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To reach the Moon, America needed to develop a powerful rocket: the Saturn V. This NASA image compares the size of the mighty Saturn V with the other rockets which NASA used in earlier space flights.

One major triumph brought a moon flight much closer to reality. The United States developed, and successfully launched, the mighty Saturn V. Taller than a 36-story building, it was the largest and most powerful three-stage rocket ever built.

With three million parts, it was a giant just waiting for the right time to send a crew to the moon. Not one was ever lost, but not one would have ever flown had engineers (at the Marshall Space Flight Center in Huntsville, Alabama) not solved combustion-instability problems with the F-1 engine (which powered the Saturn V rocket).

Several Apollo missions were flown to lessen anxieties about a safe lunar landing (and return) while astronauts were preparing (in Arizona) to walk on the moon. Crew members of Apollo 8 were the first people to see an "earthrise" as their spacecraft made the first loop around the moon.

Five months later, Apollo 10 was the first mission to go into lunar orbit. Partially descending to the moon - which can, on rare occasions, appear as a "SuperMoon" to people on Earth - the crew tested the lunar module that would be critical to a safe moon landing.

The Soviets, meanwhile, were also rushing ahead with plans for a moon landing. They even had lunar suits ready. An insurmountable problem blocked their way, however. They did not have a rocket comparable to the Saturn V. Prior rockets, sending cosmonauts into space, did not have sufficient power for a moon launch.

The N-1, Russia's best effort to successfully build a moon-launch rocket, was a failure. During the first launch attempt (in February, 1969), an engine fire caused the rocket to shut down and crash one minute after take-off. In July, 1969 the test rocket shut down seconds after lift-off, falling onto the launch pad where it exploded.

When the launch site was destroyed, so were all Soviet hopes that their crew could reach the moon before Apollo 11's flight. (Follow the link to a U.S. Corona reconnaissance satellite photo of the destroyed launch site.)

In a final attempt to at least retrieve lunar surface materials before the Americans, the Soviet Union sent an unmanned robot to the moon. It crash-landed on the moon's surface shortly after Neil Armstrong and Buzz Aldrin were the first human beings to step foot on the moon.

See Alignments to State and Common Core standards for this story online at:
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See Learning Tasks for this story online at:
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Media Stream

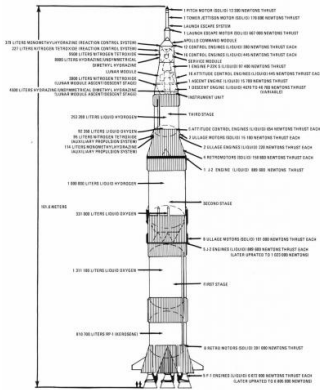


Saturn V Rocket - Display Photo

Image online, courtesy NASA.

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Saturn V - A Three-Stage Rocket

NASA Schematic - image online, courtesy NASA.

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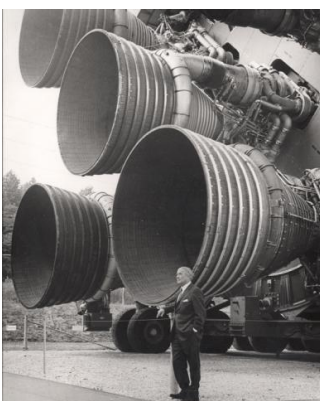


Saturn V - Launch Photo

Image online, courtesy NASA.

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Five F-1 Engines and Dr. von Braun

Photo by NASA Marshall Space Flight Center (NASA-MSFC), Image MSFC-0201422. PD

Quoted passage, from NASA STI (Scientific and Technical Information) Program.

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First Earthrise Seen from the Moon

Image online, courtesy NASA.

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Soviet Space Suit

Image online, courtesy the National Air and Space Museum, Smithsonian Institution.

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Russian N-1 Rocket

Image online, courtesy of RSC Energia via the Smithsonian Air and Space Museum.

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Destroyed Launch Site of Russia's N-1 Rocket

Image online, courtesy the CIA via the Smithsonian National Air and Space Museum.

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Russian N-1 Rocket Launch Attempt

Image online, courtesy the National Air and Space Museum, Smithsonian Institution website.

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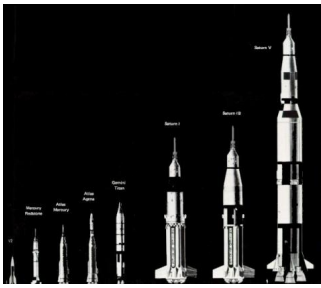


Soviet Unmanned Robot - Built for Work on the Moon Surface

Image online, courtesy RSC Energia via the National Air and Space Museum, Smithsonian Institution.

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TO THE MOON

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Saturn V - The Moon Rocket

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Moon Walk - Preparation in Arizona

From "Moon," episode 4 of *The Planets*, a BBC series (from 1999) using historical space-race footage, computer graphics and interviews to tell the story of space exploration and discovery. The entire series is about 390 minutes. Copyright, BBC, all rights reserved. Clip provided here as fair use for educational purposes and to acquaint new viewers with the production.

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