



CHRISTOPHER C. KRAFT JR.

1924–2019

Elected in 1970

“Contributions to engineering through the planning and direction of the nation’s manned space flight missions.”

BY RICHARD H. TRULY

On July 21, 1969, the *New York Times* front page featured just one story, written by John Noble Wilford. The first line said it all:

“HOUSTON, Monday, July 21 – Men have landed and walked on the moon.”

As director of flight operations, CHRISTOPHER COLUMBUS KRAFT JR. was at a console in the back row of the mission control center, looking down at his team of flight controllers, led by the flight director. Chris had conceived the center, designed to control human spaceflight, during America’s first manned space program, Mercury. The first flight director of the National Aeronautics and Space Administration (NASA), he was known as the “Father of Mission Control.”

Mission control was a simple concept for managing the incredibly complex array of space vehicles and a sprawling network of ground stations around the globe. It was brought together by the lessons learned in 20 crewed space missions—Mercury, Gemini, and Apollo—plus countless ground simulations. Each controller, with call signs like RETRO, FIDO, BOOSTER, and EECOM, was responsible for a particular system or phase of flight. At their fingertips were detailed

schematics and mission rules. The controllers were experts, but the final split-second decisions were FLIGHT's to make.

About those seminal days in Mercury, in his 2001 memoir *Flight: My Life in Mission Control* Chris Kraft wrote: "There's only one flight director. From the moment the mission starts until the moment the crew is safe on board the recovery ship, I'm in charge. I ask. I listen. I make decisions...they can fire me after it's over. But while the mission is under way, I'm Flight. And Flight is God."

Chris Kraft Jr. was born at home February 28, 1924, in the small Virginia town of Phoebus to Christopher and Vanda Olivia Suddreth Kraft. Phoebus was a tough town known to locals as "Little Chicago" because it sat at the Tidewater end of the old Chesapeake and Ohio railroad line from Chicago. The town was eventually swallowed up as a neighborhood in Hampton.

When Chris was only 3, he was terribly burned after falling into a burning trash fire. After a very long recovery, the only lasting injury was to his right hand, but he remained right-handed and never let the damage slow him down. His injury and his Tidewater accent would follow him for life.

Phoebus didn't have a high school; Chris hitch-hiked to Hampton High and pocketed the 15 cents his mother gave him for the streetcar. In homeroom, he met a "gorgeous" girl, Betty Anne Turnbull, and finally got up the courage to ask her for a date. He was "floored" when she said yes.

After graduating from Hampton High, Chris entered Virginia Polytechnic Institute to study engineering. It was September 1941. Three months later, the Japanese attacked Pearl Harbor and the career goals of all the students instantly changed. Chris applied to join the new Navy V-7 and V-12 programs and fly for the Navy. But despite his argument that his right hand didn't stop him from being the catcher on the Virginia Tech baseball team, the injury kept him from military service during World War II. He became the youngest president of the Corps of Cadets and graduated at age 20 with one of the school's first aeronautical engineering degrees in December 1944.

He took a job at the National Advisory Committee for Aeronautics (NACA) at Langley Field, just 7 miles from Phoebus. The director of research was the legendary Robert R. Gilruth, who had found and fixed flaws in the British Spitfire and numerous American fighters and bombers; Chris was assigned to the Flight Research Division. NACA was the mecca for aeronautical science and engineering, and over the next years Chris worked on various structures and stability and control problems. During his first year, his work involved the Army P-47, Navy's F6F and SB2-C, and after the war the Bell X-1, the world's first rocket plane. He was involved in one of the first uses of radio telemetry, which would be key to future space programs, and ran a major gust-alleviation project. One of his major projects was on the Navy's F8U supersonic fighter where he worked with a "cantankerous" Marine named John Glenn.

During all this, on September 5, 1950, Chris married Betty Anne Turnbull, and they went on to have two children, Gordon and Kristi-Anne, while they were at Langley.

On Saturday, October 5, 1957, Chris and Betty Anne woke to find the world had changed overnight: the Soviet Union had launched Sputnik into orbit. The launch shocked America into action. Nowhere was the effect felt more than at Langley.

Within just over a year, NASA was created with NACA as its core and the Space Task Group was formed under Bob Gilruth to run the new Project Mercury, America's first human spaceflight attempt. Chris Kraft was tapped as one of its only 35 members. Although they were renowned experts in aeronautics, the group found themselves on a very steep learning curve about this new business of spaceflight. Gilruth assigned Chris to flight operations once Mercury was a reality.

The next few years were a tumultuous time during which Chris formed a concept of Mission Control in his mind, although it would start in a blockhouse at Cape Canaveral with more grease pencils than sophisticated computers, and graphic displays followed later. When the time came in early 1961 to control missions, Chris was the only flight director.

