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EXCLUSIVE INTERVIEWS

CHALLENGER'S LEGACY

The loss of invincibility, the cultural shakeout and the lessons that shaped today's NASA

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Flying after Challenger

Former astronaut Tom Jones spent a total of 53 days orbiting Earth in the years after the Challenger tragedy. He explains why he accepted the risk of spaceflight and why he believes there will always be volunteers ready for the next journey into space.

Dick Scobee was the first space shuttle astronaut I ever met. The veteran pilot of 1984's STS-41C Challenger mission had been assigned soon after to command the STS-51L Challenger mission. One evening in 1985, when I was a Ph.D. student at the University of Arizona, I found myself shaking hands with Scobee, saying, "I'd sure like to have a job like yours." Not the most original conversational opening when meeting a real astronaut, but standing in front of the man, I admit I was dazzled.

Scobee, who'd earned his bachelor's degree in aerospace engineering at Arizona, had come back to campus to speak. Both Scobee and his wife, June [interview, page 24] were gracious and at ease as they answered questions about an astronaut's professional and family life. The pair were stellar ambassadors for NASA.

Less than a year later, I watched with millions of others as Dick Scobee and his crew perished on live television. Viewing the launch broadcast with me at the university's planetarium were several dozen school children, all eager to see teacher Christa McAuliffe soar into orbit. When Challenger came apart amid a fireball of blazing propellants, all of us were silent for long seconds, unable to comprehend the scene. A few students yelped an uncertain cheer when one of the errant solid rocket boosters kicked out a recovery parachute, but I knew the crew was gone. All I could think of was the Scobee family.

Two years later, I was finishing up my doctorate and submitting my own application to NASA's astronaut program. What was I thinking? I had a wife and a baby daughter, and I'd seen what risk in human spaceflight meant to a family's future. What I told Liz was that if Dick Scobee, a professional test pilot who knew the dangers inherent in aviation and spaceflight, could commit his life to work for America in space, that job must be mighty important. I wanted to sign up, too.

So part of my motivation was national service, but I had more per-

Recovered sections from Challenger, left, and Columbia, are part of the permanent memorial at the Kennedy Space Center. Former astronaut Tom Jones says spaceflight risks remain, but can be reduced.

NASA/Kim Shiflett

Tom Jones waves at crewmates inside shuttle Atlantis while working on the International Space Station in 2001.

NASA

sonal reasons as well. First, I had wanted that astronaut job for 25 years, and one accident wasn't going to deter me. Second, I wanted to experience spaceflight, personally and physically. What was it *really* like?

I rationalized the risks this way: While piloting B-52s in the Air Force, I'd seen aircraft accidents and lost friends. After Challenger, NASA would fix the shuttle and improve its safety.

Does it sound crazy? Perhaps Liz thought so, but she knew the odds of NASA selecting me were slim to none. She could worry about risk when and if my dream became reality.

After a third application, I was hired by NASA in 1990, just four years after Challenger. Because of the agency's rigorous program of design and safety improvements implemented after the accident, I could reassure my family about the reduced dangers of spaceflight. Yet risks remained. In 2003, a fatal accident once again shocked NASA. And once again, it was caused by hardware failures, faulty communications and the agency's flawed decision-making. The searing lessons from Columbia's disintegration over Texas were all too familiar to those who had analyzed Challenger's avoidable demise.

Today, as NASA begins testing a pair of space taxis, operates an aging International Space Station and makes plans for its first deep space journeys since Apollo, spaceflight risk is still with us. An astronaut nearly drowned inside a flooded space helmet in 2013, and two Soyuz crews survived harrowing reentries after pyrotechnic failures in their descent modules in 2007 and 2008. Space operations remain markedly intolerant of human complacency and hubris.

In deep space, we will confront risk levels not seen since Apollo. NASA's management and its rank and file must not only remember how the agency lost two shuttle crews, but also develop effective methods for dealing with daunting new challenges: radiation, physical debilitation in free fall and prolonged isolation on journeys to the moon, asteroids and Mars.

In an October report, "NASA's Efforts to Manage Health and Human Performance Risks for Space Exploration," the agency's inspector general warned of the difficulties ahead:

" … the Agency's risk mitigation schedule is optimistic, and NASA will not develop countermeasures for many deep space risks until the 2030s, at the earliest … Accordingly, the astronauts chosen to make at least the initial forays into deep space may have to accept a higher level of risk than those who fly International Space Station missions."

Astronauts Memorial Foundation

The Space Mirror Memorial at the Kennedy Space Center in Florida honors 24 astronauts who died, including the 14 men and women aboard space shuttles Challenger and Columbia.

I believe that to reduce these risks, we'll need to mine the moon and asteroids for water and "dirt" for radiation shielding. We will need nuclear energy in space for power and propulsion. We'll also need to test these technologies on the space station, the moon and the nearby asteroids before reaching for Mars.

NASA will always have astronauts who volunteer to face the risks of deep space travel if national and space agency leaders explain clearly why exploring the space frontier remains an important U.S. priority. After Challenger and again after Columbia's loss, two presidents eloquently communicated why America must continue to explore the space frontier. On inauguration day in 2017, the next president should renew our commitment to exploration and pledge the nation's talent, resources, and conscience to protect those who risk all to achieve ambitious goals in space.

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