking with commanding officer.

After completing ground vibration and hover tests, we ran in-flight vibration analysis tests and returned to

NAS North Island. Further inspection revealed that one of the blade dampers had a leak that caused the excessive blade motion. If undiscovered and had the aircraft continue to fly, the condition may have led to a catastrophic failure of the rotor system.

Due to the HAC’s time-critical decision, the crew returned safely with the aircraft undamaged. By declaring an emergency and PEL at MCAS Miramar, the HAC avoided passing up a safe airfield for the unknown, even if it was only a few miles away. The superior pilot didn’t fall victim to “get home-itis” or hesitate declaring an emergency. Instead, he used his superior judgment to ensure the safety of aircraft and crew. 

LTJG OUIMETTE FLIES WITH HSC-8.



U.S. Navy photo by Mass Communication Specialist 2nd Class Daniel M. Young

An MH-60S Sea Hawk helicopter assigned to Helicopter Sea Combat Squadron HSC-8 prepares for a live fire exercise. HSC-8 provides vertical lift search and rescue, logistics, anti-surface warfare, special operations forces support, and combat search and rescue capabilities for Carrier Air Wing (CVW) 11 in support of the Nimitz-class aircraft carrier USS Nimitz (CVN 68) and Carrier Strike Group (CSG) 11 operations.



TO TEACH AN OLD BIRD NEW TRICKS . . .

BY LT KRIS HAWBAKER AND LT BRANDON PIERCE

As on every other evening, a muddy shroud engulfed Djibouti City – a sinister combination of the last rays of sunlight illuminating every bit of airborne African dust. Looking down from an aircraft, it looked like fog, and this period of thermal cross-over wreaked havoc on the eyes. Mountainous terrain, albeit several miles distant, rose silently out of the layer to the South and West. The city's lights, usually a welcome guide for any aviator, waited for the sun to fully set before they would reluctantly appear.

Into this quagmire we descended in our P-3C Orion, returning home after another long day in the AFRICOM area of responsibility (AOR). Ten hours prior, as the sun had risen, we had rotated away from this very airfield, out to conduct tasking in support of our Horn of Africa mission set. While the mission had been a success, the long flight took its toll on the aircrew, and now all eleven souls on board were looking forward to a post flight visit to the mess hall.

However, the terminal phase of flight at Djibouti International Airport (HDAM), rather than serving as a feel-good welcome mat, often posed the greatest threat to P-3 aircrews during our missions.

Although it is a NAVAID-equipped ICAO airfield, HDAM is without radar services. Its controllers must base their air picture entirely upon what aircraft pass to them, and there are a large number of dissimilar aircraft and UAVs operating in close proximity. The language barrier of the native controllers is an ever-present challenge, and it's always an all-hands-on-

deck communications evolution throughout the entire approach and landing.

We listened intently to the radios, trying to decipher both ATC directions and other aircraft's position reports. Nothing seemed amiss until we made the procedure turn inbound on the VOR approach, at which point we overheard ATC giving approach clearance instructions to a quickly incoming civilian airliner. The immediate cause for concern was that they were cleared to intercept the final approach course for the same approach that we were on... at the same altitude.

The air traffic control tower had, in effect, forgotten about us.

As we were mid-turn, we had neither the aft radar coverage nor any visual contact with the rapidly gaining and descending airliner. On earlier deployments, only rapt attention to radios and a prompt query of ATC could have saved our aircraft from a midair collision with that airliner, whose pilot was almost certainly on



Photo Courtesy of DVIDS

A U.S. Sailor conducts a preflight check inside a P-3 Orion. In the AFRICOM area of responsibility, pilots must be aware of sudden changes in weather conditions such as dust storms that could create difficult flying conditions.

instruments in those abysmal environmental conditions.

Luckily, we had a tool in our repertoire that no other P-3 had brought to the fight: a fully integrated Traffic Alert and Collision Avoidance System (TCAS).

