

Man In Space Timeline



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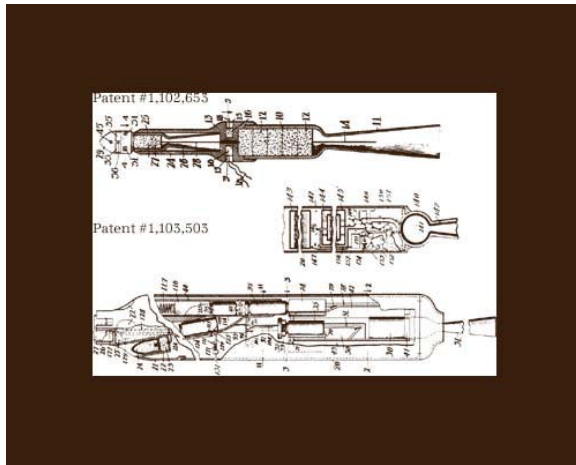
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The Role of Robert Goddard



Images: NASA



On March 16, 1926, Dr. Robert H. Goddard launched the world's first liquid-fueled rocket in Auburn, Mass., laying the foundation for rocket technology. Although the rocket flew for only 2.5 seconds, it climbed 41 feet and landed 184 feet away.

From 1930 to 1941, Goddard made substantial progress in the development of progressively larger rockets, which attained altitudes of 2,400 meters, or about 1.5 miles, and refined his equipment for guidance and control, and other associated equipment. He filed many patents.

Nazi Germany's V-2 Rockets: 1944

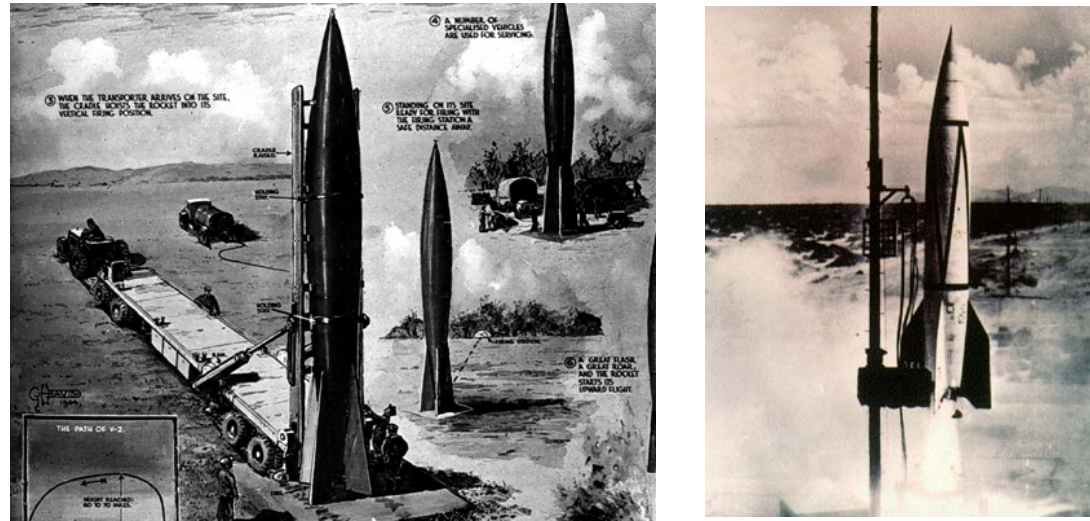


Image: NASA

Before World War II, many German scientists worked on developing rockets that could get to outer space. Hitler forced them to use their knowledge to develop the first ballistic missile, which was a rocket that could carry explosives a long distance to bomb other countries.

The rocket they developed by 1944 was called the V-2. It was also the first rocket to reach the fringes of space. After WWII ended, Wernher von Braun, the scientist who led the German team who developed the V-2, came to the United States and helped to get the United States into space.

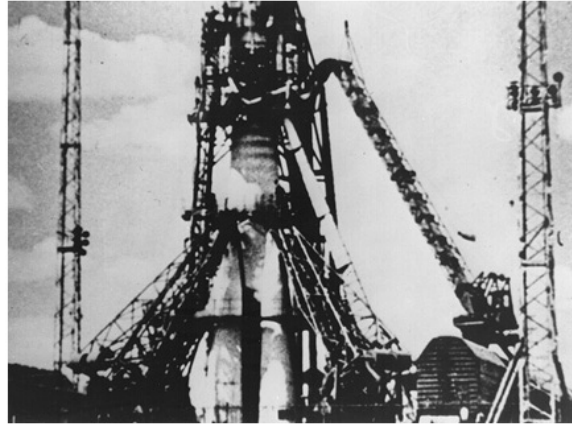
Operation Paperclip: German Scientists Come to USA



Werner von Braun (center) surrenders to the United States. Image:NASA

When the first V-2 rockets hit London late in the war, Wernher von Braun reportedly said that “the rocket worked perfectly except for landing on the wrong planet”. Before the war, he had dreamed of sending rockets into space. Now he chose the United States as most likely to use his technology to do that. At the end of World War II, in **May of 1945**, German rocket pioneer Wernher von Braun arranged the surrender of his top engineers and scientists to the United States. Other scientists went to Russia. Von Braun also delivered test vehicles along with rocket plans to the US.

