The Marine From NASA
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Below: Second Lt George D. Zamka (right) was commissioned after graduating from the U.S. Naval Academy in 1984. He graduated Marine officer training at The Basic School, MCB Quantico, Va., that same year. (Photo courtesy of Col George Zamka)

Inset: Selected for test pilot training, he followed the school with a four-year assignment in VX-23, the "Salty Dogs," U.S. Navy Air Test and Evaluation Squadron at NAS Patuxent River, Md. (Photo courtesy of Col George Zamka)

The Marine From NASA

By Allan T. Duffin

The payload bay of the space shuttle *Endeavour* was loaded with 36,000 pounds of equipment. The shuttle, floating more than 200 miles above the Earth, eased toward the giant research laboratory known as the International Space Station, then docked gently. Astronauts donned their space suits and began spacewalks to connect two new modules to the station: a life support hub and a viewing center.

Inside the shuttle, the mission commander and NASA astronaut, Colonel George D. Zamka, guided his crew through the delicate procedure. During the mission, *Endeavour* and her crew circled the Earth 217 times, traveling nearly 6 million miles over the course of 13 days, before returning to Earth on Feb. 21, 2010.

The NASA personnel performing the shuttle mission were carefully selected and specially trained. Some came from civilian life while others came from different branches of the military. George Zamka might be an astronaut, but like former U.S. Senator John Glenn, one of the first candidates selected when NASA launched the astronaut program in 1959, he also is a colonel in the United States Marine Corps.

Zamka's nearly three-decade Marine career is packed with diversity and tremendous achievements. He has served as a pilot, racking up more than 5,000 hours in some 30 aircraft types. Out of the cockpit, Zamka completed tours as a forward air controller, maintenance officer and, since his appointment in June 1998, as one of America's 95 astronauts. To date Zamka has logged nearly 700 hours in space.

NASA astronaut and Marine George Zamka led the STS-130 space shuttle mission to the International Space Station, Feb. 8-21, 2010. It was the 32nd shuttle mission to the space station. (Photo courtesy of NASA)

NASA astronaut George Zamka, STS-130 commander, is pictured next to a Russian Orlan space suit in the Pirs docking compartment of the International Space Station while space shuttle *Endeavour* is docked with the station. (Photo courtesy of NASA)

Childhood Dreams

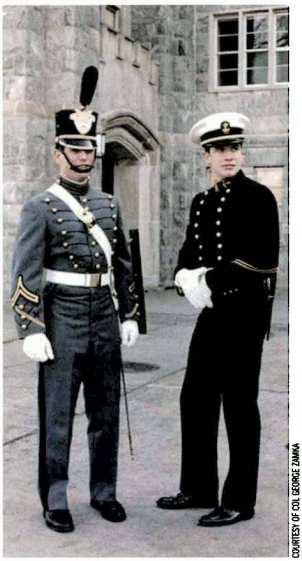
Zamka's interest in flight dates back to his childhood. "My mother is from Colombia [South America], and my uncle was a pilot in the Andes Mountains," recalled Zamka. "On one family visit he took us flying. I saw him working the controls and landing on these austere strips in different places. It was very exciting for me, and that's where I got the bug."

By the time he was a senior in high school, Zamka had decided to join the military. "I had been inspired by cadets I saw at West Point and also had an interest in naval history," he said.

While studying mathematics at the United States Naval Academy, Annapolis, Md., during the early 1980s, Zamka gradually shifted toward a career in the Marine Corps. "I saw some examples of pretty fine Marine officers," Zamka explained. "They influenced me. I thought, 'This is going to challenge me to do the very best I can do.' "

Into the Sky

After graduating from Annapolis in 1984, Zamka trained to fly the A-6E Intruder, a carrier-based attack bomber. Six years later, after cross-training into the F/A-18 Hornet, Zamka would find himself in the middle of a war.



COURTESY OF COL GEORGE ZAMKA

Midshipman Zamka gained added military experience when he was competitively selected for an exchange program with the United States Military Academy, West Point, N.Y.

In 1991, Zamka deployed with his squadron to Kuwait. It was the beginning of Operation Desert Storm, and Zamka soon would fly 66 combat missions over enemy positions. His squadron's mission was to act as fast forward air controllers, hunting in the desert for targets that were threats to coalition ground troops. "We were looking for artillery, tanks and multiple rocket launchers," recalled Zamka.

