



► VEENA PRASAD

It was a journey of epic proportions that took nearly 10 years of preparation, when in 1961, the U.S. President John F. Kennedy declared his intention of "putting a man on the moon and bringing him back safely to Earth" before the decade was out. An estimated 4,00,000 people worked to make this happen — from the engineers, scientists, technicians, flight directors, software programmers, telescope crew, data handlers, camera designers, navigators, to the seamstresses who put the spacesuits together, stitching together all twenty-two layers of fabric without a flaw.

Finally, the day came. At 9:32 am on July 16, 1969, Neil Armstrong, Edwin "Buzz" Aldrin and Michael Collins strapped themselves into the Apollo 11 spacecraft and were blasted off into space by a 363-foot rocket using 7.5 million pounds of thrust from the Kennedy Space Centre, Florida. A team of scientists at Mission Control, Houston, monitored every second of their flight. They had been preparing for this moment for years, but the last seven months had been particularly intensive. Countless simulations were run and practised, covering every possible eventuality. President Nixon even had a speech ready in case the mission failed!

First step

On July 19, 1969, three days after launch, Apollo 11 entered the orbit of the Moon. The spacecraft was made up of two units — the Command Module (nicknamed 'Columbia') and the Lunar Module (nicknamed 'Eagle'). Michael Collins was the pilot of the Command Module. He was going to stay in orbit around the Moon while Neil Armstrong and Buzz Aldrin piloted the Lunar Module down to the Moon. Why couldn't Collins join them? Because launching a spacecraft from Moon is impossible without a launch facility! In order to get back to Earth, the Lunar Module would have to fly up to the Command Module to be picked up. Michael Collins, during simulation drives, had perfected 18 different ways to rendezvous, leaving nothing to chance.

As the Eagle detached from Columbia, its engine firing in preparation for descent, Collins radioed Mission Control — "Everything's going just swimmingly. Beautiful." He had spoken too soon. Four minutes into descent, Armstrong found an error code "1202" flashing on his screen. It had never come up during the simulation runs.

Mission Control was frantically looking

The EAGLE has landed

On July 20, 1969, three astronauts, and the entire globe, celebrated the giant leap for mankind as they set foot on the Moon.

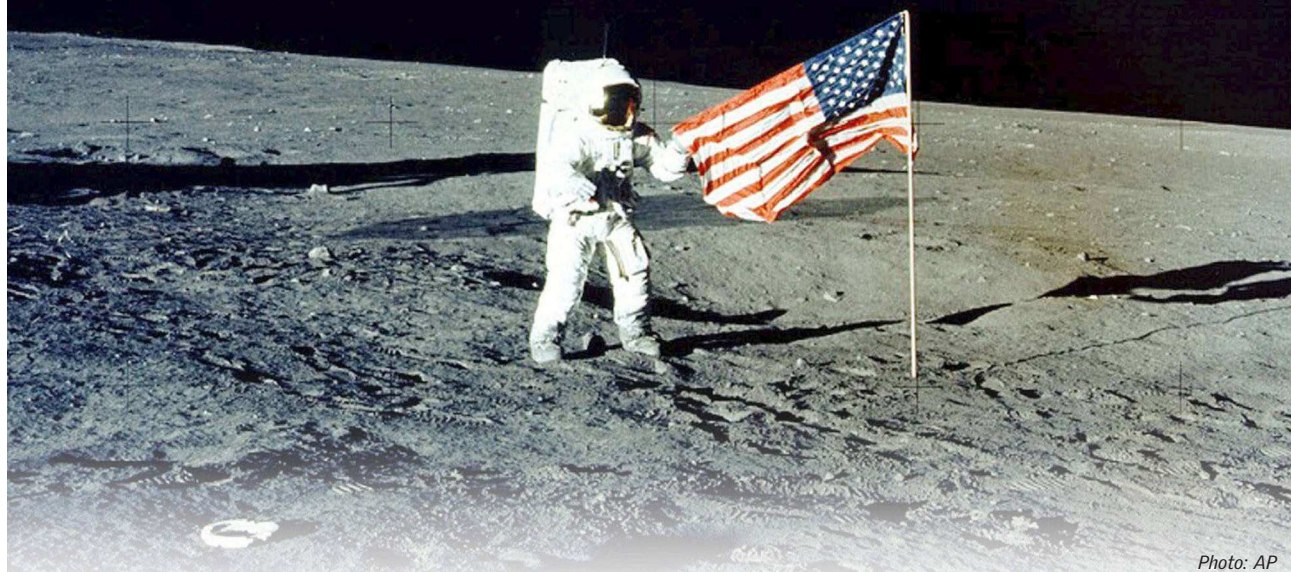


Photo: AP

through its error codes trying to figure what it meant (remember, back then there were no such thing as a desktop computer to readily display error codes. In fact, the Apollo computers had less processing power than today's cell phone!) Meanwhile, the Eagle was rapidly descending to the Moon.

