

The Statewide Committee for Research honors Alaska's

Northern Innovators



Greg Walker The Unmanned Flyer

Northern Innovators Hall of Fame Member

Some places in this world are just too dirty, dull or dangerous for human pilots to fly. An airspace in the latter category is anywhere near gas flares in Alaska's oilfields. With only a few seconds of warning, flames blast high in the air from a network of pipes, releasing the stress of sucking oil from deep in the ground.

One dark winter day, Greg Walker found himself in a parka squinting at these fire-breathing nozzles near Prudhoe Bay. He stood a safe distance away, controlling a distant flying king crab that buzzed around flaming flare heads 50 feet above the ground. The 2.5-pound flying machine captured video and five-megapixel images of the flares and their support pipes, some of them jacked by frost and needing repair.

Walker's mission was to help oil-company workers for BP figure out which expensive parts they needed to replace during the next summer's scheduled maintenance. The king crab was one of BP's Aeryon Scouts, a four-propeller flying machine BP had purchased for use on the Deepwater Horizon oil spill. BP collaborated with Walker and his team because they are experts on operating unmanned aerial vehicles, both those belonging to other people and their own.

As the director of the Alaska Center for UAS Integration, part of UAF's Geophysical Institute, Walker has acquired a fleet of these tools in an enterprise that is making he and his team very busy. His group of creative people consists of more than a dozen others including consulting engineers, software engineers and operations and maintenance people.

Walker, 49, built the university's program from scratch after coming to Alaska on a whim in 1998. He formerly ran his own company that designed and made control systems for unmanned aircraft and is an expert on "fuzzy logic" systems that help aircraft almost fly themselves.

After visiting Prudhoe Bay to inspect BP's flares, Walker traveled 900 miles south to Kodiak Island to fly the Scout over the shoreline. He there used the flyers to see how harbor seals reacted to launches from a rocket facility on Kodiak. This was after a summer in which he and his crew traveled to Prince William Sound to test the Scout's ability to buzz over beaches to help crews plan oil spill cleanups, and another 900 miles out to Dutch Harbor to see how effective a larger, fixed-wing flying machine was for mapping gatherings of Stellar sea lions.

The unmanned aerial vehicle business is on the rise in Alaska, as more agencies come to UAF to work with Walker and his crew. Alaska is one of six official test sites for unmanned aircraft sanctioned by the Federal Aviation Administration.

The university owns 160 aircraft, among them Scan Eagles — 40-pound aircraft the size of California condors that the crew has used to map the boundaries of smoky wildfires and to count seals in the Bering Sea — lunar-lander type Scouts and fixed-wing AeroVironment Ravens and Pumas.

A few summers ago, Walker spent a month aboard a ship with biologists who were looking for seals that live on and around sea ice. Walker flew missions with a camera he

installed in the aircraft's nose. The camera captured more than 25,000 images, often on days that featured crummy weather. The exercise was a good advertisement for the usefulness of unmanned vehicles in Alaska.

"It's hazardous to put humans out there," Walker says. "If you're out there (in a small airplane or helicopter) hundreds of miles from land, 400 feet altitude, if you have any problems at all, you're dead."

The list of missions Walker and his team have completed gets longer by the month. They have used unmanned flying machines to sample ash from Alaska volcanoes and Walker has used them to count giraffes and lions in Africa.

"The more you show the capability of these things, the more people come up with needs for them," Walker says.

Though an expert on the technicalities of the flying machines, Walker often finds himself in a suit and tie talking with potential customers in a boardroom.

"I'm actually a better salesman than anything else," he says.

His enthusiasm and boyish smile are a few of the traits a person first notices.

"I get excited about problems," Walker says. "Energy leaks — it tends to get other people excited."