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contents

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U.S. AIR FORCE

Flight Planning and Preflights — Fail to plan, plan to fail!

This edition of *Flying Safety Magazine* demonstrates the importance of in-depth flight planning and accomplishing a good preflight. Numerous aircrews have again taken a few moments to share their experiences with other Airmen, for which I'm grateful.

Every mission, from the most routine milk-run to putting ordnance on target, needs a good plan to enable success. Everyone's heard "a plan is just a baseline for change." That's true, but without a good baseline — in-depth flight planning and mission study — your options for change are limited, because your cranium's lacking the data it needs to make real-time decisions. Data, such as local and alternate field NOTAMs, the weather for your flight period (and later), your mission-capable fuel and tanker options, alternate landing fields and frequencies, and having the approach plates for those fields, all have proven pivotal to safely recovering aircraft and accomplishing the mission.

Another critical step before flight is a good aircraft preflight. Safety reports are full of statements like, "I don't remember checking to see if the pins were pulled" or "I forgot to check that area." Making the time to do a good preflight is critical, even if you're behind on the timeline. Recently, multiple commands made this a special interest item to ensure emphasis. It doesn't do much good to take off and have to return because the gear is still pinned down or a panel has come loose. Explaining this one in front of the DO's desk is always a challenge and usually begins with "Sir, I screwed up."

Bottom line: The flight planning and preflights are every bit as critical to mission accomplishment as your skills in the air. Make the time to do a thorough job at both, and your flights will tend to have fewer moments of anxiety. Fly safe!

Safety Sage

DEPARTMENT OF THE AIR FORCE — THE CHIEF OF SAFETY, USAF

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Ego Versus The "E-word"

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There is always a bit of rivalry between fighter pilots. As an F-15C driver, I would joke and laugh with my Eagle buddies when we heard of yet another of "those F-16 guys" who had to declare emergency fuel and gum up the return to base flow following a large force exercise at Nellis AFB, Nev. With twice as many engines and more than twice as much fuel, there were times in the Eagle when I was low on gas, but never so low that I had to throw out the "E-word." It was a matter of pride, and yes, ego, that I always made it home without calling attention to myself. That is, until one night at Nellis, flying F-16s with the Aggressors, I became one of "those F-16 guys."

I was fairly new in the Fighting Falcon with less than 100 hours, and less than six of those at night. I had never flown at night at Nellis, and I had never fought from the west side of the Northern Ranges — the typical "bad guy" land. I had the only clean jet in our formation (no external fuel tanks) and was not fragged to go to the tanker to get more fuel. My job was to stay in the airspace for as long as I could to provide training and then RTB once I hit bingo fuel. Of course, as anyone will tell you who has flown fighters during Red Flag or a Weapons School LFE, even a simple RTB can be a chore, especially at night in a jet that doesn't have much fuel at engine start.

I hit bingo and removed from the fight to the west. I descended to FL190, exited the airspace over Stonewall, and prepared for the long trek home around the range complex. Having not done the recovery to Nellis from this direction, I immediately set max range airspeed and requested the most direct route I could from ATC. It wasn't long before ATC had some changes for me. In fact, three times they vectored me away from the standard recovery route for other aircraft exiting the airspace: first 30 degrees, then 20 more, then another 30. By that point, I wasn't even headed toward Nellis anymore, and the F-16 min fuel and emergency fuel numbers, as well as the techniques and options to resolve this situation, took a front seat in my mind.

The bingo fuel I used was appropriate to get back to Nellis with "normal recovery fuel." However, rarely is there a "normal recovery" during a night LFE at Nellis, and I needed to think of some non-normal options. One option was to land at Creech AFB, which I would practically fly right over during the RTB. During the day, in VFR conditions, this was perfectly reasonable. However, with no viable precision approach into Creech, this wasn't really feasible for a dark Nevada night. Another option was to cancel my IFR clearance, cut in front of "the train" returning from the ranges, and do a visual straight in back at Nellis. Due to my lack of experience with this recovery, coupled with my lack of night experience in the F-16 and at Nellis, I ruled out this option before even stepping that night — it was a matter of my personal operational risk management. Another option was to ask for priority in the recovery pattern. At that moment, I calculated I would be below my normal recovery fuel, but still above min fuel. I was also vectored back on course as ATC finally fit me into "the train."

USAF Photo by Capt Tana Stevenson

My recovery was back on track, but I maintained a very heightened sense of my fuel state and approach control vectors to aircraft in front of me. Everyone seemed to be getting a normal instrument downwind and turn to base. Those normal vectors stopped with the two-ship of F-16s that was in front of me. There was a dramatic pause from approach control as we both continued on downwind, flowing north, farther from Nellis. The calculator in my brain now had to recalculate what fuel state I would now recover with. The two-ship in front spoke up as I was running my numbers and slowing to my max endurance airspeed. They were given what seemed like a base turn, but was actually a box pattern across the final approach course.

Then it was my turn to start that slow process of shoving my ego to the side. "Approach, Sniper 2, min fuel, looking for a base turn." "Sniper 2, Nellis Approach, copy." Well, I'd taken that first step, but I was still flying away from Nellis. After what seemed like an eternity, approach finally came back with, "Sniper 2, approach, we informed tower, but it didn't work, continue heading 360." Great. In a single-engine multi-role fighter without much gas, the margin between minimum fuel and emergency fuel isn't that great. It took a couple more calls to approach to figure out that the tower was trying to launch a couple flights of F-18s on opposite direction takeoffs. While I had a small margin of gas, the expected delay was at least 10 minutes. With the DME to Nellis growing larger by the second, that margin had become negligible. The pressure was building, and I gave my ego another shove.

"Approach, Sniper 2, if you're going to delay me that much, then I will definitely be emer-fuel," I stated matter-of-factly, and though I had taken two large steps in that direction, I was still two syllables short of throwing out the "E-word." After a moment, Approach asked if I had the two-ship of F-16s still in sight and if I could follow them. I could see the lights of their formation, so I turned right on what I considered a base leg. As I flew toward them and picked up a radar lock, it became obvious to me that they were in a right turn in their box pattern. I would end up meeting them 180 degrees out. I had no intention of adding a night intercept to this situation, so again I had to do some more coordinating with Approach control. Between me, the other two-ship, and everything else Approach was handling, I could tell he was getting a bit task-saturated. So finally, with one last kick, my ego went tumbling into the Nevada desert.

"Approach, Sniper 2 is Emergency Fuel, Nellis in sight, proceeding on a visual straight in for Runway 21L." Finally. Despite my efforts to keep a low profile, I made it known I was an F-16, low on gas, and needed priority to land. It had a huge effect. Approach control seemed almost relieved, radio transmissions returned to a normal level, and

I was handed off to tower. As I reached a normal final approach, the weight and pressure, which may have well been my ego, was lifted. I was definitely emergency fuel, but my seat cushion returned to its normal position, and I knew I was home free. All it took was to be "that guy" and make that last radio call, and I was glad I did.

The lessons are fairly obvious, even to a young wingman. I had certainly learned those lessons before, but sometimes even experienced pilots need a refresher course. If you're unsure and unfamiliar with the mission or procedures, add some extra gas for your own bingo and comfort level, especially at night. Regardless of whether some people consider emergency fuel an actual emergency or just poor planning, if you need to, then declare it to get your aircraft and your body back on the ground — that's why it's called "emergency" fuel. As for me, next time I plan to cut southwest, exit the ranges much closer to Nellis, and take that visual straight in. It was what I ended up doing, anyway. Besides, that evening significantly lowered my ORM assessment of doing that straight-in at night.

As I made one of my best landings, night or day, F-15 or F-16, that evening, I had to chuckle to myself. The radio was alive again with the two-ship of F-16s, now behind me, negotiating with tower. "Negative, we're landing behind Sniper 2. We're not ready to call the E-word yet, but we're getting close on gas."

USAF Photo by TSgt Anna Hayman

Runway Incursions

USAF Photo by TSgt Keith Brown

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As a pilot who has traveled to a multitude of both military and civilian airfields, I often find that some of the most challenging parts of a flight are taxiing to the runway before takeoff and returning to the parking ramp after landing. Varying weather conditions, complicated airfield layouts, inadequate signage, miscommunications between controllers and pilots, as well as a host of other miscellaneous problems, all make navigating around the taxiways of an unfamiliar airfield challenging and, on occasion, downright dangerous. According to the FAA, in FY06, 330 runway incursions occurred at U.S. airports ("FAA: Office of Runway Safety," 2006).

The FAA defines a runway incursion as "any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land" (FAA Runway Safety Report," 2005). A variety of factors contribute to runway incursions, such as working memory decay, interruption, miscommunication and disorientation. For the pilot, the volume and proximity of the aircraft, rapid rate of radio communications, completion of checklists, and time-compressed navigation concerns contribute to a unique form of workload rarely experienced in other phases of flight (Safer Airports, 2005). Clearly an abundance of factors must be scrutinized to determine the reason behind these deviations. But let's examine some of the human limitations that lead to errors.

One of the first limitations is that pilots use their visual and auditory systems to successfully taxi an aircraft across an airfield. They receive instructions from a controller, and through the use of air-

port diagrams and signage, they're expected to follow the requested route. To accomplish this task, pilots and controllers must start by effectively communicating with each other. Variables such as "stepped on" radio calls, speech intelligibility, speech distortion, and other "noise" all affect whether a radio call is correctly received. On top of this, communication with foreign controllers and pilots is often confusing, due to limited vocabularies and strong regional accents. The effects of these variables are compounded when controllers and pilots fail to use standardized phraseology or when multiple languages are used among the controllers and aircrew.