When Patrol Squadron NINE (VP-9) deployed last November, we took with us the first two TCAS equipped P-3Cs in the Fleet. We fully expected TCAS to provide a much-needed boost to situational aware-

ness and safety of flight in our expeditionary area of responsibility. Once we heard ATC clear them for the approach, we were immediately aware of the danger afoot. We took it upon ourselves to politely notify ATC that we were “procedure turn in-bound, level 32 hundred feet.” ATC, to their credit, had us “execute an immediate right 360” while the oncoming airliner was directed to “maintain five thousand feet until

“TCAS has already proven to be a game-changer in the way our aircrews remain safe.”

ness and safety of flight in our expeditionary area of responsibility. After just the first month of operational use, however, TCAS had already proven to be a game-changer in the way our aircrews remain safe.

TCAS had picked up the transponder signal of the approaching airliner at nearly 40nm away and

the final approach fix.” The threat of collision was avoided before it fully materialized. This experience, and dozens like it, helps to reinforce the important edge that TCAS provides.

Though the FAA required commercial aircraft to equip TCAS as early as 1993, the Maritime Patrol




Photo Courtesy of NASA

This image over East Africa shows a dust storm slowly covering Djibouti and eventually the Gulf of Aden. The North African region sees numerous dust storms which can be as light as fog and as heavy as a thunderstorm. During the sunset hours a dust storm can be especially difficult for pilots to navigate.

and Reconnaissance Force (MPRF) community has only recently begun implementation of the system. Over the Horn of Africa, the first TCAS-capable P-3s have made their debut. MPR aircrews only had radios, radar, and vigilant observers to keep them from tangling with other airborne assets. Thanks to the diligent efforts of our community leadership and acquisitions team, we are now able to employ this SA multiplier.

The full benefits of TCAS are numerous and range across the entire spectrum of MPRA operations. We are now able to identify and correlate air traffic not initially observed (or perhaps ever visually gained). We can remain aware of traffic not broadcasting on safety-of-flight frequencies or far outside of controlled airspace. We can track terminal area traffic not identified or incorrectly referenced by air traffic controllers who are heavily radar-limited. Perhaps most importantly, we can successfully make informed, time-critical decisions in regards to overall aircraft positioning when dealing with in-flight malfunctions or emergencies.

Now, as our community shifts to rely on the P-8 Poseidon as our primary platform, P-8 aircrews will use a full suite of state-of-the-art avionics, including a fully integrated TCAS system. The incorporation of TCAS in the P-3, along with myriad other avionics upgrades in recent years, provides yet another link between platforms for a community in its first transition in a half century, while allowing us to operate our legacy aircraft more safely until their eventual sundown.

For the MPRF, TCAS provides the proven benefits available for many years to commercial aircraft, and a control to reduce the risk highlighted by a number of near-midair collisions that our community has experienced in preceding years. To the combat aircrews of Patrol Squadron NINE, a TCAS-modified aircraft delivers the heightened airspace awareness required to safely conduct flight operations in a high-risk, high traffic AOR and satisfies a long overdue MPRA need. 

LT PIERCE AND LT HAWBAKER FLIES WITH VP-9

Hot Off THE Press!



The motorcycle safety magazine for the riding enthusiast and for all Navy and Marine Corps leaders who have riders in their unit.

BY NIKA GLOVER

The famous actor (and avid motorcyclist) Steve McQueen once said, "One of the things that makes motorcycling so great is that it never fails to give you a feeling of freedom and adventure."

Most motorcyclists would probably say that statement is spot on. The feeling of adventure and sense of freedom is hard to resist. So they take the risk with the pleasure of riding because for riders it's an even trade-off. However, that doesn't change the fact that motorcycle riding is dangerous, and riders must be vigilant and safe.

In response to the rise of motorcycle mishaps and fatalities, the Naval Safety Center has produced a special-issue magazine called *Ride*. The goal of the magazine is to inform motorcy-

clists about motorcycle safety through something called “covert” learning. No one wants to spend their time reading a bunch of sometimes boring facts and figures. *Ride* magazine was created to be enjoyable while informative.

For starters, the magazine has the look and feel of a commercial publication. There’s information on the latest products and gadgets for motorcyclist. Those products are cool but they also offer an upgraded level of protection.