"Desert Storm was our first major combat in a long time," he continued. "There was a newness to it and a little bit of uncertainty—a sophisticated air threat and a number of unknowns." During a typical mission, Hornets would mark the enemy positions with a series of 2.75-inch rockets. Then other coalition aircraft would take out the targets. Depending on the day, the sky could be filled with AV-8B Harriers, Air Force A-10s, Kuwaiti A-4s, Navy

Becoming an Astronaut

The National Aeronautics and Space Administration has selected just 339 astronauts out of thousands of applicants since the program began in 1959. How competitive is the program? Last year NASA received 3,500 applications from which it chose just nine men and women. That's an acceptance rate of less than 0.3 percent!

To become a **pilot astronaut**—qualified to fly and command the International Space Station as well as the space shuttle—candidates must have a bachelor's degree in engineering, biological science, physical science or mathematics. Also required: at least 1,000 hours of pilot-in-command time in jet aircraft. Test pilots have an advantage. Candidates also must pass the NASA physical, which includes 20/100 or better uncorrected vision and a maximum 140/90 blood pressure. Height restrictions also come into play: Candidates must stand between 5 feet 2 inches and 6 feet 3 inches tall.

Mission specialists control the onboard systems and equipment. They also perform space walks, officially known as extravehicular activities or EVAs. Requirements include a college degree plus at least three years of professional experience. Vision can be 20/200 or better uncorrected, and height must be between 4 feet 10½ inches and 6 feet 4 inches tall.

Payload specialists are non-NASA personnel who join the crews from civilian and foreign organizations. They're typically sponsored by commercial or research firms.

—Allan T. Duffin

NASA

STS-130 crew members (clockwise from top) Col George Zamka, commander; Terry Virts, pilot; Kathryn Hire, Nicholas Patrick, Robert Behnken and Stephen Robinson, mission specialists, pose in the International Space Station Cupola while *Endeavour* is docked with the station.

NASA

Boarding *Endeavour* for STS-130 on Feb. 8, 2010, were (left, front to back) Col George Zamka, commander; Kathryn Hire and Nicholas Patrick, mission specialists; and (right, front to back) Terry Virts, pilot; Stephen Robinson and Robert Behnken, mission specialists.

aircraft and additional Marine Corps F/A-18s.

Zamka's squadron typically flew two missions a day. "Sometimes we'd fly one mission in the daytime and the other at night," said Zamka. "Sometimes we'd fly both missions at night." But in the grand scheme of things, he added, the mission schedule didn't matter. "You got up when the alarm went off. We would get a quick brief, put our flight plan together, then go fly."

After Desert Storm, Zamka briefly served with 1st Battalion, Fifth Marine Regiment, First Marine Division, Marine Corps Base Camp Pendleton, Calif. There, Zamka's experience with forward air control came in handy: After flying many FAC missions in the Middle East, he was performing a similar mission with the Marines on the ground.

Soon thereafter, Zamka was selected to become a test pilot. He spent four years with the Naval Strike Aircraft Test Squadron at Patuxent River, Md.

"Test pilots are the translators between the operators and the design engineers," explained Zamka.

The most exciting part of the job, he said, was ensuring that a new capability worked the way the Marines needed it to work on the battlefield. Zamka's test missions included flying with an asymmetric (unbalanced) bomb load to make sure that the aircraft remained stable in flight. Some missions even required him to make the F/A-18 deliberately go out of control.

Zamka's background as a forward air controller came in handy during his time as a test pilot. "We did radio checks using new radio configurations," he said. "For FACs on the ground, radios are incredibly important."

Although he said he is fortunate to have spent much of his career flying with Marines, Zamka noted that many people he has met are unaware that the Marine Corps actually has an air component. "When I went to the Air Force test pilot school, people didn't know that Marines had airplanes!" he recalled with a smile.

Heading Into Orbit

In June 1998, Zamka was back in an operational squadron as its maintenance officer when he received a phone call from NASA: He had been selected for the astronaut program.

It would take nine years of training and patience until Zamka had the opportunity to fly into space. In October 2007, he piloted the shuttle *Discovery* as it delivered a new module to the International Space Station.

For his latest mission into space, flown last February, Zamka served as the mission commander. His crew included a first-time pilot and four specialists. It was a bittersweet trip: After nearly 30 years of service, the shuttles are flying their last missions, standing down so that a new generation of spacecraft can take their place.

What are the differences between flying a jet aircraft and piloting the space shuttle? According to Zamka, it is having different targets. "When you're flying in combat, you're going against an adversary," he explained. "There's a dissenting vote. That is, someone coming after you to wreck your plans."

