

Show and Tell

By Maj. R.C. Meade, USMC

Every *Approach* article seems to begin with, “It was a clear day,” or “It was supposed to be an easy hop.” In my case, it was both—which should have set off an alarm in my head.

Five years in the fleet had earned me a good-deal tour in Pensacola. After completing ground training, I was scheduled for my first hop at the flight-instructor-training unit. I hadn’t touched the controls of a T-34C in six and a half years, and I wondered how quickly my skills would return.

The flight was supposed to be a low-stress, show-and-tell hop. I was paired with Steve, a fellow Marine captain and experienced instructor pilot. We ran through a quick NATOPS brief, preflighted, and did the checklist. Positioning



the aircraft on the runway, we set 500-foot-pounds torque, took one last look at the gauges, and started our takeoff roll. As the aircraft cleared the deck, we checked the fuel cap on each wing for streaming fuel. Although we saw a small amount of clear fluid coming from both caps, we weren't concerned. During preflight, Steve had pointed out water had collected in the caps during the previous night's rainstorm. We expected some fluid, mixed with residual fuel, to seep from the cap. We retracted the gear and began our climb to the working area.

Leveling off at 4,500 feet, en route to area 1, Steve asked if I smelled fuel vapors in the cockpit. I could detect a faint odor of JP-5 but wasn't sure how much was normal. The T-34 NATOPS mentions that transient-fuel vapors may be present in the cockpit, particularly after certain aerobatic maneuvers. Although our departure hardly qualified as aerobatic, we discussed our situation and decided, if the smell persisted, we would don our oxygen masks and head back to Whiting Field. The fumes went away after a few minutes, and Steve continued his tour of the outbound-course rules.

We just had canceled radar advisories and were heading toward the working area when the fuel fumes returned. The smell was mild but persistent, so we opted to head home.

We donned our oxygen masks and followed the procedures for streaming fuel. After reciting the memory items, I pulled out my pocket checklist and went through the items step by step. The second step states, time permitting, electrical power to both wings should be secured by pulling a series of circuit breakers. While the pilot radioed Pensacola Approach and declared an emergency, I continued to pull circuit breakers, securing power to the affected items. As Steve set up the aircraft for the emergency-landing pattern, I began the procedure for manually extending the gear. Reaching for the landing gear, power-and-control circuit breakers, I saw the entire panel was covered with fluid. I looked down at the map case and realized all the electronics on the right sub panel were sprayed with the same clear liquid.

Doing my best to sound calm, I keyed the

ICS and said, "Uh, Steve, the circuit-breaker panel and all the electronic gear are covered with something...I think it might be fuel."

I hoped it was condensation from the air conditioner, but, to make sure, I wiped a gloved hand along the map case and lifted it to my face to check. When I broke the seal on my mask, I nearly gagged on the fuel fumes.

"Yeah Steve, it's definitely fuel," I called.

I pulled the appropriate breakers, put down the gear handle, engaged the clutch knob, and began cranking.

After 42 turns, the gear-extension handle stopped abruptly. As I turned to check the gear-position indicator, my stomach sank—three barber poles. From the rear cockpit, I heard my copilot exhorting me, "Keep going...the gear still isn't down."

I looked in the mirrors and told him, "That's it, the handle won't budge."

I looked back and saw Steve shaking his head, as he muttered over the ICS, "This just isn't my day."

After telling tower of our unsafe-gear indication, we headed for the overhead pattern to sort out our problem.

Imagine, orbiting overhead with an emergency that tells you to land as soon as possible, with fuel coating the cockpit and sloshing around under your seat. You also have three unsafe-gear indicators, and you're wearing an oxygen mask to keep from being overcome by fuel vapors. What are your choices? Gear-up landing? Point the plane in a safe direction, and get out?

More questions popped into my head. Where is the fuel coming from? How long can I fly before something ignites the fumes? Did I miss a step in the procedure? Is this a gear-indicating problem, or is this really an unsafe gear? Why didn't I stay in the fleet?

As Steve focused on flying and coordinating a visual inspection of the gear, I ran through the procedures in my mind. Step one, permissible exposure level—no questions there. Step two, time permitting, secure electrical power to the wing. Hmm, what circuit-breakers did I pull? AOA probe, nav and strobe lights, gear-indicating



Where is the fuel coming from? How long can I fly before something ignites the fumes?

system. With a quick “Aha,” I told my copilot I thought I had solved the mystery. Although I wasn’t wild about resetting a circuit breaker on a panel covered with jet fuel, I equally was uninterested in hanging out for a visual inspection. After closing my eyes and turning my head away, I gently nudged the breaker back into place.

Thankfully, there was no explosion, and I instantly was rewarded with “three down and locked.” Steve reintercepted the emergency-landing profile, and we were on the ground in no time. As the aircraft stopped, we completed an emergency shutdown. The crash crew came

and signaled frantically for an engine shutdown. As I exited the cockpit, fuel ran out of the nose compartment, and the underside of the aircraft was coated in JP-5.

A bucket was placed under the nose to catch the leaking fuel, and, once everything was safe, we had our first look at the problem. Streaming fuel in the T-34 usually occurs when a fuel cap isn’t seated properly, but this case was different. The fuel filter on the engine-driven fuel pump wasn’t reinstalled properly after maintenance. Instead of being torqued to a specific value and safety wired into place, the filter only was hand-tightened. This situation created an eighth-inch gap between the filter and the pump. At full power, the pump operates at 800 psi, pushing a lot of fuel out of the system in a short time.

Here are the three lessons I took away from this experience:

- There is no such thing as an easy hop. Disaster is lurking around every corner, so expect it.
- Dealing with mild or intermittent indicators is a bit like dealing with substance abuse. Acknowledging you have a problem is the first step to getting better.
- Knowing your procedures isn’t enough. We executed every step in accordance with NATOPS, but it was calm heads and solid understanding of systems that prevented this problem from getting worse.

Maj. Meade is currently with MAG-26.

A picture's **Worth a thousand words...**
and **Thousands of hits on your website.**

Check out the Photo of the Week at
<http://safetycenter.navy.mil/photo/default.htm>

