

The apollo program by nasa history essay



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The Apollo program is a space program by NASA which aims to send men to moon. It began in 1961. The goal was accomplished during the Apollo 11 mission, when Neil Armstrong was the first human to step on the moon. The program has many dimensions other than space field and explorations, it has political dimensions too. Apollo program affected the world in many ways and started a space exploration revolution.

Introduction

Since the beginning of the 17th century, when Galileo took the first close look to the moon using his first telescope, people started dreaming of flying to the outer space and to reach the moon. That dream became real after 3 centuries, when NASA launched Apollo Program.

The Apollo program was a project by NASA in the United States. The goal of this project was to land humans on the Moon and bring them back to Earth safely. The idea of getting a human to the Moon started during the Eisenhower administration but it really began in 1961 after President John F. Kennedy declared a national goal of “ landing a man on the Moon” before the end of this decade.

One of the biggest reasons behind starting this program is the competition between the United States and the Soviet Union in space exploration field. In 1961 and during the cold war, the Soviet Union was the first country to send a man to the outer space in an orbital flight, that man was the Soviet astronaut Yuri Gagarin. After the great achieve of the Soviets, many Americans saw that the United States must win the competition against the Soviet Union.

On the 20th of July 1969, the goal was finally accomplished when Neil Armstrong and Buzz Albrin landed on the Moon and returned to Earth safely and that was during the Apollo 11 mission. Between 1969 and 1972, there were a total of six successful landings on the Moon. In these flights, 12 astronauts walked on the Moon and collected around 382 Kgs of rocks, sand and many other samples to study the geological features of the Moon. The program ended in 1974 with Apollo 17.

The Space Race

Early in 1960 and during the Eisenhower administration, the Apollo program was conceived as a follow-up to the Mercury program which was the program that sent the first American astronaut to the space. The Apollo spacecraft was able to carry three astronauts whereas the Mercury capsule could support only one. NASA manager Abe Silverstein named the program after the Greek god of light and music; he said later

In November 1960, John F. Kennedy was elected president after he promised in his campaign to put America in superiority over the Soviet Union in space exploration and missile defense field. Despite Kennedy's promises, he didn't approve immediately on Apollo program once he became president. Though he knew about some of the technical details, at the same time he was put off by the huge financial commitments.

On the 12th of April, 1961, Soviet Union successfully sent Yuri Gagarin to the outer space to become the first human to fly in space. That movement reinforced American fears about losing the space race against the Soviet Union and being left behind in a technological competition. At the same time

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President Kennedy refused to make any commitments on America's response to the Soviets. After 8 days on April 20, Vice President Lyndon Johnson received a memorandum from President Kennedy discussing the America's space program status with him and asking him to find a solution to catch up with the Soviet program. Johnson's respond came out one week later, he concluded He mentioned also that landing humans on the Moon will be achieved by the United States

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On the following month, on May 25, 1961, President Kennedy announced his approval and his full support for the Apollo program. He said that through a speech during a special session of Congress.

At that time, many of NASA employees doubted whether Kennedy's goal could be met. Many people doubted too, because only one American had flown in space.

The goal of landing astronauts on Moon before the end of 1969 required an advanced technology, and a huge amount of money to run the program, it was around \$24 billion which is the largest commitment of resources ever made by any nation at that time, and to get the work done in less than 10 years, NASA employed 400, 000 people to work on Apollo program plus the support of more than 20, 000 industrial companies and universities.

Apollo's mission mode

Once Kennedy had announced the national goal, the planners of Apollo mission faced the challenge of designing a flying system with the minimum

risks to human life. At the same time they don't want to exceed the limits and spend extra money on designing flights. They came up with four possible mission modes to choose from:

- Direct Ascent: It's to send the spacecraft directly to the Moon, make it land and return as one unit. To be able to make this kind of missions work efficiently, they have to design a strong launching system and a more powerful booster.

- Earth Orbit Rendezvous (EOR): In this mode many rockets would be launched, each one of the rockets will be carrying a different part of a Direct Ascent spacecraft and propulsion units to keep the spacecraft moving until it escapes earth orbit. Then the spacecraft will land on the Moon as a unit.

- Lunar Surface Rendezvous: They would launch two different spacecraft, one is a vehicle with propellants on it, and the other is the manned vehicle. First, the vehicle carrying propellants would land and then the manned vehicle will land later. They would transfer propellant from the first vehicle to the manned vehicle to make it able to go back to Earth.

- Lunar Orbit Rendezvous (LOR): In this mission mode they would send a main spacecraft and a smaller lunar module to travel together into a lunar orbit. Then the lunar module will independently land on the Moon. When the mission is completed, it returns to the lunar orbit and come again with the main spacecraft. Then the main spacecraft returns to Earth.

After studying each mission and testing some of them they came up with some expected results to choose the best mission mode for Apollo program,

they decided to go with the Lunar Orbit Rendezvous mode. In the LOR method, astronauts can use the spacecraft as a life boat in case of a failure in the command ship, which is an advantage. On Apollo 13, astronauts faced a problem of oxygen tank failure that caused a cut in the electrical power in the command ship. The Lunar Module provided all the needs to get the crew back to earth safely.

Apollo Missions

There are two types of Apollo missions:

Unmanned missions

NASA began preparing for the Apollo program long before they decided to start the manned Apollo missions. In October 1961, they started testing flights of the Saturn I booster and it lasted for around three years until September 1964. In 1963, two tests of the launch escape system at the White Sands Missile Range. After all the tests, NASA sent three unmanned missions, they were Apollo 4, Apollo 5 and Apollo.

Manned missions

After testing the launching vehicles and making sure that nothing wrong is going to happen to the crew, NASA started the manned missions which carried three astronauts each or sometimes more. The first manned mission on the Apollo program was Apollo 7, launched on October 11, 1968 in an Earth orbital flight; it was to test the Command Module. Many manned missions continued the following years with some successful Moon landings. The last Apollo mission was Apollo 17, launched December 7, 1972.

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Canceled Missions

Apollo 18, Apollo 19 and 20 were originally supposed to be a part of the Apollo program, but those missions had been canceled. In 1968, during the beginning with the election of Richard Nixon, the space program started to lose focus. After Nixon was elected president, he didn't want to continue what Kennedy started and he was not so interested in the space program, in his opinion, it's enough and it's the time to stop the space missions because the original goal has accomplished. In 1969 Apollo 20 was canceled, and 18 and 19 were dispensed with in 1971.