Several visual problems arise as a result of the physiology of the eye. The human eye is susceptible to a variety of visual illusions. This is especially true when operating in periods of low visibility and at night. Vision is most affected during these periods because of reduced color and contrast sensitivity, as well as the effects of glare. Glare temporarily destroys the eyes' sensitivity, further reducing night vision. I remember going into Miami International one rainy night about a year ago and experiencing a very challenging taxi to the FBO we were to park at. I had been there many times, but we always landed on the side of the airfield closest to the FBO (usually a 3-4 minute taxi). This time it was very late at night, it was rainy and foggy, it was the only runway available due to weather minimums, and it was on the opposite side of the airfield. After we cleared the active runway, the ground controller's taxi directions sounded like alphabet soup. Fortunately, our planning shop had printed us a large 8x10 airfield diagram. This proved much more helpful than trying to read the small one printed in the DoD approach books, especially at night. We told the controller we were unfamiliar with this side of the airfield and to please give us the taxi route once more. This time he gave the instructions at a slower pace, and all of us in the cockpit wrote them down and then traced our way on the large 8x10 printout. With all the fog and glare from the standing water, we took our time and made it to the FBO almost 15 minutes later. Several locations were confusing, but through the use of CRM and stopping to look at our large airfield diagram together, we made it without incident.

Let's now look at some of the solutions to help minimize the number of runway incursions. There is no "golden BB" to totally eliminate all of them, but with a multifaceted approach, we can reduce the amount significantly. First, set aside ample time during the brief to examine the airfield diagram and all taxi routes. Don't just look at what you expect to do; look at all the routes from different locations and study any potential areas of confusion that may develop during the taxi. This would be a very good time to print a large airfield diagram for reference, to take with you on the flight. Review the NOTAMs and mark off closed taxiways or ones that you cannot use. Once more, review the airfield diagram with everyone in the front of the cockpit before descent.

All crew members should be actively involved with the taxi; maintaining situational awareness on the position of their aircraft relative to the airfield diagram is essential. Checklists should be ac-

complished at a time that causes the least amount of distraction to the crew, such as "when the aircraft is stopped or while taxiing straight ahead on a taxiway without complex intersections." This is especially critical during periods of reduced visibility. Finally, if any confusion as to the position of the aircraft occurs, the crew should exit the runway, stop their aircraft, and notify Air Traffic Control ("Flight Crew Procedures," 2003). As many as 20 percent of incursion incidents involve aircrew being reluctant to seek assistance and continuing with a potentially hazardous course of action, even though they are unsure of their situation. Basic route planning, using standardized procedures, and admitting confusion to ATC could significantly reduce the number of runway incursions caused by pilot deviations.

Below are a few guidelines that could be useful during the planning and execution phase of taxiing at unfamiliar airports.

1. Review airport layouts as part of preflight planning, before descending to land, and while taxiing, as needed. Include any potential areas of confusion.
2. Print a large 8x10 airfield diagram for easy reference. Jeppesen Inc., one of the primary providers of airfield diagrams and instrument approaches, began publishing "hot spots" on airfield diagrams, which give aircrews an idea of the most troublesome locations on the airfield.
3. Know airport signage.
4. Review NOTAMs for information on runway/taxiway closures and construction areas.
5. Request progressive taxi instructions from ATC when unsure of the taxi route.
6. Check for traffic before crossing any runway hold line and before entering a taxiway.
7. Clear the active runway quickly when landing, then wait for taxi instructions before further movement.
8. Study and use proper radio phraseology in order to respond to and understand ground control instructions.

By highlighting these areas, crews can effectively manage workload to allow for maximum awareness when transiting airfields.

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USAF Photo

Ops And Maintenance:

USAF Photo by SSgt. Michael R. Holzworth

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It was my first Red Flag, and I was ready to participate in what was reputed to be the most intense combat-like training on earth. Our squadron of Strike Eagles arrived at Nellis AFB full of anticipation for the weeks ahead. We were slotted to drop numerous live weapons, ready to employ our brand new SNIPER targeting pods, and anticipated a gun-slinging fight with Red Air and SAMs. We were not disappointed.

My first sortie was going to be a night low-level ingress and egress as a four-ship. We were scheduled to attack top-priority targets in the heart of the SAM "Super-MEZ," as we called it. As I stepped to the jet, I realized that it was crucial that all my systems worked perfectly, especially my terrain-following radar. If my TF radar malfunctioned, I would be forced to fly the ingress/attack at our Min Safe Altitude, which would leave me a sitting duck for SAMs and Red Air.

After a thorough examination of the forms, I breathed a sigh of relief. The jet was Code 1 from the previous sortie, and it didn't appear to have any serious maintenance problems. My backseater and I jumped in the jet, and we were ready to go. After takeoff, the TF system did one uncommanded flyup during the systems check, but I wrote it off as being caused by the jet two miles in front. Other than the one flyup, it worked fine during the remainder of the systems check.

After the push, the system seemed to work as advertised. We were hugging the rocks at 500 feet with no cares in the world except getting those bombs on target. It wasn't until the final turn toward the target that things got worse. Immediately before the IP, the jet got another flyup. I honored the flyup and proceeded above MSA. Then I reengaged the TF and attempted to go back down. No dice. We were getting successive flyups in the target area, and I would have to stay above the MSA for the remainder of the sortie. Now I was a sitting duck at more than 8,000 feet, and every SAM was taking a potshot at me. I found out later that I was "killed" by one SAM, and also picked off by Red Air about 15 miles from the "safe" line, because I was alone and unafraid at 8,000 feet, while my buds hugged

USAF Photo by MSgt Val Gempis

the rocks down below me.

As I exited the aircraft after the sortie, I told the crew chief about my miserable first night with the TF radar. His response was classic: "Oh yeah, we've had a lot of problems with this jet's TF system." With a shrug of the shoulders and a chagrined look, he had just passed off my death as an unfortunate but excusable occurrence. I was less inclined to look at it that way. During debrief, I was further surprised to find that the TF system had already been written up, but apparently wasn't important enough to put in the forms. I called "foul."

Obviously, this situation didn't kill anyone for real, but it made me think a long time about how I should act with regard to maintenance and those young crew chiefs on the line. I realize that flight discipline doesn't only start when the JFS handle is pulled, but begins well before the walkaround and lasts all the way through the maintenance debrief. As aircrew, I was obligated to get those maintainers involved in the mission, to hold myself and those around me to a high standard when it comes to jet write-ups, and to hold myself responsible for accepting any jet I was taking airborne.

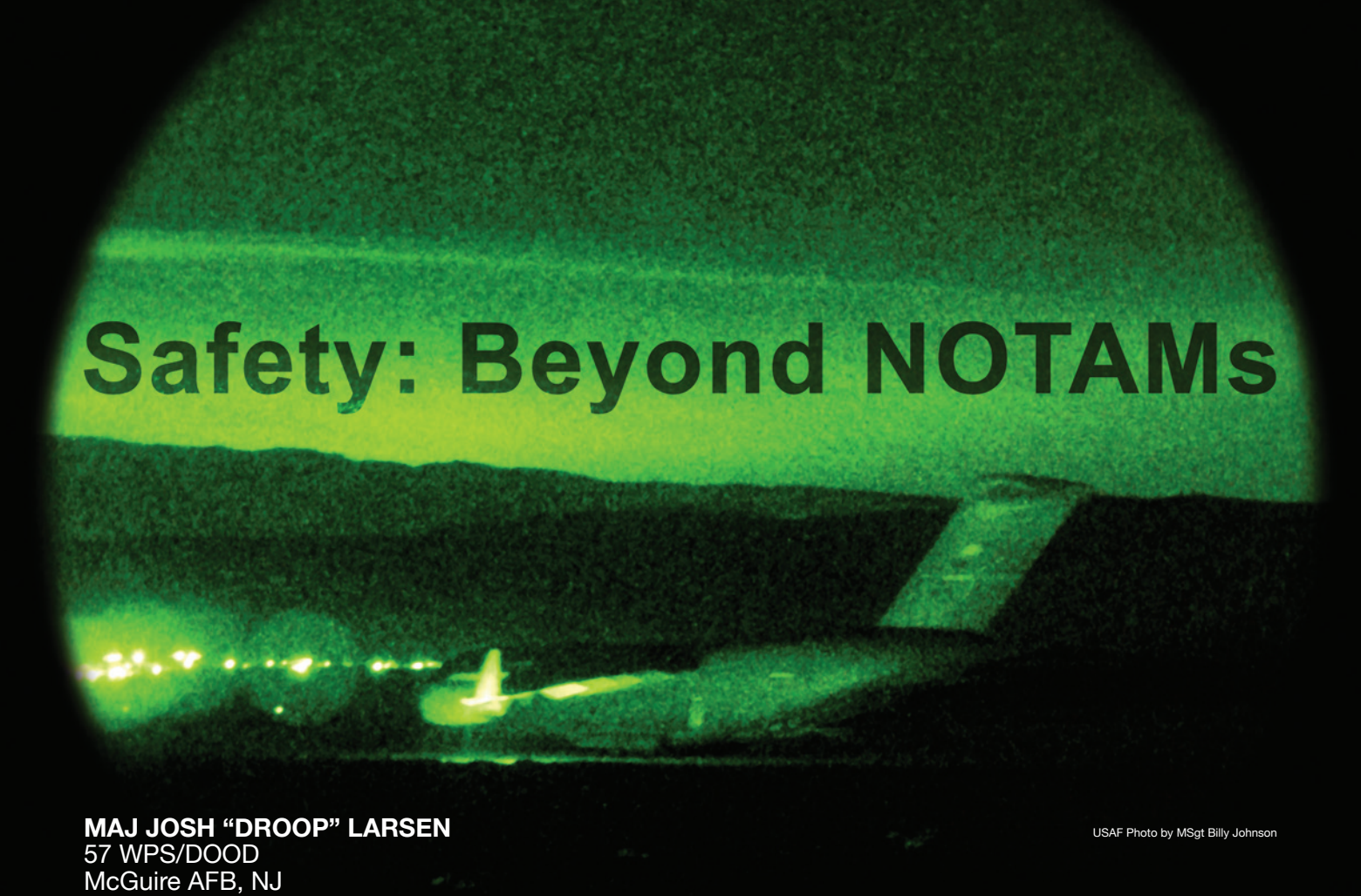
I later realized that the crew chief who welcomed me back at Nellis had little idea about the complexity, planning and enormous importance involved in executing a Red Flag large force exercise. He probably had little idea how important it was for our four-ship to hit our targets and for us to have workable equipment, because we, as aircrew, had done very little to get him emotionally involved in the mission. He had no other motivation to get the jet fixed properly, other than that his boss was breathing down his neck to get it done. It's not only possible, but probable, that if we had taken some time to show him our target photos, let him see our low-level route, and explain to him the mission for that night, he might have had more motivation to get those Code Two items fixed sooner. I am more willing now to show crew chiefs the reasons and results of a mission, because I know that helping them see the mission results of their hard work benefits the relationship between aircrew and maintenance in the long run.

