

As the descent began, Armstrong and Aldrin found themselves passing landmarks on the surface two or three seconds early, and reported that they were “long”; they would land miles west of their target point. Eagle was traveling too fast. The problem could have been mascons—concentrations of high mass in a region or regions of the Moon’s crust that contains a gravitational anomaly, potentially altering Eagle’s trajectory.

Five minutes into the descent burn, and 6,000 feet (1,800 m) above the surface of the Moon, the LM guidance computer (LGC) distracted the crew with the first of several unexpected 1201 and 1202 program alarms. Inside Mission Control Center, computer engineer Jack Garman told Guidance Officer Steve Bales it was safe to continue the descent, and this was relayed to the crew. The program alarms indicated “executive overflows”, meaning the guidance computer could not complete all its tasks in real-time and had to postpone some of them. Margaret Hamilton, the Director of Apollo Flight Computer Programming at the MIT Charles Stark Draper Laboratory later recalled: “To blame the computer for the Apollo 11 problems is like blaming the person who spots a fire and calls the fire department. Actually, the computer was programmed to do more than recognize error conditions. A complete set of recovery programs was incorporated into the software. The software’s action, in this case, was to eliminate lower priority tasks and re-establish the more important ones. The computer, rather than almost forcing an abort, prevented an abort. If the computer hadn’t recognized this problem and taken recovery action, I doubt if Apollo 11 would have been the successful Moon landing it was.”

When Armstrong again looked outside, he saw that the computer’s landing target was in a boulder-strewn area just north and east of a 300-foot-diameter (91 m) crater, so he took semi-automatic control. Throughout the descent, Aldrin called out navigation data to Armstrong, who was busy piloting Eagle. Now 107 feet (33 m) above the surface, Armstrong knew their propellant supply was dwindling and was determined to land at the first possible landing site.

Armstrong found a clear patch of ground and maneuvered the spacecraft towards it. They were now 100 feet (30 m) from the surface, with only 90 seconds of propellant remaining. Lunar dust kicked up by the LM’s engine began to impair his ability to determine the spacecraft’s motion.