THE HUMAN FACTOR

It's almost axiomatic to say that human factors are somehow involved in every aviation incident or accident. That includes drone accidents. While officially known as "unmanned aircraft systems," most drones still have pilots — and the remote pilot of a drone is as human as any other pilot. The very nature of human beings carries the inevitability of mistakes. Even though designers and engineers have worked very hard over the years to design machines that are immune to, or at least tolerant of, mistakes by those who fly and fix them, human beings have a remarkable way of finding new ways to make errors. We all know that those errors can be deadly in aviation.

That's where human factors research comes in. In the United States, the more formal discipline of human factors started during the World War II era. The combination of mechanical and procedural advances has dramatically reduced the ugly numbers that were almost viewed in that era as a "cost of doing business." But even one accident is too many, and so the work aimed at reducing both mechanical and human factors causes continues. That's also why the team is devoting this issue of *FAA Safety Briefing* to a fresh look at the discipline of human factors.

The Abstraction Distraction

If you think the term "human factors" sounds very abstract, I agree with you. Some may even regard it as a largely meaningless cliché. It's neither an abstraction nor a cliché! So, before we go any further, let's nail down what we mean by "human factors" and why this branch of science merits your attention.

HUMAN FACTORS PLAY A BIG ROLE IN AVIATION SAFETY, NOT ONLY FOR THOSE WHO PILOT AIRCRAFT, BUT ALSO FOR THOSE WHO DESIGN, MANUFACTURE, AND MAINTAIN THEM.

A traffic accident investigator named William Messerschmidt deftly describes it as "the way people interact with the human-made or influenced environment." Specifically:

> *(P)eople make things, others interact with those things, and we're curious as to how those interactions are likely to end up. (…) We're often asking how we can make those interactions safer, more efficient, or better in some way.*

A more formal definition calls human factors "the study of how humans behave physically and psychologically in relation to particular environments, products, or services." The same source goes on to note that "factors of humans" (emphasis mine) include attention, detection, perception, memory, judgment, reasoning, and decision-making. All these factors play a role in aviation safety, not only for those who pilot aircraft, but also for those who design, manufacture, and maintain them.

A Look Ahead

Here's a preview of the magazine team's take on this crucial topic. At the time of this writing, stress is quite literally a global condition arising from the pandemic coronavirus health emergency. So, we'll launch with a look at stress, which the *FAA Safety Briefing* editor characterizes as the "ultimate" human factor. Magazine alum Sabrina Woods, whose passion for human factors science led to her recently earned Ph.D. in this topic, leads a discussion of bias and its potential for behavior adverse to safety. We devote another feature to the "humans behind human factors" research and application in the FAA, whose work is even more important in light of issues that contributed to the B-737 MAX accidents. You will meet one of the FAA's leading "humans in human factors," Dr. Kathy Abbott, in this issue's FAA Faces department. Other topics include fatigue, workload and task management, and much more.

If you are among the many whose aviation activities have been sidelined by the pandemic, we hope you will use any stay-at-home time that remains to join us for this deep dive into the multifaceted world of human factors — and, once released for normal activities, that you will take the time to ensure that you are ready for a safe return to the sky.