That Red Flag sortie also hammered home to me the importance of properly writing up the jet for the next user. In the past, I had been lazy about writing up certain faults, as long as the system in question seemed to work properly in the air. I justified it by telling myself that the fault codes must be spurious BIT codes that don't matter. Those days are no more. If the crew tells me it has problems, if the jet has problems by acting abnormally in the air, or if I think something is worth informing the next crew, I will write it up in the forms. Nothing is more frustrating than having something go wrong with a jet and then find out that it was never addressed by the previous crew.

Finally, the complacent attitude of not writing up certain faults also transferred over into my preflights. I don't know how many times I've walked up to a jet with the assumption that the aircraft must be ready to fly because maintenance told Top 3 that it was crew-ready. This kind of assumption can be dangerous. Attention to detail during the preflight and aircraft forms inspection is critical to catching something about the jet that is not flightworthy. Several instances during preflights in our squadron have caught no-go items that could have created in-flight EPs. A detail-oriented attitude during the preflight/postflight is now an important part of my mission preparation.

At times, the relationship between ops and maintenance can be strained. With some hard work by the aircrew to keep maintenance informed and involved in the mission, and with attention to detail before engine start, much of the frustration between maintenance and aircrew can be mitigated. With this attitude, maintenance and ops can work together like the cohesive team unit that makes the mission a complete success.

Safety: Beyond NOTAMs



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USAF Photo by MSgt Billy Johnson

There we were, alerted off Bravo at Frankfurt during the early stages of Operation Enduring Freedom. The crew was tired, but that was normal. No matter what you did, you couldn't get your crew out to the jet more than an hour before takeoff. With that in mind, we were doing our best to expedite our preflight duties: checking in at the operations desk to get our mission cut, getting our life support equipment, sighting in our NVGs, and getting our intelligence briefing and mission brief. During the mission brief, we reviewed our mission materials: NOTAMs, Frag, flight plan, and diplomatic clearances to make sure that everything made sense and times were appropriate. I signed the Form 1801. We left the operations building and waited for our crew bus. The bus took us to the storage building so we could pick up our myriad of mobility bags. With the bus completely full of our personal and professional bags, we finally got to the jet about 55 minutes before takeoff.

The preflight, though rushed, went well enough for us to depart in time to meet our tanker. Since this type of operation was becoming pretty standard, I decided to get a little rest before meeting the tanker. The refueling went normal. Now that we had enough fuel to finish the mission, it was time to dig into the mission materials I wasn't able to get into during the preflight sequence. There were about 2½ hours left before landing and about two hours left before crossing the Afghanistan border when I finally got into the binder, which was about 3 inches thick. There was nothing surprising, since the crew had done the same mission several times. I planned my approach based on the weather, the intelligence report, and the active airspace in the area. It would be night when we arrived, so we planned to perform an NVG approach.

The crew got ready for crossing the Afghanistan border. We ran checklists, prepared the cockpit, and donned NVGs and our other survival equipment. The communications were particularly good that night. We hadn't had any problems and didn't expect any. The only issue we were still working was meeting slot time, since Bagram was a non-radar environment. We crossed the border and were just waiting to get in contact with tower. The crew visually sighted the airfield before radio contact. We told the controller our plan via code words, and the tower controller said that we were cleared to land and told us the winds.

I maneuvered the aircraft toward final via our planned route. I intercepted final at about two or three miles, and that's when I saw something I didn't expect. "Hey co-pilot, does the runway only look half lit?" The co-pilot responded, "Yeah, only the right side looks lit." I had him query the tower controller. The tower controller responded, "Only the east half of the runway is usable, 90 feet wide,

USAF Photo by MSgt Keith Reed

cleared to land." That was something I would have liked to have known before, since that could change our wind limits, as well as the type of approach. Based on the current conditions and the approach we already had planned, nothing changed. We continued our approach to a successful landing.

After landing, we were still on the clock because of our departure slot time, so we temporarily ignored the runway surprise and focused on the job at hand. The loadmasters got the download and uploads accomplished, while the pilots prepared the jet for the flight back to Germany. After an unremarkable taxi out, takeoff and climb out, we finally started talking about the runway situation. Did we miss something? Did any of us know anything about it before we saw it?

After we were established at cruise and across the Afghanistan border, we started searching through the mission folder. We checked the NOTAMs; nothing about the runway. We searched the rest of the mission folder. Of the three places that listed the runway width, two of them still listed 148 feet. The last mention had 148 feet crossed out and 90 feet penciled in. The proper width was listed correctly in one of the possible places, but it was not mentioned in our mission briefing and was still listed as full width in two other places. The rest of the flight, though long, was uneventful. We debriefed the tactics cell at the Rhein-Main stage after we arrived. We informed them that crews need to know all information about the airfields, especially non-standard things like partial runway closures.

You may be wondering why I chose this incident as a safety topic. The normal aviation system has many checks in it to eliminate mishaps during situations like this. Granted, a runway would not be half-closed for maintenance during standard operations. The runway would be either closed or open. But, in this case, we had troops on the ground who needed resupply, and closing the air bridge was not an option. There are standard ways for getting this type of information out. The mission brief must be accurate and comprehensive, since the crews don't know what they're doing until they show and have no time to mission plan. NOTAMs are the way aircrews normally expect to get this kind of information; this also failed. Lastly, approach or tower is required to give safety-of-flight information to aircrew on first contact. If any of these methods had worked, we wouldn't have been surprised when we visually acquired the situation. We were fortunate. If we would have arrived at Bagram during the day, I don't think we would've noticed that the left half of the runway was closed. For aircrew reading this, keep your head on a swivel. You're the last line of defense in preventing mishaps, especially during expeditionary or non-standard operations.

Critical Lessons Learned

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Walking into the briefing room, it seemed like it would be just another combat mission on the EC-130H. I was a high-time co-pilot in the squadron and therefore was teamed with a low-time aircraft commander for the deployment. Due to the long missions, a mission planning team plans, files and coordinates each Compass Call combat mission. Nothing stood out in the brief as abnormal, until they informed us that our bingo back to the deployed location was before our air-refueling control time. That meant if we didn't get gas from the tanker, we weren't going back where we came from. My aircraft commander and I were both concerned about this, but knew there was nothing that could be done at this point, and the mission needed to happen.

The flight into theater and the several fun-filled hours of orbiting went as expected. Now it was time for the Compass Call pilot's favorite part of the mission, the air refueling. As we headed south into the air-refueling track, the weather began looking ugly — there was a sandstorm at our admittedly low air-refueling altitude accompanied by up-to-moderate turbulence. Realizing our fuel predicament, we did everything possible to try to get our gas. After checking the entire length of the track for better weather and having the tanker check a little higher, we decided the air refueling was not going to happen.

This is the part of the story when you start asking yourself how we got so deep in the hole. In this case, our divert field was right on the edge of the distance we could go on the remaining fuel. Heading in that direction, we pulled out the printed approaches we were provided for that field. After calling on all of the frequencies listed for the airfield, we couldn't contact them to let them know we were coming. After several minutes of radio chatter from the crew in the back, we got the word that the CAOC had gotten in touch with the embassy, and they contacted the field.

Great, everything was set; now, if only this weather would clear up. With every minute that went by, our engineer was doing more calculations with the navigator to find out if we would be landing on concrete or sand. With the turbulence and limited visibility, the aircraft commander had his hands full flying the aircraft. In order to alleviate some of the workload, he asked me if I could read to him the only copy of the approach we had. This would allow him to concentrate on flying and me to back him up on the approach. I agreed that this would be the best way to get us both involved in the approach. The navigator handed me the approach plate, and I stared at it dumbfounded. I had never seen a Jeppesen approach plate until now. In hindsight, it's not rocket science to read a Jeppesen approach plate, but it's not the best instruction method when you're not sure whether you'll be flying it or gliding down on it. Unable to read the plate, I handed it to my now disappointed and very busy aircraft commander. The engineer informed us that we could make it, but there probably wouldn't be enough fuel for a go-around. We were now close

enough to contact the airfield. I called over tower frequency, requesting permission to land. The response I got was definitely non-standard. "OK, captain, we wait for you." Now, finding this humorous at a time when humor was hard to come by, I asked my aircraft commander, "How does he know my rank?" I once again requested clearance to land receiving back "OK, captain." By now, we decided that it was as close to "cleared to land" as we were going to hear.

My aircraft commander flew a textbook approach to a full stop landing. Once again, we contacted tower to request taxi instructions, but received back only a "Yes, captain." We taxied to the largest and closest ramp we could see and found someone standing beside a truck waiting for us. As we came to a stop and shut down our engines, we noticed a truck full of people start to pile out and form a circle around our aircraft. This would be a considerate way to secure our aircraft for us, if those who were surrounding the aircraft were facing away from us with their guns.

