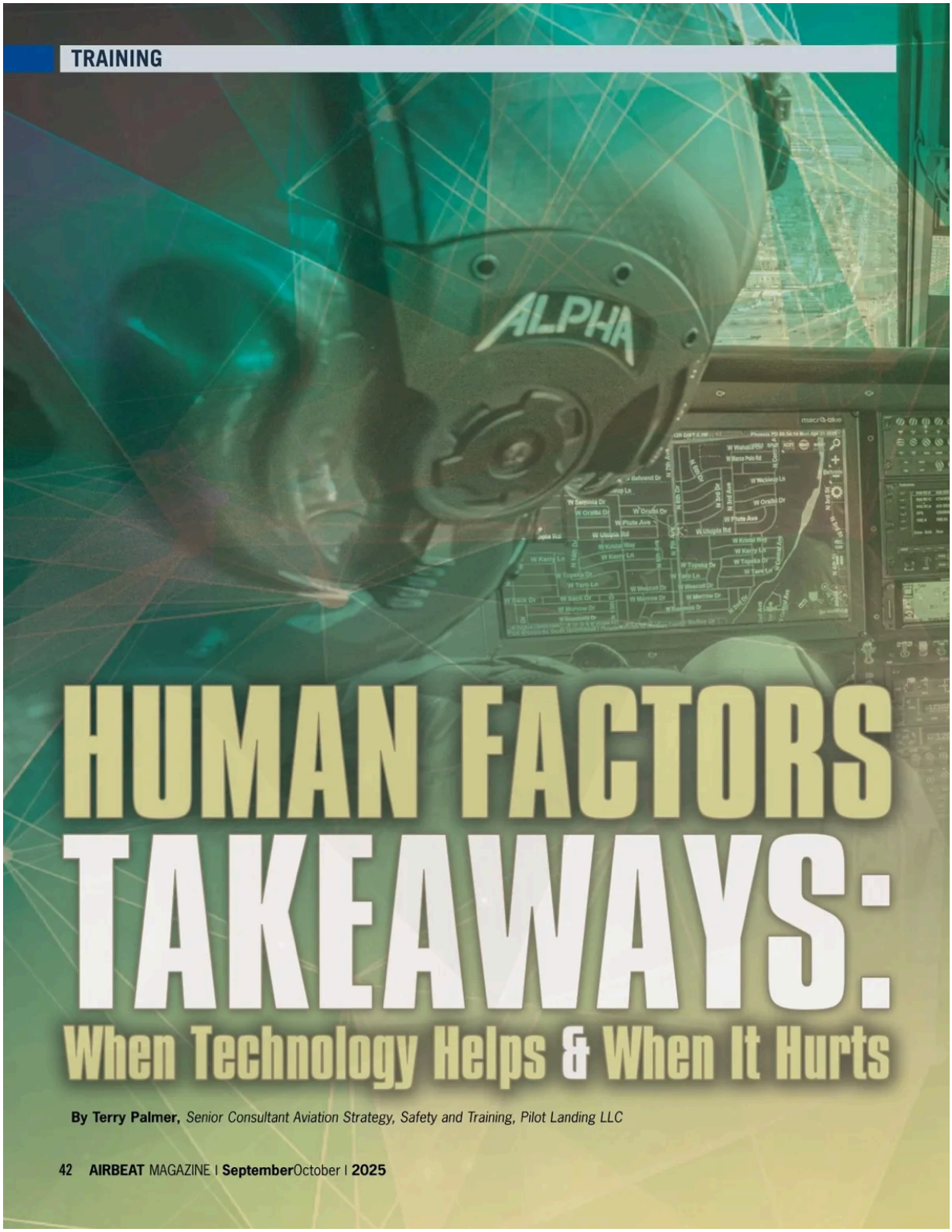

HUMAN FACTORS TAKEAWAYS:

When Technology Helps & When It Hurts

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It's hard to imagine flying without all the tools we have today—moving maps, GPS, tracking systems, digital checklists, even weather radar in the palm of our hand. In public safety aviation, these tools have made operations safer, faster and more efficient.

But as much as technology can be our best friend, it can also quietly work against us. It's easy to forget that the shiny screen in the cockpit is only as good as the person using it—and that every system has limits.

Recent National Transportation Safety Board investigations highlight how even experienced crews can run into trouble when technology distracts from, or even replaces, basic airmanship and communication.

