MISSION COMMANDERS OPERATION MANUAL

The goal of this simulation is to land on the surface of the moon and to return safely back to the Earth. There are three phases to the mission: Lunar Landing, Orbital Docking, and Earth Re-entry.

Before you begin your mission you might want to visit the mission options menu by clicking the bottom left of the Mission Control Center. There you can enable and disable several features of the game including the skill level. A skill level of 1 is the hardest, it gives you only one attempt to land, dock and return to the Earth. A skill level of 4 is the easiest and provides four attempts for a safe return. Skill levels two and three are similar providing two and three attempts. The control of the craft also increases in difficulty with the Skill Level. The attempts (or lives) are designated as Tanks on the control panels. The other features in the options menu are described in detail on the display screen of the menu.

Instructions:
Phase 1
Phase 2
Phase 3

Learn more about the APOLLO Program
How to Order
Please read the Legal Stuff.

Goal: Land the Lunar module on the surface of the moon.

Requirements: To conduct a safe landing on the moons surface the follow conditions must be met. The red cross hairs on the top leftmost display must be crossed inside the Landing Site. The latitude and longitude of the Lunar Excursion Module (LEM) is controlled be the cursor keys of your keyboard. (arrows up, down, left, and right). Indicator lights next to the latitude and longitude displays will light when the readings are within parameters.

NOTE: *It is important to note that the control thrusters of this simulation can only fire in one direction at a time. Any vertical thrust that is being applied will also be disengaged.*

Vertical speed must be no faster that -10 units at the altitude of 42 feet for the auto land feature to complete the landing sequence. To control the vertical thrust you press and hold the space bar on your keyboard. A meter on the bottom right corner of the screen will graphically represent the force of the thrust. An indicator light next to the Rate of Descent (ROD) will light up if the descent is to fast.

All movements made by firing thrusters will burn fuel. The longer the rate of burn the more fuel is consumed. If the fuel level falls below 150 units an alarm will sound and an indicator light next to the fuel display will turn on.

If the ROD is less than -10 and the latitude, longitude cross hairs are within the landing site when the altitude readout reaches 42 units then the screen will change to a window view of the automated landing. If any of the conditions are not met then the auto thrusters will fire and return the module to a higher orbit. Depending on the selected skill level you will be given another attempt or not.

Score: Points are given for the accuracy of the landing as well as for the speed of the landing. Both Score and Time are recorded.

Hints: Never let the approach speed get too high. Beware of firing the thrusters too often. They use much needed fuel.

Back Next

Goal: You must dock the Lunar Module to Orbiting Command Module

Requirements: Docking the LEM to the OCM is similar to landing the LEM on the moon but is far more precise. To properly dock the modules you must align the docking targets of each module. This is done by firing retrorockets to guide the LEM into position. The cursor keys control these jets. The RADAR Screen in the top right of the screen, displays the OCM"s target. When the target is centered with the LEM"s target then it will turn yellow. An indicator light to the right of the RADAR will blink to show you are on course.

**Remember you are in space and there is no gravity to counteract your movements!*

The LEM"s Velocity at the time of connection is very critical. Your velocity must not exceed 5 units upon contact (Range=000). Pressing the spacebar fires the forward rockets to slow your approach toward the OCM. An indicator light to the right of the RADAR screen will blink when the velocity is within safe limits. Another indicator light next to the velocity readout will light up if the velocity is unsafe.

Score: Points are given for both the accuracy and the speed of the docking. Both Score and Time are recorded.

Hints: Never let the approach speed get too high. Beware of firing the thrusters too often. They use much needed fuel.

Back Next

Goal: You must set the proper thrust and angle of approach to enter the reentry window for your space capsule.

Requirements: To reenter Earth"s atmosphere you must enter a designated area know as the reentry window. This area shows up on the computer display as a circle with a cross in it. The capsules altitude is displayed on the right side of the display as a capsule icon and on the control panel on the bottom right. The range of the capsule from the window is given at the bottom right of the control panel. The range display is handy to determining the thrust needed to reach the window.

The Thrust is entered by sliding the throttle left to right on the bottom left of the control panel. A Display to the left will show the exact units. The Angle of Descent (AOD) is enter in the same way. The AOD Throttle is located just under the Thrust Throttle. You have three opportunities to make the window per Tank. (Tanks are determined by the skill level see above)

Score: Points are given for the speed of the reentry minus the number of attempts. Both Score and Time are recorded.

Hints: Keep an eye on the range. Use the Angle of Descent to reach distant windows.

Back Next

The Apollo program was the successful conclusion of the U.S. effort to achieve, within the decade, the goal set by President John F. Kennedy on May 25, 1961 "of landing a man on the MOON and returning him safely to Earth." It followed the GEMINI manned-flight program conducted in 1966-67 to develop the necessary techniques of orbiting, docking, and extravehicular activity (EVA). The main elements of the Apollo project were the three-man Apollo spacecraft; the two-man LUNAR EXCURSION MODULE (LEM), or Lunar Module (LM); and the SATURN family of rockets, consisting of the Saturn 1, the Saturn 1B, and the Saturn 5. These units made up the first manned, interplanetary transportation system. Using this system, astronauts landed on the Moon, where they explored and collected samples at six sites on the near side between July 1969 and the end of December 1972. The total cost of developing and operating the Apollo-Saturn transportation system in the lunar program was $25 billion.

Between October 1968, when the Apollo-Saturn transportation system underwent its first full space test, and July 1975, when it was used for the last time, the National Aeronautics and Space Administration (NASA) launched 15 manned Apollo-Saturn flights. Eleven of these were missions in the lunar landing program, including two test flights in low Earth orbit, two test flights in lunar orbit, six landings, and one circumlunar flight, during which the planned landing was aborted. During the testing period three fatalities occurred on the launch pad at the Kennedy Space Center, Florida, but none in actual flight.

After completion of the lunar landing program, four flights were carried out: three were missions that ferried astronauts to and from the SKYLAB experimental space station in 1973-74, and one was a joint flight with Soviet cosmonauts in the APOLLO-SOYUZ TEST PROJECT in 1975.

Back

APOLLO - mission to the moon

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Back