Alan Shepard finally went into space on May 5 on a sub-orbital flight. NASA had suffered many failed launches in the early days and trailed the Soviet space program. The Soviets had launched Yuri Gagarin on a one-orbit flight the month before.

Later that month, President John F. Kennedy committed the nation “to achieving the goal, before the decade is out, of landing a man on the Moon and returning him safely to Earth.” At the time, the commitment shocked Chris, whose team had only 15 minutes of experience controlling human space flight. In his memoir, Chris recalled wondering “had [JFK] lost his mind?” The heat was on.

As the Mercury missions went on, Chris and his flight control team learned lessons from every flight and updated their mission rules and vehicle schematics at every opportunity. Because of the 30-hour duration of the final mission, Chris created another flight director and team. The final Mercury flight was in May 1963, and the two-man Gemini was next; the lunar missions would require rendezvous and docking both in transit and around the moon, and Gemini was the program to learn how to do that.

The members of the space task group from Langley had long known that a national program of this magnitude would eventually require them to leave Tidewater and move to a large new facility; when the decision was made to locate the future Manned Space Center in Houston, they knew where. Between Mercury missions, Chris and Betty Anne made a house hunting trip and for their new home chose Friendswood, a Quaker village a few miles from the future center.

In preparation for Gemini, the flight control team had to train and prepare schematics for a totally different spacecraft and modify mission rules. Chris needed to pick and train new flight directors; Eugene Kranz and Glenn Lunney were selected. Design requirements for the new Mission Control center also had to be agreed to. The first manned Gemini mission would be controlled from the Cape, but the new center in Houston was the eventual home.

As the Gemini missions flew, Apollo was looming and the news from the development of the spacecraft was not all good. By this time, Chris was both directing all of flight control and serving as a flight director for the missions. Two close friends, Bob Gilruth and Sig Sjöberg, encouraged him to conclude his flight director duties and direct more of his attention to Apollo. *Gemini 7* was Chris Kraft's last mission as flight director.

When he looked at preparations for Apollo, Chris saw problems everywhere. There were issues with both NASA and contractor program managers, with vehicle design, and ignored technical detail requests that were needed so flight controllers could prepare their schematics and astronauts could be trained. So many late changes were required that the Apollo Command Module would come in Block 1 and Block 2 versions.

Then, with the Gemini missions completed and only about a month before Apollo was to begin, tragedy struck. On January 27, 1967, during a final launch pad test, a cockpit fire erupted in a pure oxygen atmosphere and in the conflagration that followed, the prime crew of Gus Grissom, Ed White, and Roger Chafee were killed.

After the shock and the grief subsided, the loss of the crew gave NASA resolve to make the changes required and continue to pursue Kennedy's goal. Apollo was far stronger after recovery from the fire, but the task ahead was monumental.

In just 10 months (October 1968–July 1969), the astronaut crews and Mission Control flew the most successful string of space missions the world had seen. *Apollo 7* checked out the new command module in Earth orbit, *Apollo 8* went in orbit around the moon at Christmas, *Apollo 9* tested out the lunar module in Earth orbit, *Apollo 10* did a dry run to just before the lunar landing, and *Apollo 11* was able to transmit the most electrifying voice call of the space program:

"Houston, Tranquility Base here, the Eagle has landed."

Seven missions to the moon would follow, although *Apollo 13* was aborted because of the explosion of an oxygen

tank. After several days, the safe return of *Apollo 13* to Earth was perhaps Mission Control's finest hour.

Chris Kraft became Bob Gilruth's deputy in January 1970, and two years later, when Gilruth left his position as first director of the manned space center for a new assignment at NASA Headquarters, Chris was named to succeed him. Chris thought it a great honor since he admired Gilruth so much and wrote in his memoir, "No man of space did more or received less credit than Robert R. Gilruth...he forced us always to be better than we would have been without him."

After former President Lyndon B. Johnson's death, the center was renamed the Johnson Space Center (JSC) in February 1973. Chris was a strong leader of JSC and during his tenure NASA completed the Apollo program by flying *Apollo 16* and *Apollo 17*, flew the first three long-duration missions on *Skylab*, flew the *Apollo-Soyuz* docking mission with the Soviets in the depths of the Cold War, developed the Space Shuttle, flew five free flights of the Space Shuttle *Enterprise* off the top of the 747, and flew the first two orbital test flights of the Space Shuttle *Columbia*. Kraft retired from NASA in 1982.

Neil Armstrong, the first man on the moon, told the Associated Press in 2011 that Chris, who never flew in space, "held the success or failure of American human spaceflight in his hands."

Christopher Columbus Kraft died at age 95 on July 22, 2019. Chris and Betty Anne had been married for 68 years—and on that date exactly 50 years before, *Apollo 11* was returning from the Moon.