If it was a serious error, they would

have to abort quickly and begin the ascent to join Command Module. In a fragile spacecraft 386,000 km from Earth, life or death was going to be decided in a few moments. To add to the tension, communications would break down intermittently and the radar was also behaving oddly.

Armstrong was tense. Time was running out. Just then, Mission Control decided that the error could be ignored as all other activities were being carried out normally by the computer. So they continued the descent. Buzz Aldrin's eyes were fixed on the instrument panel as he read out numbers for altitude, speed and other critical numbers when Armstrong looked out of the window and realised that the computer was guiding them to land on a rocky area filled with boulders, although the orbital area on screen indicated a smooth plain. Clearly, its data was all wrong! At 400 feet above the surface, it was too late to abort. Armstrong did the only thing to be done — he took manual control of the aircraft.

It was tricky business on unfamiliar terrain, but Armstrong focused on a smooth spot and guided the craft towards it. But their troubles were not over yet. A flashing light warned them that they were low on fuel! (They would find out later that the excessive sloshing of the fuel had caused one of the fuel sensors to stop functioning.) There was nothing else to do but continue to land towards the smooth

spot, a crater aptly called the 'Sea of Tranquility'.

Resting their fears

Still 10 feet above the ground, with the fuel indicator saying they had only 30 seconds left, the team at Mission Control had stopped breathing, imagining the worst. At last, Armstrong's taut voice came

over the console:

"Houston, Tranquility base here... The Eagle has landed."

At 9:30 pm Houston time, on July 20, 1969, Neil Armstrong stepped out onto the surface of the moon, uttering the famous words: "This is one small step for a man, but one giant leap for mankind." Buzz Aldrin followed him out, marvelling at the "magnificent desolation" of the lunar landscape. They planted the American flag, and a

plaque that read: "Here men from the planet Earth first set foot upon the moon. July 1969 A.D. We came in peace for all mankind." For over two hours, the astronauts collected soil samples and moon rock for study. Among things left behind were retro reflector arrays, a boot print, a golden olive branch, Russian

medallions to honour fallen cosmonauts, a patch from Apollo 1, a silicon disc with goodwill messages from among others, the Pope, Queen Elizabeth II and Indira Gandhi. Unfortunately, a lot of litter also got left behind, including television cables, some tools, crashed remains of the Eagle, moon boots, and less glamorously — the astronauts' urine pouches and defecation bags.

More than a 100 years before the Apollo Moon Mission, science fiction writer Jules Verne had worked out many theoretical aspects of rocket launching in his novel *From the Earth to the Moon* (1865). He didn't get everything right, but some of his numbers were amazingly close to the actual calculations used in the Apollo missions, including approximate weight of the spacecraft, its material and cost! Verne also predicted that launching would be efficient from a site close to the equator, which turned out to be Florida, both in the novel and in reality. Verne's engineering was also pretty accurate as the design of his spacecraft was almost the same as that of Apollo, with similar details on outer shell, wall thickness and hydraulic shock absorbers to protect the astronauts from the tremendous gravitational forces during acceleration and deceleration.

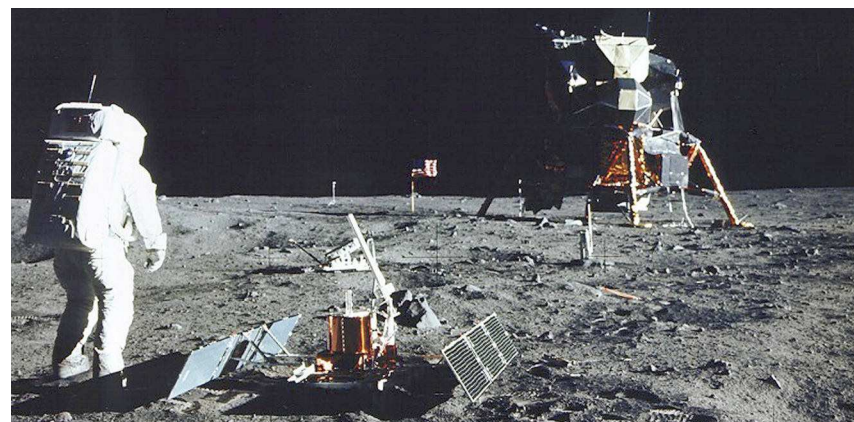
And finally, the Command Module that Michael Collins piloted was named Columbia in honour of the Columbiad, the spacecraft in Verne's novel.



IMPRESSIONS: The first footprint on Moon.



MISSION ACCOMPLISHED: Men behind Mission Moon. Neil Armstrong, (L) "Buzz" Aldrin, (R), and Michael Collins (C). Photo: Reuters



MAKING THEIR WAY: Taking a giant leap. Photo: Reuters.