On the other hand, spaceflight features a different adversary. "For NASA we are training against a hazard: a hazardous environment. Our enemy is Murphy, as in 'Murphy's Law.' Anything that can go wrong will go wrong."

However, once Zamka is flying the mission—whether in an F/A-18 or the space shuttle—the experiences are strikingly similar. "You revert to your training and your habits. Marines are trained for a bad day.

"We put that training into use in combat, to ensure our responses to incoming

Astronauts From the Marine Corps

Currently NASA has 11 active astronauts including Colonel George D. Zamka from the Marine Corps. You can read more about them and other Marines who served as astronauts at the following link: www.jsc.nasa.gov/Bios/astrobio.html. Current astronauts (with some information about their military service) are:

Major General Charles F. Bolden Jr., USMC (Ret): NASA Administrator, selected as an astronaut in 1980

Test pilot, Vietnam veteran, deputy commandant of midshipmen at the United States Naval Academy, deputy commanding general of I Marine Expeditionary Force (Forward) during Operation Desert Thunder in Kuwait, deputy commander of U.S. Forces in Japan, commanding general of Third Marine Aircraft Wing

Colonel Robert D. Cabana, USMC (Ret): Director, Kennedy Space Center, selected 1985

A-6 Intruder pilot and bombardier/navigator, test pilot

Col Charles O. Hobaugh: pilot, selected 1996

AV-8B Harrier and A-7E Corsair pilot, test pilot, veteran of Desert Shield/Desert Storm

Col Douglas G. Hurley: pilot, selected 2000

F/A-18 Hornet pilot, test pilot, first Marine pilot to fly the F/A-18E/F Super Hornet

Col Bryan D. O'Connor, USMC (Ret): Chief, Safety and Mission Assurance, NASA Headquarters, selected 1980

A-4 Skyhawk and AV-8A Harrier pilot, test pilot

Col Frederick W. Sturckow, USMC (Ret): pilot, selected 1994

F/A-18 Hornet pilot, TOP GUN graduate, test pilot, veteran of Operation Desert Storm

Col Terrence W. Wilcutt: Deputy Director, Safety & Mission Assurance, Johnson Space Center, selected 1990

F-4 Phantom and F/A-18 Hornet pilot, test pilot, former schoolteacher

Lieutenant Colonel Randolph J. Bresnik: mission specialist, selected 2004

F/A-18 Hornet pilot, test pilot, veteran of Operations Southern Watch and Iraqi Freedom

LtCol Carlos I. Noriega, USMC (Ret): Director, Safety, Reliability & Quality Assurance Office, Constellation Program, Johnson Space Center, selected 1995

CH-46 Sea Knight helicopter pilot

Former Sergeant Joseph M. Acaba: mission specialist, selected 2004

Marine Corps reservist, hydrogeologist, former schoolteacher and Peace Corps volunteer

—Allan T. Duffin

NASA

NASA astronaut Col George Zamka completed his first space flight in 2007 as pilot for STS-120. Including STS-130, he has logged 692 hours of space flight. STS-130 carried the International Space Station's final two permanent modules: Tranquility, which provides added life support features, and Cupola, which provides a panoramic view and direct observation of robotic operations.

missiles or artillery are the correct ones." At NASA, the threats are different, but the training is just as tough: The astronauts are exposed to simulations, labeled "smart failures," to train for the worst-case scenario in space.

The smart failures pile error upon error to test the astronauts' abilities to respond to crises. "The chances of problems lining up exactly that way are very slim," acknowledged Zamka. "But if they do happen, we're prepared. When it comes to actual spaceflight, we're ready to handle even the little things that come up."

Having served on the ground and in the air, Zamka has a unique perspective as a Marine. "I've always been humbled by a Marine and his rifle and his dedication and courage. I take those same qualities into space with me: honor, courage and commitment. Honor to serve the United States in space and to represent the Marine Corps. Courage in counting on your team, counting on your plan and taking that plan up against the hazards of space. Commitment to doing the best you can, and asking yourself every day if you can do it better."

Editor's note: Allan T. Duffin is a freelance writer, television producer and Air Force veteran with service in Operations Iraqi Freedom and Enduring Freedom. His new book, "History in Blue: 160 Years of Women Police, Sheriffs, Detectives, and State Troopers," was published by Kaplan and distributed by Simon & Schuster. Duffin's Web site is www.aduffin.com.

Leatherneck—On the Web

See additional photos and video from Col Zamka's shuttle mission at www.mca-marines.org/leatherneck/Marineastronaut