After a short internal conversation, we convinced our young airborne maintenance technician to step outside and take inventory of the situation. It was only a short while later that we learned the airport had been closed all day due to the weather and that the "air traffic control" staff on tower's frequency were actually the crew from the fire department. In addition, the nice gentleman standing outside waiting on us was the airport manager. After learning that it was OK for us to exit the aircraft, the aircraft commander and I stepped out and began our negotiations for fuel. Part of that included waking the only person who knew how to drive the fuel truck and an extensive call from the CAOC to the embassy. After what seemed an eternity but couldn't have been much more than an hour, we were fueled up and on our way back to the deployed location.

USAF Photos by MSgt Bill Thompson

Luckily, there was no mishap involved in this incident, no matter how much room we gave Murphy to make one. On that one flight, I learned several lessons that I still use today. The first is to never assume that nothing can be done to improve a dire situation. During our mission-planning brief, if one of us had brought up the question of such a critical air refueling, the mission-planning team might have been able to make some changes, to include finding a tanker for us on the way out or changing the air-refueling time to slightly earlier. On top of that, we hadn't given much consideration to diverting. It was all too easy to think, "It'll never happen to me." If I had just reviewed the divert package a little more thoroughly, I might have been able to read that approach when my aircraft commander needed me to. The last thing I learned on that mission is the critical importance of crew resource management. Between the mission crew making radio calls to the CAOC, the navigator and engineer calculating gas, my talking to ATC, and my aircraft commander flying the aircraft, we all played a part in getting the plane on the ground safely. This scenario could have had a much different result if the aircraft commander had decided that he could handle the situation on his own. If that had been the case, I probably wouldn't have been here to write this article. +


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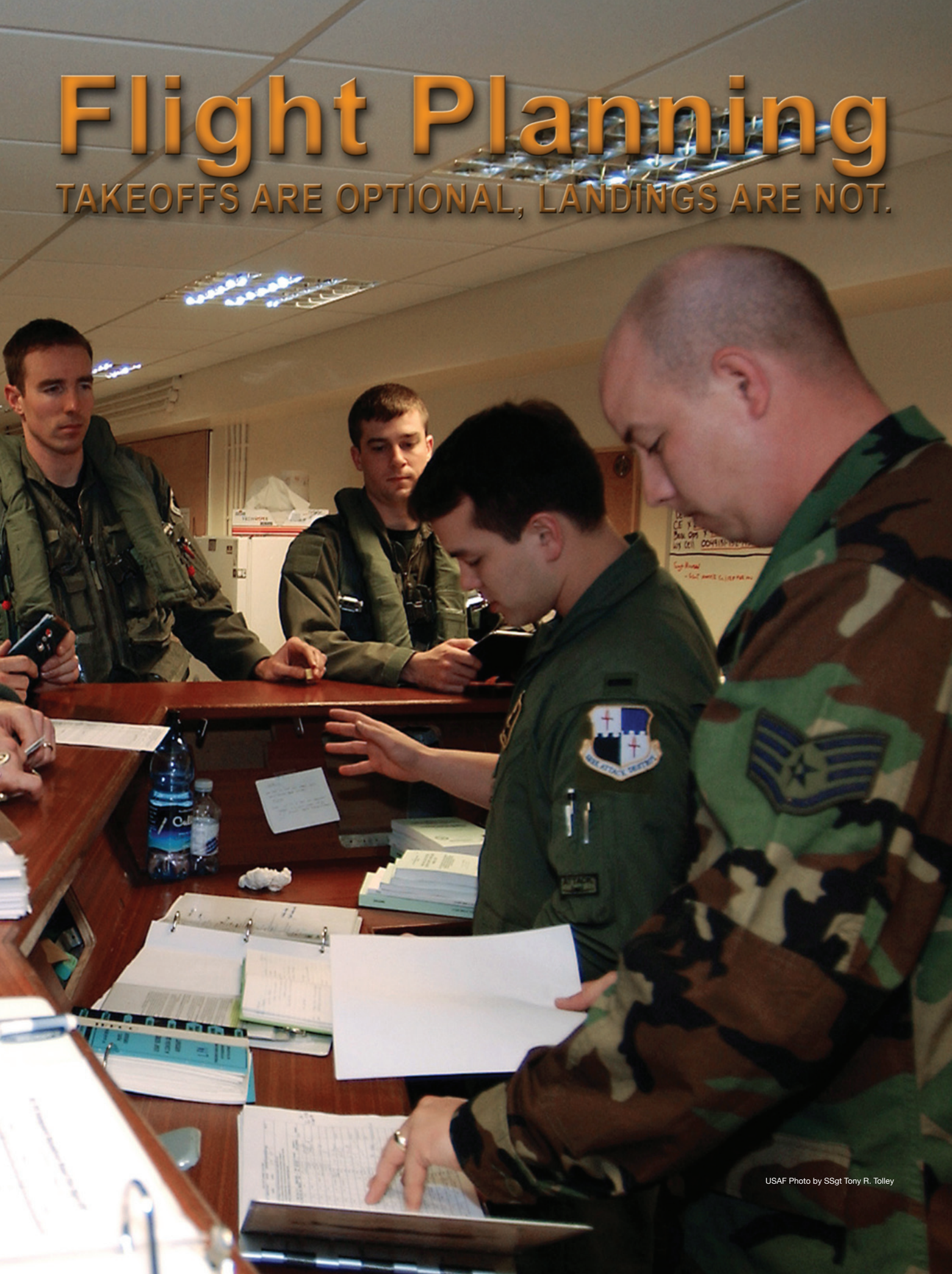
NOTAMS

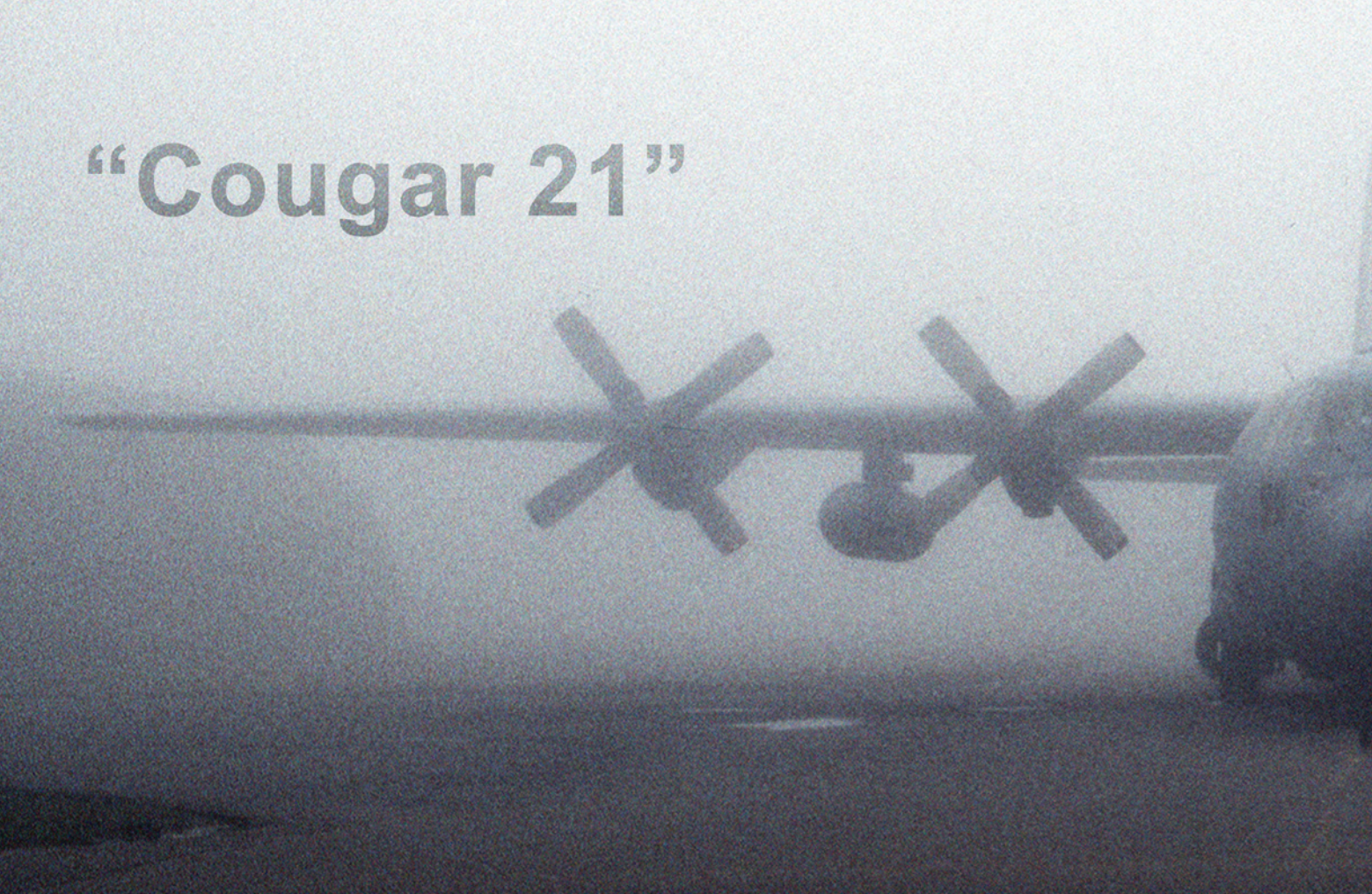
Flight Planning

TAKEOFFS ARE OPTIONAL, LANDINGS ARE NOT.



USAF Photo by SSgt Tony R. Tolley

"Cougar 21"



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"Cougar 21, confirm you have landed; tower does not have visual." I looked over at the aircraft commander, took a deep breath, and replied "Affirmative." "OK, take the next taxiway to your left and tell us which one it is; we will send a follow-me out to help you taxi to parking."

You might be asking, "What was keeping the tower from seeing a C-130 sitting on its runway?" Answer — the visibility was somewhere between 100 and 150 feet due to early morning fog. A gray C-130 tends to blend in well with gray fog.

