

Interview with Charles Duke, Apollo-16 LMP
By James Oberg

BGen Charles Duke, USAF, 65, was a NASA astronaut from 1966 to 1976, and was the lunar module pilot on the Apollo-16 moon landing flight in April 1972. Along with mission commander John Young, he made three day-long moon walks, which included driving a 'moon jeep' for miles while hunting for rock samples. A native of Charlotte, North Carolina, and a graduate of the US Naval Academy (1957), Duke now lives in New Braunfels, Texas. He talked by telephone with AL concerning the differences between the Apollo program and a future project to send astronauts to Mars.

When asked what had been the toughest technical challenge in getting to the moon and back, Duke unhesitatingly identified transportation. "To me I think the biggest challenge was developing the Saturn- V rocket, the heavy lift vehicle," he answered. "Without that we didn't have the capability to get enough weight up there to do a lunar mission. That had to work, that was the lynchpin." The failure of Russia's own "N-1" moon rocket doomed their push to land cosmonauts on the moon.

Aside from the hardware, the human element would be critical for Mars mission. "Certainly, muscular degeneration and those kind of things could not be tolerated," he explained. "And so we need a good exercise program. I think with a good exercise program that is carried out diligently every day, the body would probably be in pretty good shape when you got there."

There's more to an astronaut than just his or her body, and on long interplanetary missions -- NASA expects a Mars round trip to last up to three years -- mental and emotional health can be crucial to physical health. AL asked Duke how he would have been able to spend a few years rather than just a few weeks in space with his shipmates, without getting into ferocious battles or bitter sulks.

"I think with your training you get to know one another," he replied, "and you get to negotiate out your differences without getting upset and angry and contentious. John and Ken [Mattingly] and I had worked real close together for almost three years, we just knew each other's personalities. We just didn't punch any buttons that would set anybody off and we knew that we had to work together." Concluded Duke, "The motivations to make a mission success overcame any kind of contention that you would have that would degrade mission success."

NASA experience even on 3-month Skylab missions (1973-4) was benign, but Duke pointed out that more recent experiences aboard the Mir space station uncovered some psychological concerns. "The Americans and the Russians got a little contentious," he explained. "If this is going to be international crew, there's a lot of cultural differences I think you need to overcome."

Recent success with the US/Russian "International Space Station" may be setting the pattern for future big manned space projects, Duke suggested. "I think from a politically

practical approach, that's the way it's going to be," he told AL. "It's going to wind up more expensive, but less expensive for all the participants, because you're just anteing up a little bit per nation." He had no illusions about the difficulties: "It's not going to be an easy task to organize an international mission to Mars, but politically that's probably the way its going to end up."

On Apollo-16's return to Earth in 1972, Duke had to walk in space to help retrieve exposed mapping camera film in the aft section of the Apollo. This was, for all practical purposes, interplanetary space, without any planet nearby, and Duke described his vivid impressions.

"It was a real adventure to me, it was a real different impression than doing a walk on the moon in gravity," he explained. "I floated out of that hatch, and it was a wonder, it was almost euphoria. I could look off to the right, down in the lower right position, like at a 4 o'clock position on a clock, there was the earth. It was a new earth, it was just was thin little sliver of a crescent of blue and white. And I rolled around to the left, and at about the 10 or eleven o'clock, there was the moon, gigantic in size. Earth was 180,000 miles away, the moon was 60,000, and there was this enormous almost full moon towering over us, and everywhere else you looked was the blackness of space."

The glare of the sun drowned out all stars, and Duke was overwhelmed with the feeling of being surrounded by nothingness. "You felt detached, you felt like you were not a participant, but as if you were watching an audience and used the stage as the universe."

As one of only twelve humans to walk on the Moon, Duke tried to imagine what would be different about walking on Mars. "From the pictures I've seen, it's going to be a lot rockier than the moon, and certainly not as dust covered, and a different color," he imagined. "You're going to have color in the sky." On the moon the airless sky was black.

Duke paused and then described another difference he had just thought of. "You won't be able to look up and see that beautiful earth towering above you," he mused, "it's going to be just a pinpoint of light somewhere." The thought led him on. "Even at the moon, you look back at the earth, and you get that feeling every once and awhile, 'Damn, we are a LONG way away.'"

"The psychological impact of Mars will be that too, I think," he continued, imagining the thoughts of the future Mars explorers: "We are a LONG way away." But he felt confident that the excitement of the mission and the drive to accomplish it would override any kind of psychological block to being that far away. "I'd be one to volunteer if I were the right age, the right generation," he added, his grin clear even across the telephone line.