Night Search: Losing Sight of the Basics

A public safety helicopter crew recently launched at night to help ground officers locate a suspect. Conditions were dark, with limited cultural lighting in the search area. The crew equipped themselves with night vision goggles and began scanning with a camera system mounted on the aircraft.

As the search went on, the crewmembers' attention narrowed. Heads stayed down on the video monitor, calls were exchanged about thermal images, and altitude checks became infrequent. Terrain awareness alerts sounded—but the crewmembers were competing with mission chatter and the task of keeping the suspect in sight. By the time the warning registered, the helicopter was already dangerously close to the ground. Recovery came too late.

NTSB concluded that the crewmembers' fixation on mission tools caused them to lose track of their altitude—a fundamental element of safe flight. The technology worked exactly as designed. What failed was the crew's ability to divide attention between their tools and the environment.

Human Factors Takeaway: Even in high-pressure missions, no tool should take your eyes and mind completely away from flying the aircraft.

Overwater Patrol: Drifting Into Danger

In another investigation, a helicopter crew was performing a routine overwater search. Moving map and tracking systems were front and center, giving the crewmembers precise location data and a digital record of their search pattern. But conditions began to change; clouds lowered, visibility reduced and light winds shifted the aircraft subtly off course.

With their eyes fixed on their screens, the crewmembers didn't notice the visual cues outside that would have told them they were nearing the edge of the safe operating area. By the time they recognized their position, they had drifted into a zone with limited options for an emergency landing. A safe return was possible, but it took immediate corrective action—and a measure of luck—to avoid a worse outcome.

NTSB found that, while the crewmembers maintained positional awareness digitally, their visual situational awareness degraded. They relied so heavily on their moving map that they missed the early warning signs nature was giving them.

Human Factors Takeaway: Technology can tell you where you are, but only your

eyes can tell you what's changing around you outside the aircraft.

Firefighting Flight: The iPad That Stopped the Pedals

Sometimes, technology's danger isn't in the data—it's in the hardware itself.

During a wildfire mission, a CH-47D Chinook helicopter crew was conducting long-line water drops over rugged terrain. The cockpit was busy but routine, with both pilots focused on the mission. Then, without warning, the helicopter began to yaw uncontrollably.

The co-pilot tried to correct with the pedals, but they wouldn't move freely. The yaw increased, and the crew quickly realized they were losing control. Seconds later, the helicopter struck the Salmon River. Both pilots died in the crash.

When investigators recovered the wreckage, they found the culprit: the company-issued iPad used for mission planning and mapping. The device had fallen and become wedged between the co-pilot's left pedal and the airframe, physically preventing the pedals from re-centering. Gouge marks on the iPad matched the pedal assembly exactly.

NTSB concluded that, because of cockpit layout, seat restraints and the pilots' helmets, neither crewmember could reach down and free the jammed iPad in time. It was a heartbreaking reminder that even a useful piece of technology can become a hazard if it's not properly stowed.

Human Factors Takeaway: If anything is not secured, it's a potential hazard—no matter how essential it is to the mission.

Lessons Across Every Mission

These three cases share a common thread: The technology performed exactly as intended—or at least as designed—but the way it was used, placed or relied upon set the stage for trouble.

So, how do we avoid the trap?

1. *Treat technology as an aid, not a crutch.* Every pilot learns to cross-check instruments, maintain outside scanning and communicate clearly.

That doesn't change just because the screen looks impressive. The basics are what save us when technology doesn't.

2. *Train for distraction.* Many operators train for equipment failure—but how often do we train for "technology overload"? Practice scenarios where multiple systems demand your attention at the same time. Decide in advance what deserves priority.
3. *Know what "normal" looks like.* Systems onboard can show trends and patterns over time. Learn the baselines so that when something looks off, you can react before the problem grows.
4. *Learn from others' mistakes.* The NTSB database isn't just for investigators. Use real-world cases in safety briefings. When people see how easily a good crew can be caught off guard, it drives the lesson home.

Technology will only grow more advanced from here, and that's a good thing. But whether you're flying for firefighting, wildlife enforcement, law enforcement or EMS, remember that no tool replaces judgment, situational awareness and solid crew coordination.

The pilots and crews who stay safest are the ones who balance old-school skills with new-school tools—using technology to back them up, not bail them out.