The day started out with a simple mission: carry a maintenance rescue team and another crew from Little Rock AFB, Ark. to Alexandria International, La., wait around for a few hours to see if the MRT could fix the aircraft that was stuck at Alexandria, and then return to Little Rock. Just an easy air land mission, right? Nobody shooting at us, no low-level flying, no need to max-perform the aircraft; just go from point A to point B and return. We didn't even need to refuel once we landed; the round-trip flight was well within the standard fuel load for a C-130. It was a gorgeous night for flying; we could see a million stars as we flew south. What could go wrong?

We had no problems loading the aircraft, made an on-time takeoff, and landed at Alexandria International uneventfully. After offloading the MRT, we went inside to recheck the weather and NOTAMs and settled down to wait. And wait. And wait some more. After six hours, we had to make a decision on whether to proceed back to Little Rock without the other crew and the MRT. You see, the MRT was unable to duplicate the electrical problem on the other aircraft, described by another crew as a lightning bolt going off underneath the flight deck. The extra crew decided not to fly the other aircraft back at night, so we loaded up everyone and headed back to Little Rock, planning to land right after dawn. Did we miss anything? We had enough fuel to make it back, and we had checked our weather and NOTAMs. Our divert base was Adams Field, only about 15 minutes from the base. No problem, except that it was late fall, we were planning to land right after dawn, we only had about 30 minutes of extra fuel, and our weather forecast was already six hours old when we took off for Little Rock.

The return trip was uneventful until just before we started our descent, when Little Rock approach asked us what our intentions were. Fog had rolled in, covering the area like one of those thick, fluffy white bath towels your mother always kept for guest use only and yelled at you every time you pulled it

USAF Photo by SSgt David W. Richards

out of the hall closet. Adams Field was 0/0; nothing was moving. Approach told us the base weather report was calling for a 200-foot ceiling and ½-mile visibility, but kind of chuckled when he said it. I would have laughed too, except I looked at the fuel gauge and realized that we had no choice; we didn't have enough fuel to divert anywhere else.

What do you do in a situation like this? Because of some bad decisions earlier in the night, we had no choice: we shot the approach. The AC told me to fly the ILS; he would look for the field. Once he spotted the field, he would take over for the landing. I was supposed to stay on the instruments, in case we had to go missed approach. The flight engineer would back us up on our airspeed and altitude, and the navigator would monitor the approach. The loadmaster? He just buckled his seat belt really tight.

Everyone knew their duties, and we were ready to start the approach. There was no wind, and I had that approach shacked. Truthfully, I believe it was the best ILS I'd ever flown. It was a good thing, too. Two hundred feet above decision height — no airfield. OK, no big deal, just keep going. One hundred feet above, same thing. I'm a little nervous now. Fifty feet — nothing. Decision height — no one says anything. This is not good. Fifty feet below decision height, 150 feet above the field. I can't stand it anymore. As I began to say, "Crew, we're going around," the AC interrupts with, "I have the lights, my aircraft." I looked outside and could just barely make out the flashing sequencer lights. I didn't see the runway itself, until just before we crossed the threshold, about 75 feet AGL.

The landing was uneventful, as was everything thereafter. The follow-me vehicle found us and led us to parking without incident. Everyone let out a big sigh of relief once we shut down in parking without any bent metal. We managed not to declare emergency fuel, and better yet, we weren't broken into thousands of burning pieces scattered over the Arkansas countryside.

What lessons can be learned from this experience? First, checking the weather is not something you just pay lip service to; always get the most *current* weather possible. Next, really think about your alternate. Some place 15 minutes away works if the runway is shut down for an IFE, but what if the weather shuts down everything within a 300-mile radius? Finally, never get complacent. I mean *never* get complacent. Aviation is dangerous enough when everything is going right; never give Murphy an edge. He doesn't need it — you do.

Is This The Smartest Thing You've Done?

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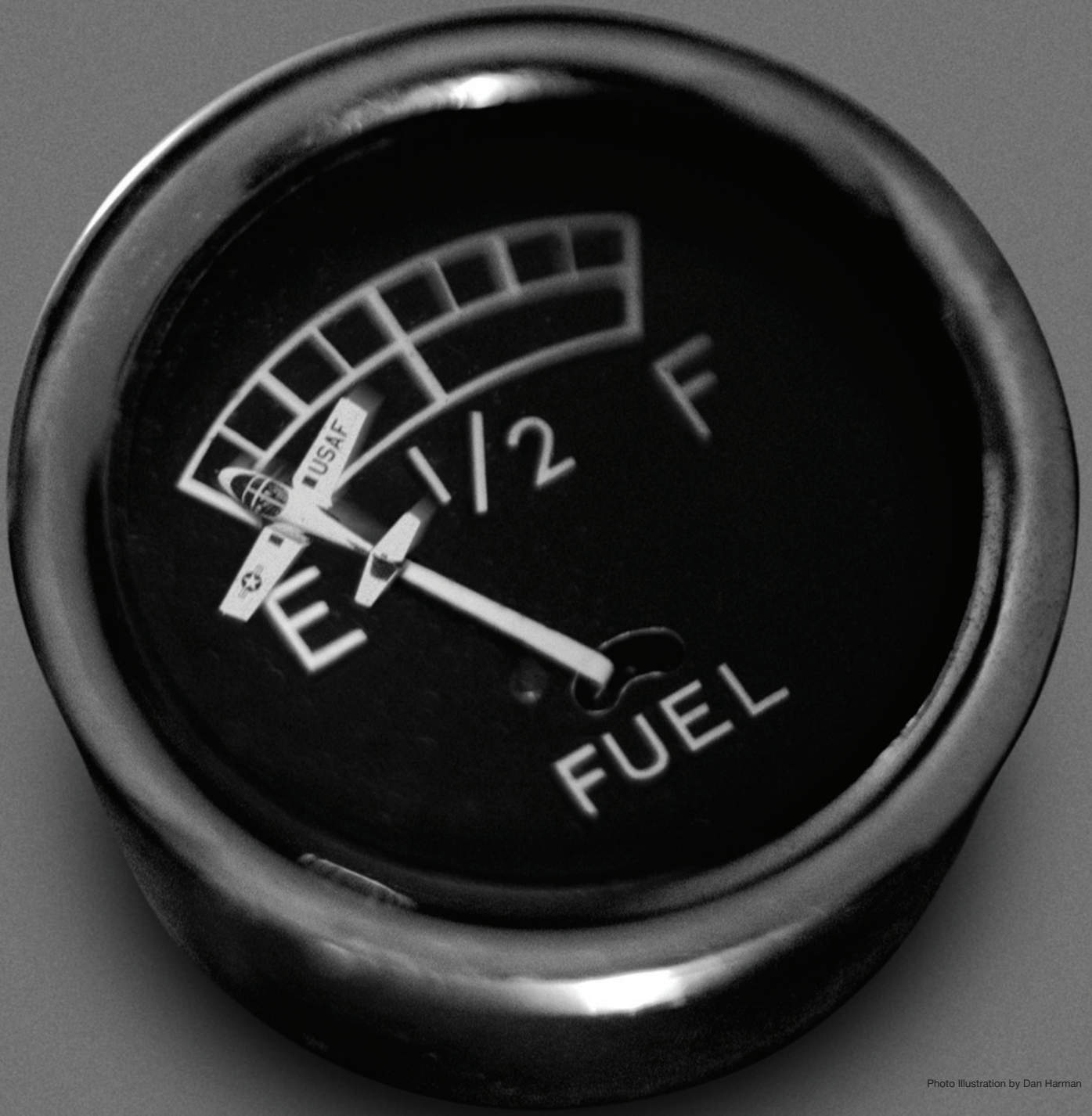

Photo Illustration by Dan Harman

"Is this the smartest thing you've ever done?" These words were ringing in my head as I found myself standing in the assistant ops officer's office. I was busy racking my brain over which of the myriad of offenses he was referring to that I had committed over the past month, while at the same time trying to slip into my best post-academy strict position of attention. Then the AF Form 781 came sliding across the desk. "Ah, so that's what His Major-ship was talking about." Perhaps, I should start at the beginning.

I was at base operations planning my return trip to the home-drome at Mather Airpatch. Unfortunately, I had lost my fellow instructor pilot on this T-3 cross-country sortie a few days earlier. He had suffered a severe ear block while descending into Luke AFB. But that's a safety story for another day. On that day, it would have been nice to have another brain to run my plans through.

The weather between Colorado Springs and the West Coast was severely clear, and I checked the NOTAMs for all possible en route stops and any likely divert fields. Everything looked good as I filled out the DD Form 175 for my three hops home in the mighty Cessna T-37B Tweet. The most direct route was to go from Peterson Field to Hill AFB in Utah. Sure, it seemed like a long way, but it was well within the range of the T-37. I had made the reverse flight twice before with no problems. Besides, the weather was great, and my aircraft was about 300 pounds lighter than normal since I was without the other pilot.

While doing my preflight, I noticed an Air Education and Training Command T-43 taxiing out for takeoff. I smiled to myself, thinking how the cadets onboard would spend the next couple of hours droning around, plotting their positions, and figuring out the airplane's ground speed, while I was in command of my own fully aerobatic jet trainer. I couldn't have been happier to have my Academy days behind me and be part of the "real" Air Force. Nope, there was no amount of money that would make me want to change places with one of those cadets.

As the T-43 climbed into the Colorado sky, it started a slight turn to the northwest. I finished the engine start and got my flight clearance as I began to taxi for takeoff. Ground control switched me over to tower frequency, and the J-69s in my T-37 started the jet down the runway and on my way to Utah and eventually home. The tower controller handed me off to departure control, and I was cleared to turn right and pick up a southeasterly heading. "Wait a minute, that can't be right. I need to turn north and get headed toward Utah," I said. A quick call to the ATC center provided my answer. The T-43 was operating in the Military Operating Area directly northwest of the airport. I would have to continue my climb to the southeast until proper separation could be achieved. Whoops, I hadn't counted on that, but I was sure it wouldn't be for too long. Ten miles later, I wasn't so positive. Twenty miles later, I really began to get concerned. Round trip, this was an extra 40 miles added to my flight. Not too far in a heavy aircraft, but that was about 10 percent of the range of a T-37. And this was already an abnormally long trip. Finally, I reached 25,000 feet (the Tweet's max altitude) and was cleared to turn northwest. I had already gone into fuel-conservation mode.

