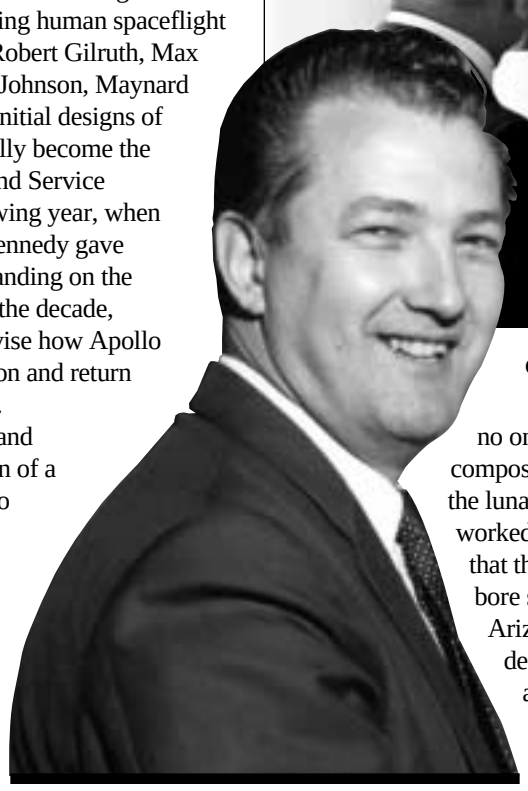
Owen Maynard, key architect of Apollo spacecraft, dies at 75

Owen Eugene Maynard, an early leader of the Apollo Program and one of Canada's spaceflight pioneers, died on July 17. He was 75.

In 1960, Maynard was part of a small group of engineers, NASA's Space Task Group, in Langley Field, Virginia, assigned to a new human spaceflight program called Apollo. Working under the direction of leading human spaceflight luminaries such as Robert Gilruth, Max Faget and Caldwell Johnson, Maynard helped develop the initial designs of what would eventually become the Apollo Command and Service Modules. The following year, when President John F. Kennedy gave Apollo the goal of landing on the moon by the end of the decade, Maynard helped devise how Apollo would fly to the moon and return safely back to Earth.

NASA JSC Photo S66-24136

Owen Maynard discusses various exhibits during Prince Philip's visit to JSC in 1966.



Owen Maynard

Unlike Mercury and Gemini, the selection of a spacecraft for Apollo followed a process involving external studies, requests for proposals, and technical evaluations. In practice, however, the Space Task Group had its own design for Apollo. Maynard was part of the technical review board that confirmed the group's design.

About one year after Kennedy's call to land on the moon, NASA had decided on sending astronauts to the moon and bringing them back to Earth by a method known as lunar orbit rendezvous or LOR. Maynard was among the first members of the Space Task Group to see the wisdom of using LOR as a means of landing on the moon at a time when other methods were favored. NASA eventually selected LOR as the mode for the lunar landing in 1962.

The decision to use LOR defined the Apollo spacecraft as three separate entities: the Command Module, Service Module, and Lunar Excursion Module (later changed to Lunar Module). The latter vehicle became central to Maynard's career at NASA when, in 1963, he rose to the post of chief of LM Engineering in the Apollo Spacecraft Program Office at the Manned Spacecraft Center in Houston. Maynard and his group worked closely with engineers from Grumman, contractor for the LM.

The LM, as a craft that would perform solely in the vacuum of space and the light gravity of the lunar surface, presented new opportunities and challenges for engineers. The landing gear presented problems since no one knew exactly the composition and density of the lunar surface. Maynard worked on the assumption that the moon's surface bore similarities to that of Arizona and helped design the landing gear accordingly.

"We didn't know what the lunar surface was like," Maynard said in a 1999 interview for the JSC Oral History Project. "The scientists were telling us that the lunar surface was like a fairy castle structure, electrostatically suspended particles that when you landed on it, you'd just sink many meters into the moon's surface, like very light snow, for hundreds of meters, maybe. And the leading scientists that had spent their money looking [through] telescopes and radio telescopes and everything else, when they tried to formulate what that would be like from normal scientific data, they concluded that it's what is called soils mechanics – something that you couldn't actually land in. So here Kennedy had challenged us to go land on the moon, and we didn't know whether, if we did, we would sink out of sight."