There’s also a bucket list of some of the best roads to ride in the U.S. and overseas. Have you ever wanted to ride The Dragon, a road that boasts 318 curves and borders the Great Smoky Mountains? Most motorcyclists know about the famous Route 66, which is also featured in the magazine, but what about Gouliang Tunnel Road in China? While it’s only .75 miles long, it’s one big curvy tunnel.

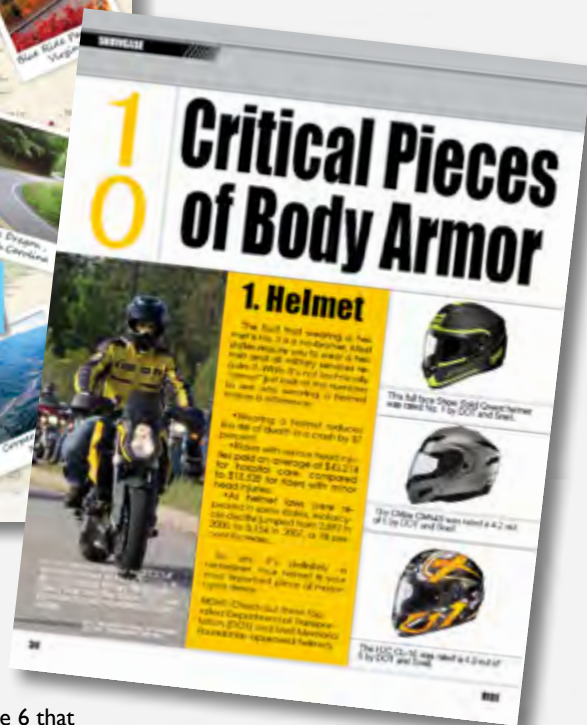
One of the most interesting articles in the magazine is “The History of Military Motorcycles,” by Aaron Cortez, a writer for the website Bike Bandit. If you’ve ever wondered where the word “chopper” came from, read the article and learn all about the bikes that were repurposed after World War II.

If you’re the type who has a need for speed, check out the article on the fastest bike Kawasaki has ever made. It’s a speed machine that you’ll want to test ride after reading about it. There’s also an entire spread on the best and most critical gear for motorcycle safety. A lot of bikers don’t even know there’s armor for the hips that help protect the pelvis during an accident.



With a commercial look and feel, *Ride* magazine was developed to be a fun magazine with rider safety in mind. The magazine is chock full of fun tidbits of information like the Motorcyclist's Bucket List on Page 6 that

shows riders the best roads to ride before they kick the bucket. There's also a showcase of the 10 Critical Pieces of Body Armor on Page 36. This showcase includes information on little-known pieces of body armor that protect important body parts. Read about the latest and greatest in sport bikes and motorcycle safety rules. The magazine will be distributed this fall. If you are not a subscriber to any Naval Safety Center magazine, contact safe-mediafdbk@navy.mil to get on our magazine distribution list.



Harley-Davidson recently released its first electric bike, the LiveWire. It's a quiet sleek bike that competes with the best gas bikes for speed and agility. You may think about going green after reading about it. Of course any good motorcycle magazine features the best bikes of the year, and *Ride* magazine is no different. The list of the 10 best sport bikes goes into detail on specs, safety aspects and price ranges.

Ride magazine has something for every bike enthusiast with safety in

mind. While we can only control some of the factors that lead to dangers on the road, we can definitely control how well we protect ourselves when we travel. By doing something as simple as wearing the proper body armor, we can limit our chances of getting seriously injured in an accident. That's what the goal of the magazine is, to help keep you safe. 🦋

Ms. Glover is the editor of *Ride* magazine. She is also the editor of *Approach* and *Mech* magazines.

► ONLINE RESOURCES

OPNAVINST 5100.12J & MCO 5100.29B: “Navy Traffic Safety Program” and “Marine Corps Safety Program”

Navy Motorcycle Rider: www.navymotorcyclerider.com

ESAMS: https://esams.cnmc.navy.mil/esams_gen_2/loginesams.aspx



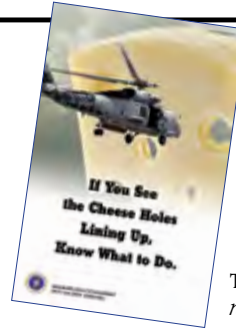
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—LT TEER