With the airplane's heating system in vent (an old Tweet IP trick to save fuel), I began to calculate the distance to Hill and the time it would take me to get there. I could make it all right, but it was going to be a long trip, and I would be cutting it close. With the fuel being so low and no one to talk to, I was checking my time and the fuel every five minutes, and I wasn't very happy with the results. Something else wasn't going right. A quick check of my whiz-wheel (everyone carries those, right?), and a confirmation from Denver Center provided me with another problem. The winds were hitting me right in the nose and were about twice as strong as forecasted. Big surprise, right? My ground speed was at least 20 knots below what I had planned. Things were not getting better; just the opposite.

I began quickly scanning my high chart for a suitable airport between my position and Hill. The only one I could find was Salt Lake City International, but I didn't really think that extra 25 miles was going to be a deal breaker. With the temperature in my cockpit rapidly falling toward zero, it was hard to believe how much I was sweating. I quickly figured out my turnaround point where I would be forced to continue or head back to C-Springs. I was also contemplating having to land on one of the few highways I saw beneath me — luckily I remembered to bring along my VFR charts.

USAF Photo by Dave Terry

We've all heard the rumors about pilots having to use their own credit cards to buy fuel for their jets, but I wasn't eager to try adding my name to this urban legend and on a mountain highway, no less! All of a sudden, being on that T-43, close to the field with lots of extra gas, was looking better and better.

About the time I was seriously considering declaring myself "minimum fuel," the first bit of luck came my way. Denver Center handed me off to Salt Lake Control. I had been requesting vectors direct to Hill ever since ATC had allowed me to turn north, but was denied each time. This new controller must have heard the urgency in my radio transmission or perhaps he wanted to steer me away from Salt Lake's very busy airspace. At any rate, things began to turn my way. Soon I was cleared direct to Hill's overhead, and during my descent, I was able to get a little heat back into my now-freezing cockpit. With no traffic in Hill's Sunday pattern, I was number one for landing, and never had "one to a full stop" felt so good. After a very brisk taxi and a sprint for the nearest latrine, I sat down with the 781s and realized I was logging a 2.2 sortie!

Safely on the ground, it was time to do a little reflecting on how lucky I had been. Even before my ADO had posed his question, I knew I had gotten away with something foolish. My "sky-hop" to Hill had been predicated on everything in my plan going right. But what if something went wrong? What if I didn't get the most direct routing? What if something happened with the weather or the winds weren't as forecasted? What if I'd had an ATC delay in the air or on the ground at Colorado Springs? What would I have done if I couldn't land at Hill due to an emergency or a problem with their runway? The point is that I hadn't really built any pad into my flight plan. Using the vernacular of the poker craze sweeping the nation: "I hadn't left myself any outs." Everything in my plan had to go my way in order for it to work: perfect, forecasted weather, direct routing, no deviations and no contingencies. After discussing it with my assistant ops officer, we both agreed, all in all it was a very poor plan. It's always a good idea to give yourself options. Have a fall-back plan. Give yourself room to maneuver.

Years later as a C-141 instructor pilot, I found myself planning a stressful mission from Germany back to our home base on the East Coast. Our load was very heavy, the weather everywhere was lousy, and the large crew was very anxious to get home after a long trip. While quizzing the weather forecaster for the best possible divert locations and en route fuel stops, the hair on the back of my neck went up when I heard one of the younger crew members say, "Hey, is this really the smartest plan we have?" "No," I answered. "You're right; let's give this a little more thought."

USAF Photo by Capt Joe Leeper

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In the summer of 2007, I PCS'd to Yokota Air Base, Japan, as one of the C-12's initial cadre. The C-12J Huron arrived in Yokota to replace the C-21A. Before the move, the C-12 had been a part of the 55th Airlift Flight, Osan Air Base, Korea. The unit closed, and three pilots, including me, received orders to PCS from Osan to Yokota to help stand up the C-12s in its new unit, the 459th Airlift Squadron.

In addition to receiving the new aircraft, the squadron would also pick up the C-12's annual deployment, Operation Enduring Freedom-Philippines. The OEF-P mission supported the Global War on Terrorism by assisting the Philippine military deal with insurgents and terrorist organizations throughout the Philippine Islands. Beginning in late August 2007, this deployment was the first for the Yokota C-12s, and it soon became a top priority for the squadron. "The aircraft just arrived here on July 1 and started flying missions in August, making this a pretty quick stand up for a deployment," said Lt. Col. Sara Beyer, squadron director of operations (Summers, 2007).

As the initial OEF-P mission commander, I had about one month to plan and prepare for the deployment. Although I had no experience with OEF-P, I knew there was a lot to do from all the stories and advice I received from the 55 ALF pilots who had participated in the previous year's deployment. Items on the to-do list included a study of the Philippine airfields and request for waivers to operate on some of these fields. Airfields required a waiver if they were not in the Airfield Suitability and Restrictions Report or didn't meet minimum C-12J runway width and length requirements.

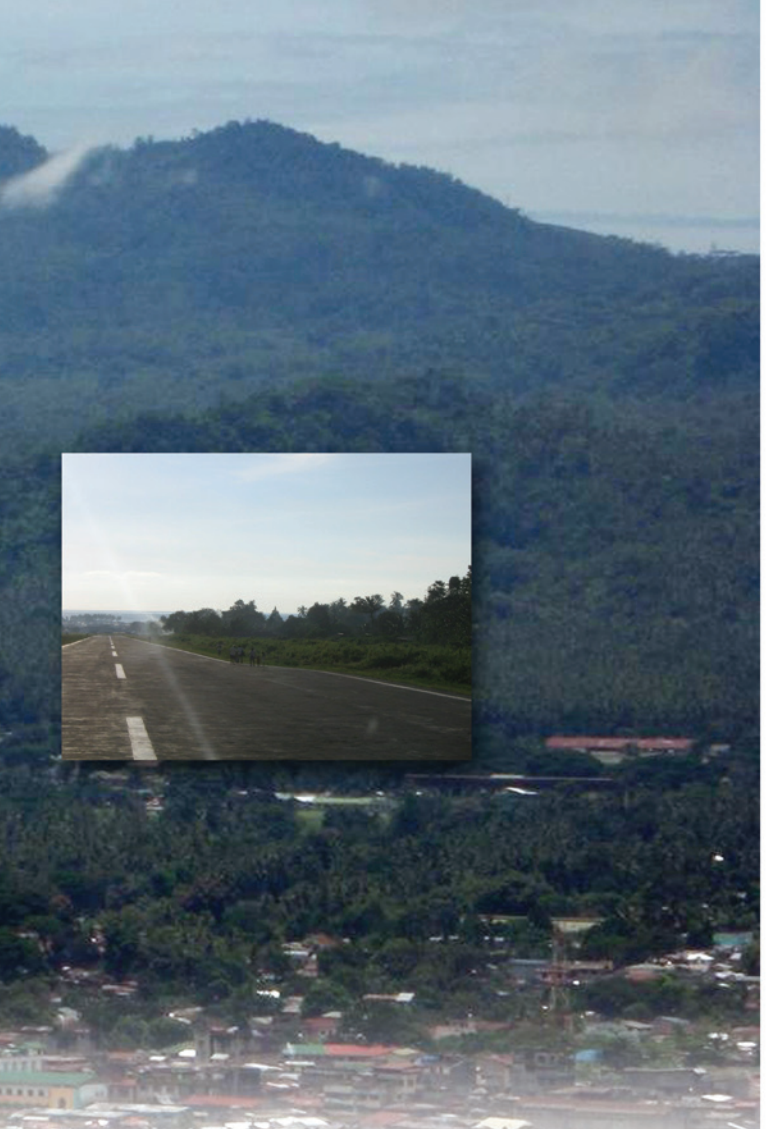
Many airfields required a waiver. In particular, Jolo Airfield received special attention due to its runway length, condition and hazards. The runway needed a waiver because of its 4,000-foot length. It barely met minimum runway width (60 feet) and didn't have the greatest surface condition. While the field is included in the ASRR, the report didn't specify C-12 suitability. Furthermore, the field is day and visual flight rules only, due to no navigational aids, instrument approaches and runway lighting at the

USAF Photos by Capt Joe Leeper

airport. In addition, takeoff and landing data prevented us from operating into this field with a wet runway. Finally, probably the most important factor is the number of hazards that existed on the field. At one end of the runway, trees and mountainous terrain allowed us to land and takeoff in only one direction and hampered the aircraft's go-around capability. Random foreign object damage and animals, such as stray dogs, would somehow make their way onto the runway and posed a tremendous risk. One of the more popular stories told to me by a 55 ALF pilot occurred during a takeoff at Jolo. The pilots had passed the go/no-go decision speed, then saw a dog run onto the runway. Upon rotation, they heard a thump and continued to their next destination. After accomplishing a safe landing, they saw one of its landing gears covered in blood and guts. The U.S. Special Forces at Jolo later called to confirm that the poor dog was split in two.

Throughout the planning process and after taking all of these issues into consideration, I remember asking myself, "Do we really need to operate into this field?" The answer was, "Yes," as a huge part of the operation took place in Jolo. Once the waivers were approved, we were legal to operate into the field. The Army and Navy also operated their C-12s into the field, and they assured me that it was not that bad. Of course, their model of the C-12 was smaller, and they operated under different rules compared to the Air Force. Moreover, if previous Air Force C-12J deployments operated into Jolo, then surely we could, right? Since this was the case, I was going to make sure that everything was accomplished to make operating at this field as safe as possible. Mitigating the risks became one of my top priorities in the planning process. Before our deployment, crews practiced short-field landings in a new training program designed specifically for landing at Jolo. Aside from an airfield study, this was the best we could do in preparing for operations into the field. Unfortunately, there were no BASH plans or wildlife control. Even NOTAMs didn't have Jolo in its listings. I admit that I departed for the OEF-P deployment a little apprehensive about operating into that airfield.