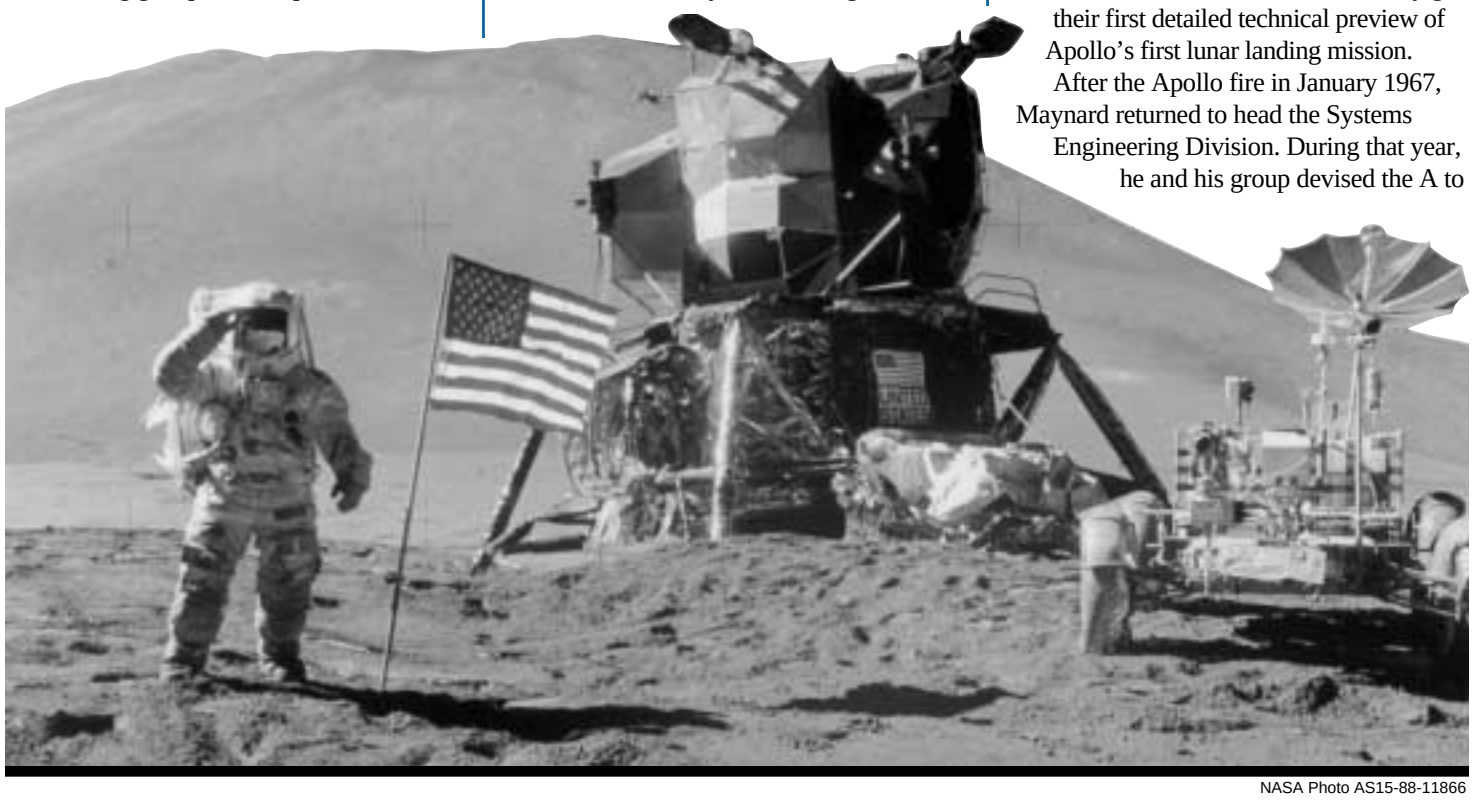
NASA JSC Photo S66-31108

Owen Maynard gives notice of civil service promotion to his secretary, Carol O'Loughlin.

In 1964, Maynard was promoted to the position he would hold for most of the remainder of his career at NASA: chief of the Systems Engineering Division. To many people, this made him Apollo's chief engineer. His responsibilities encompassed making sure that the constituent parts of the Apollo spacecraft worked together, not only among themselves but also with the launch vehicle and ground facilities.

Maynard moved out of the Systems Engineering Division in 1966 to direct the Mission Operations Division and, in June of that year, he organized the Apollo Lunar Landing Symposium during which leaders of NASA and the contractor community got their first detailed technical preview of Apollo's first lunar landing mission.

After the Apollo fire in January 1967, Maynard returned to head the Systems Engineering Division. During that year, he and his group devised the A to G mission sequence for Apollo test missions leading up to the first lunar landing on the G mission. Maynard remained in charge of systems engineering until he left NASA in 1970 following the successful achievement of Kennedy's goal.



NASA Photo AS15-88-11866

Maynard was born in 1924 in Sarnia, Ontario, Canada. When World War II broke out, he left school and worked as a boatbuilder and machinist before joining the Royal Canadian Air Force in 1942. He flew a number of aircraft in Canada and overseas, although the war ended before he could see combat.

After the war, Maynard worked at Avro Canada while he earned his degree in aeronautical engineering at the University of Toronto. He held a number of jobs at Avro including working on the layout of the Avro Jetliner and the design and testing of the CF-105 Avro Arrow weapons pack and landing gear.

In 1959, the Arrow Program was cancelled, and Maynard and 30 other Canadian and British engineers from Avro joined NASA. Until he became involved in the Apollo Program in 1960, Maynard worked on the Mercury Program.

Having worked on crew escape systems at Avro, Maynard evaluated the Mercury capsule's emergency provisions. He found that an emergency abort off the pad, for instance, could cause the spacecraft to land on solid ground rather than in water. The shock attenuation system consisted of a crushable honeycomb layer between the capsule and its heat shield. Maynard found this configuration led to a high degree of "rate of rise of G," which can cause damage to the internal organs of a pilot. To counter this, he suggested using a deployable landing bag beneath the heat shield to take the shock of impact.

Maynard was a member of a group at NASA that won a U.S. patent in 1967 for the design of a "radial module space station." This station featured solar cells and artificial gravity.

After leaving NASA in 1970, Maynard joined Raytheon in Boston where he worked on many aerospace programs. During this time, he became an advocate for the use of satellites to collect solar power for use on Earth and the use of solar power collected on Earth for powering spacecraft. He retired from Raytheon in 1992, at which time he and his wife, Helen, returned to Canada.

Maynard received many honors including two NASA Exceptional Service Medals and an honorary doctor of engineering degree from the University of Toronto. Upon receiving his degree, Maynard repeated an observation he often made about himself and the team that built Apollo: "The extraordinary had been accomplished by quite ordinary people."

Maynard is survived by his wife; their four children, Donald, Merrill Helen, Elizabeth, and Annette Kathleen; and many grandchildren. ■

Chris Gainor and the JSC Oral History Project Office contributed to this story. Gainor, a writer in Victoria, B.C., Canada, is preparing a history of the 31 Canadian and British engineers who joined NASA in 1959 after the Canadian government cancelled the CF-105 Avro Arrow Program.