The first time I flew into Jolo went as expected. The field was uncontrolled, and a quasi-fixed base operator asked over the radios if there were any aircraft currently operating at the field. Being a VFR-only field with no navaids or instrument approaches made finding the runway difficult at first. We relied solely on our eyes and terrain charts, not as com-



mon in the C-12 compared to other aircraft. Once we found the field, we accomplished a straight-in on the initial approach and performed a go-around to check the condition of the runway. Due to the obstacles at the departure end, we couldn't fly as low as we would have liked. To our best judgment, the runway looked clear, so we proceeded for another visual approach to land.

The narrow runway made landing on centerline critical. Upon touchdown, I noticed the runway condition. It was rough, and I could definitely feel the nose gear bounce up and down as we proceeded down the runway. Getting the aircraft to stop within the runway length was not a factor. However, what we saw at the end of the runway came as a surprise. A wooden beam with a metal pole attached to it was just left of centerline. Three dogs had also found a nice resting spot in the middle of the runway. I couldn't imagine what would have happened if those items had been within our landing stopping distance. We stopped and accomplished the engine running off/onload checklist. I exited the aircraft to clear the beam from the runway and chase the dogs away. After returning to the plane, we started the engine to continue taxiing to the end. From there, we accomplished a 180-degree turn and accomplished another ERO to load the cargo. While loading the cargo, I noticed the dogs on the runway again. I asked the U.S. Special Forces soldier if he could clear the animals from the runway. When he began throwing rocks at them, I approached him again to clarify what I had meant. After the rocks and dogs were removed, we took off and completed the rest of the mission uneventfully.

My first experience at Jolo paved the way for how I wanted to operate into the field for the remainder of the deployment. From that point forward, crews flew a low approach before landing at the field. Every time Jolo was on the schedule, I also coordinated for U.S. Special Forces to clear the runway. For the most part, this was effective, and we operated for the remainder of the deployment without any mishaps or damage. Unfortunately, there were moments when Special Forces were unavailable and on those days, we never knew what we would see at Jolo. Throughout the course, we encountered livestock, a jogger, and children on the runway. Sometimes all on the same day. Luckily, no incidents ever came of it. When asked to describe the airfield, one of the pilots on the deployment replied, "There's no tower. There's no requesting to land. There's just a cow and a windsock" (Dubee, 2008).

What I learned from this was twofold. First, preparation plays a huge factor in mitigating risks. In this example, reviewing the airfields, practicing short-field landings, and sharing experiences from previous pilots all played a role in making me feel more comfortable about operating at the field. I would later use this during the crew swap and for ensuring a good handover for my replacements. I had Jolo scheduled for the swapout crew's first mission and even flew with them, discussing and pointing out the hazards. The second concept I learned deals with the role of adaptability in the safety process. Since I had little knowledge and experience, I used my first trip to Jolo to help come up with a plan. As new situations arose, I learned to adapt and make changes to how we operated in and out of the field. Clearing the runways and coordinating with the Special Forces on the ground are prime examples. In the end, ensuring safety is a continuous, ever-changing process. That's why safety programs exist today.

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The Cost Of Doing Business: Maximizing Allowable Risk

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Military aviators are acutely aware of the inherent risk involved in their missions. Whether leading the initial attacks or providing humanitarian aid to others around the world, aviators are expected to perform their jobs, often overcoming daunting challenges. The training environment is where pilots begin their quest for a career in flying. Over the years, it has become more apparent that pilots require training that emphasizes safety and realism. Scenarios are increasingly designed to model the fight that the U.S. Armed Forces are facing in the current War on Terrorism. Unfortunately, simulated scenarios can never provide the complete experience. Conditions in the real world often merit higher levels of risk than are warranted during a training scenario. While weather minimums and emergency procedures are rarely challenged without consequences in the training environment, they may not be strictly adhered to in the combat environment, especially when actively engaged by enemy forces. Nevertheless, a dangerous downside to "combat adrenaline" is the desire by aviators to push the limits in combat situations, often leading aviators to bypass critical fundamental procedures unnecessarily.

USAF Photos by SrA Brian Ferguson

One such example was clearly demonstrated by an HH-60G combat search and rescue crew on a mission in Afghanistan. On a moonless fall evening in the heart of Afghanistan, a Pavehawk crew received a tasking to rescue two critically wounded coalition soldiers. A convoy had come under attack, and the soldiers were bleeding from multiple bullet wounds. The area was still under attack when the mission came down to launch. Originally, leadership hesitated launching the aircraft to avoid further casualties. However, further information led them to believe that the attack would be repelled before the end of the hour-long flight to reach the wounded soldiers. Leadership approved the launch, and the HH-60G crew, with an AH-64 Apache escort, took off near their maximum gross weight. Calculations by the pilots and flight engineer showed that the Pavehawk would likely have a 2 to 3 percent power margin for an out-of-ground-effect hover after the fuel burn during the hour-long flight. In the meantime, both leadership and the rescue aircrews hoped that the convoy on the ground would fend off the attack with their A-10 and AH-64 air assets on-scene.

Upon arrival south of the landing zone, the rescue aircraft determined that the area was still "hot." Enemy combatants had largely been contained, but sporadic mortar attacks and gunfire were still factors, limiting the convoy's ability to move from behind their cover to a safer location. The rescue crews were strictly instructed to not proceed until the ground team deemed the area "cold." The consensus from the rescue crews and the coalition ground forces was to attempt the rescue due to the critical condition of the two wounded soldiers, estimated to be within two hours of fatality. Focusing largely on the sporadic enemy gunfire, the HH-60G crew overestimated the necessity to enter the landing zone with a tactical approach. Generally, tactical approaches are reserved for combat situations, because performing a remote profile in the aircraft would be overly time-consuming and expose the aircraft to enemy fire. The remote profile incorporates multiple passes in a circular pattern overhead at a high altitude and a low altitude, referred to as high and low reconnaissance, close to the landing parameters to give the aircrew a good visual confirmation on the probable landing area. The aircrew diligently determines the existing conditions in the potential zone with their instruments and by direct sight during these reconnaissance passes. In contrast, the tactical profile omits these high and low reconnaissance reviews over the landing zone. The tactical approach is implemented in lieu of the remote approach by evaluating the most critical information before arriving to the zone, such as winds, elevation, temperature, pressure and terrain (analyzed via maps that give little detail on the exact landing location often picked on short final). The unfortunate dilemma is that evaluating such information before arriving to an area gives the aircrew at best a "wag" of the actual conditions. The mountainous environment often presents drastically different conditions from one ridgeline to the next, and performing evaluations of current conditions en route before arrival can give significantly unrealistic expectations in the actual landing area. More importantly, the tactical approach gives pilots little opportunity to see intricacies that often accompany the landing zone. Too many times, helicopters come too close to unknown hazards, such as trees and ditches, when landing in unfamiliar territory.

USAF Photo by SrA Brian Ferguson

A further problem with incorporating tactical approaches unnecessarily is that it also limits the aircrew's ability to apply thorough operational risk management. It's generally understood that ORM is a continuing process throughout the sortie and that it must be constantly updated as the mission evolves. While aircrews may still accomplish an update to ORM when using a tactical approach, they may not have enough information to adequately update the situation. Thus, an essential tool to weighing the risk versus benefit is often omitted or used in less than its full capacity.

Consumed by the urgency of the medical situation and the threat of the enemy, the Pavehawk crew expedited their approach into the zone to recover the two critical coalition soldiers. The tactical approach was initiated with a direct crosswind, due to the mountainous terrain that rose from the direction of the wind. With little information on the landing area, the crew began its approach and encountered a brownout beginning about 50 feet above the ground. Brownout is dirt or sand kicked up by the rotor wash of a helicopter, completely blinding the pilots when landing. It's common for pilots to use a combination of their instrumentation and outside visual cues in these situations; brownouts typically don't blind pilots until the last 15 feet above the ground. This brownout severely limited the crew's ability to visually navigate into the zone with the normal outside/inside crosscheck, and a go-around was called for. The pilot quickly maneuvered the aircraft around for another approach, with no evaluation of the conditions encountered on the first approach. On the second approach, the brownout began at virtually the same height above the ground, and the pilot was excessively slow, requiring a second go-around.

On the third approach, it was decided that shooting the approach directly into the wind might be a more suitable flight path, despite the lack of an escape route ahead caused by the rising terrain. The aircrew was unaware that the landing zone itself would now have a cliff off the right side with this new approach angle. The third approach culminated with a nearly catastrophic ending. The pilot, determined to not get slow as he had on the second approach, kept a higher airspeed going into the zone. As the brownout engulfed the Pavehawk, a slight right drift was induced by a minor case of spatial disorientation that is quite common with a rapid disappearance of any discernible outside visuals. The aircraft quickly drifted toward the cliff, missing the landing zone by only a few feet. The cliff had a 30-degree slope near the top

and quickly increased to greater than 60 degrees further down the ridgeline. The Pavehawk was nearly double its allowable slope limit upon the left wheel at touchdown, and began a right roll to tumble down the mountainside. With a combination of training, luck and divine intervention, the Pavehawk ceased its rolling momentum, and the pilot was able to take off.

As if the mission had not already had its fair share of tests, another challenge arose during takeoff out of the zone. Unknown to the crew, the aircraft experienced significant power deterioration stemming from the ingestion of sand on the three approaches into the landing zone. The number two engine was now producing roughly 20 percent less power than it did when the mission started. As the aircraft flew away from the impending destruction of the ridgeline, the rotor rotations-per-minute slowed below acceptable flight limits once the momentum from ground effect ceased. The engines simply didn't have enough power to keep the rotor at its required speed, and the aircraft, having reached 100 feet, began to settle back toward the ground. The FLIR image showed nothing but mountain ahead, and the pilots could only hold the power in at the level required to clear the terrain, hoping that the engines would eventually catch up. Pulling in more power would only exacerbate the situation by demanding more pitch from the rotor and slowing it down further. Taking power out would clearly lead to the inevitable crash into the terrain ahead. Slowly, the engines caught up to the rotor, and the Pavehawk cleared the terrain by 10 feet. The aircrew climbed safely overhead and gathered their thoughts on how to proceed for the rest of the mission, nearly forgetting about the enemy who drove them to choose the tactical profile in the first place.

It was at this point that the Pavehawk crew identified hazards and assessed the risk. First, the crew discussed that they were ready for one final attempt to rescue the two coalition soldiers. The crew was shaken up, but determined to make things right. Next, the crew discussed the enemy and realized that the occasional muzzle flash was not really a factor in their approaches into the zone. Third, the combination of the significant brownout, coupled with a moonless night, required further planning to identify the actual landing spot that the convoy was expecting. The crew felt that the benefit of saving the two lives outweighed the risk of going in for a fourth and final attempt.

The crew used their new epiphanies to analyze risk control measures. They agreed to dismiss the enemy threat, opting to perform a high and low reconnaissance analysis of the landing spot in a right turn and a left turn, so that the entire crew would have a good view of how to make the approach. On the low approaches, the pilots each took a turn flying down to about 50 feet, maintaining good forward airspeed to attain temperature, wind, pressure and a close-up view of the landing zone. Finally, the aircrew requested that the ground team light up the edges of the area with chemlights. This gave the aircrew a clear outline of exactly where to land the helicopter. Having made the control decisions and implementing the risk control measures, it was time to make the final attempt. Nervousness pervaded the atmosphere of the aircraft as the aircrew began their descent into the dark bowl of the landing zone. The landing was picture perfect, and both coalition soldiers were loaded onboard the aircraft.

Safely returning both soldiers to the hospital, the Pavehawk crew learned an essential lesson: there is never a situation where some form of safety awareness and risk management cannot be applied. It's tempting at times to forego the litany of regulations and guidance during real-world missions that often seem to inhibit mission execution. There are certainly situations where higher levels of risk are acceptable, perhaps even warranted, but a careful analysis of that situation should be attempted when possible. More often than not, as this Pavehawk crew experienced firsthand, there is time to make responsible and carefully considered decisions, even in the heat of battle.

The Aviation Well Done Award is presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Mishap Prevention Program.

CAPT. CHRISTOPHER T. RUST AND CAPT. ADAM C. FISHER
358th FS
Davis-Monthan AFB, AZ

The Aviation Well Done Award is presented to Captain Adam C. Fisher and Captain Christopher T. Rust, 358th Fighter Squadron, Davis-Monthan Air Force Base, Arizona. On Nov. 7, 2007, Capt. Fisher, A-10 pilot, and Capt. Rust, Instructor Pilot, safely and expertly recovered a $12 million A-10 aircraft on a single engine. While practicing turning rejoins on his first sortie, Capt. Fisher pushed his throttles from idle to max, immediately felt the aircraft shudder, and heard a gunshot-like "bang" from the left side. He quickly pulled his throttles to a mid-range position and noticed his left engine instruments fluctuating out of range. Without hesitation, Capt. Rust established a chase position on the stricken aircraft, calmly and adeptly assisted in troubleshooting the malfunction while maintaining situational awareness and control of the flight. After noting the abnormal engine indications, Capt. Fisher correctly diagnosed the problem as an unrecoverable compressor stall and shut down the malfunctioning engine. Capt. Rust directed his student to proceed to Libby Army Airfield and declared an emergency. The alertness, ingenuity and airmanship displayed by Capt. Fisher and Capt. Rust allowed them to flawlessly handle one of the most difficult A-10 emergency procedures. Capt. Fisher's and Capt. Rust's actions reflect great credit upon themselves, Air Combat Command, and the United States Air Force.

FY08 Aircraft Flight Mishaps
(Oct 07 - Feb 08)

9 Class A Aircraft Flight Mishaps
1 Fatality
8 Aircraft Destroyed

FY07 Aircraft Flight Mishaps
(Oct 06 - Feb 07)

11 Class A Aircraft Flight Mishaps
1 Fatality
5 Aircraft Destroyed

Flight Rate Producing

01 Nov	F-22A		No. 2 engine FOD discovered during post-flight walkaround
02 Nov	F-15C	✈	Crashed on training mission; pilot suffered minor injuries
20 Nov	E-8C		Hard landing; wing/pylon/gear/radar damaged
28 Nov	T-6A	✈	Dual T-6 midair collision
29 Nov	HH-60G		Hard landing during brownout; damaged FLIR, WX radome
15 Jan	F-16C	✈	Aircraft crashed in ocean during training mission
01 Feb	F-15D	✈	Aircraft crashed in water training mission
20 Feb	F-15C	✈	Dual F-15C midair; 1 pilot fatality
23 Feb	B-2A	✈	Aircraft crashed on takeoff

UAS

29 Nov	MQ-1B	✈	Departure from controlled flight; destroyed on impact; cause unknown
17 Dec	MQ-1B	✈	Lost link; destroyed on impact; cause undetermined

- A Class "A" aircraft mishap is defined as one where there is loss of life, injury resulting in permanent total disability, destruction of a USAF aircraft, and/or property damage/loss exceeding $1 million.
- These Class A mishap descriptions have been sanitized to protect privilege.
- Unless otherwise stated, all crew members successfully ejected/egressed from their aircraft.
- Reflects all fatalities associated with USAF aviation category mishaps.
- "✈" Denotes a destroyed aircraft.
- USAF safety statistics are online at http://afsafety.af.mil/stats/f_stats.asp
- **If a mishap is not a destroyed aircraft or fatality, it is only listed after the investigation has been finalized. (As of 28 Feb. 2008).**

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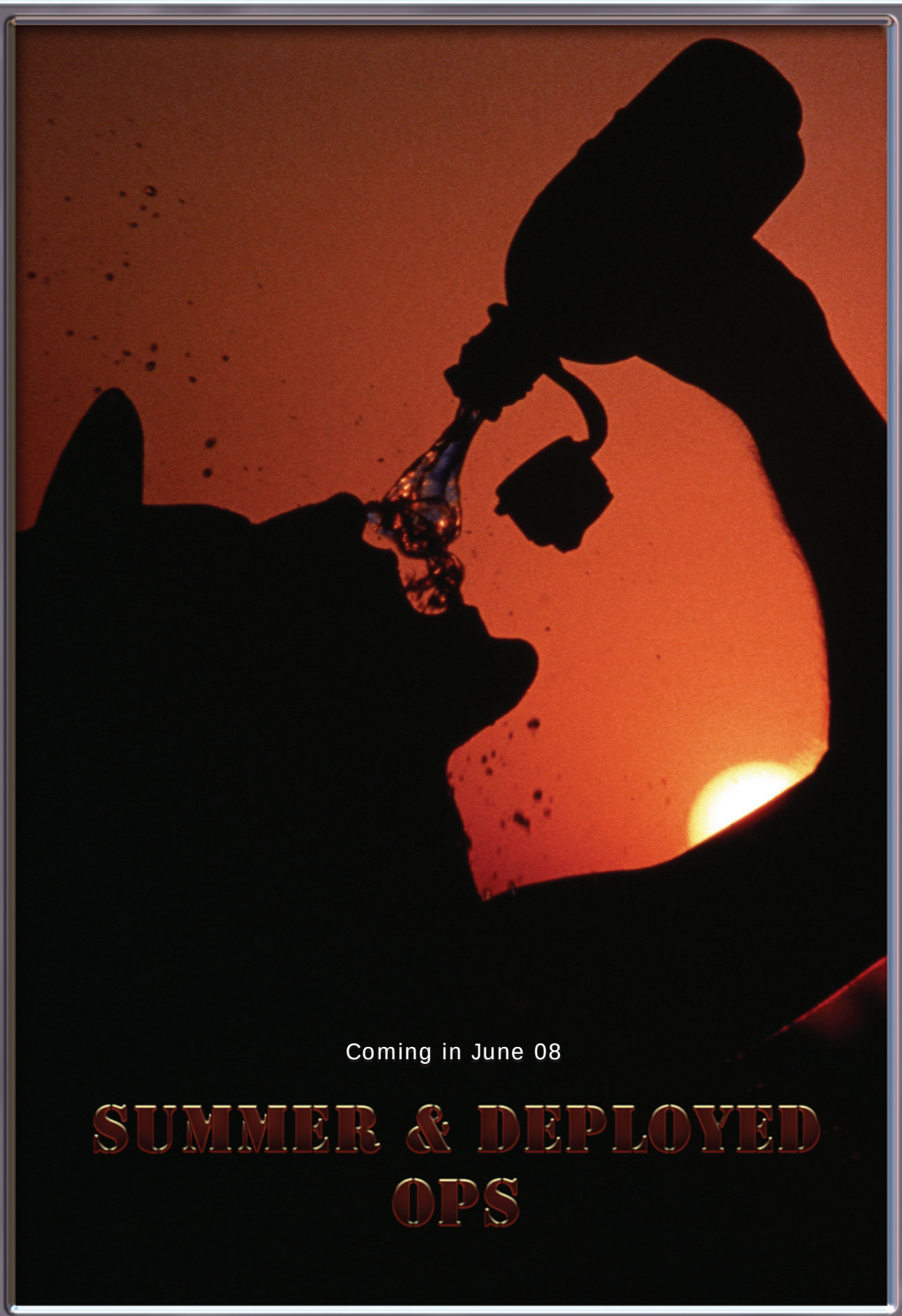

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