Sputnik: October 4, 1957



After World War II, the Soviet Union and the United States used scientists from Germany to continue the technology advances of the war. Both countries felt it was necessary to get into space before the other country. On October 4, 1957 the USSR shocked the world with its successful launch of a satellite into orbit around the world. It was named **Sputnik**, which means Companion in Russia. This 183 pound (83 kg.) circled the Earth every 98 minutes, beeping as it did so.

Terrified that the Soviet Union was close to being able to launch weapons from space, the United States now upped its rocket efforts.

First Earthling In Space: Nov. 1957

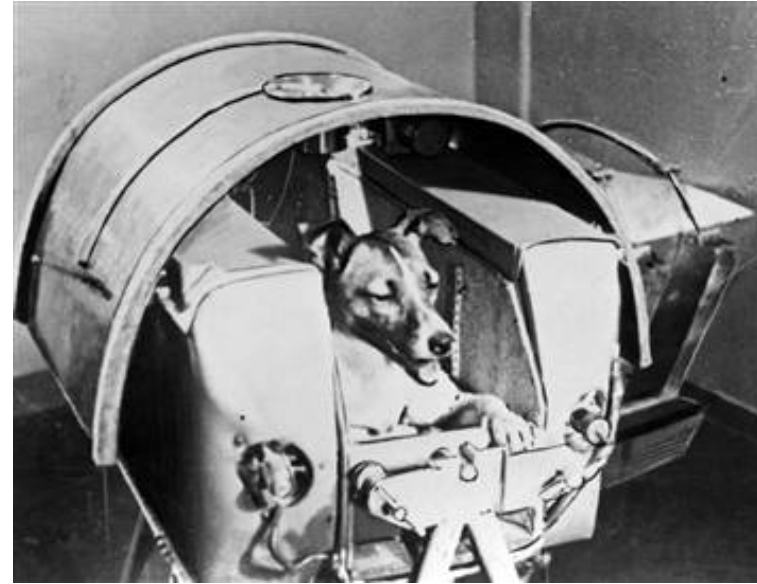


Image NASA

This sweet-faced dog was sent into space by Russia on November 3, 1957. Her name was Laika, which means “Barker”. She successfully survived her trip into space and orbited the Earth. Although she had food and water, there was no way to get her back down. She probably survived only a few days due to thermal stresses and lack of oxygen.

Vanguard Rocket Explosion: Dec. 1957



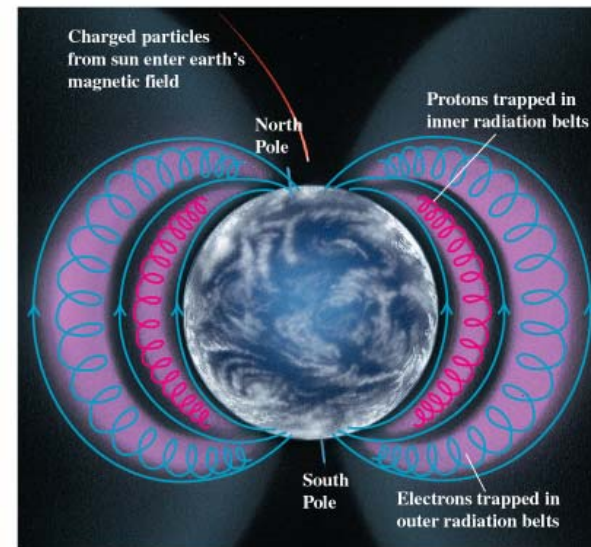
Image: U.S. Navy

In 1957 the U.S. International Geophysical Year program intended to put a satellite in Earth orbit to conduct geodetic and atmospheric measurements. A failure of the first stage caused the vehicle to blow up after only a few seconds on December 6, 1957.

The United States Gets Into Space: Jan. 1958



Image: NASA

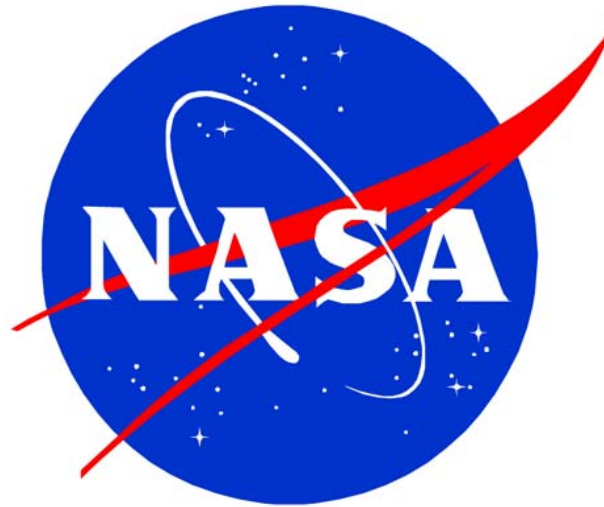


(a)

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The launch of Explorer I finally took a United States satellite into space. The 31 pound satellite carried instruments that confirmed the existence of radiation in Earth's atmosphere. This was named the Van Allen Radiation Belt. This took place on January 31, 1958.

National Aeronautics and Space Agency is Formed



October 1958 is the birth date of NASA. NASA's insignia was designed by an employee, James Modarelli, in 1959. It is affectionately known as "the meatball". Although NASA decided to use a more modern logo in the 70's, it eventually switched back. The sphere represents a planet, space is shown by the stars, the wing represents aeronautics, and there is an orbiting spacecraft going around the wing.

Russia's Luna 1: First Manmade Object to Escape Earth

January 3, 1959

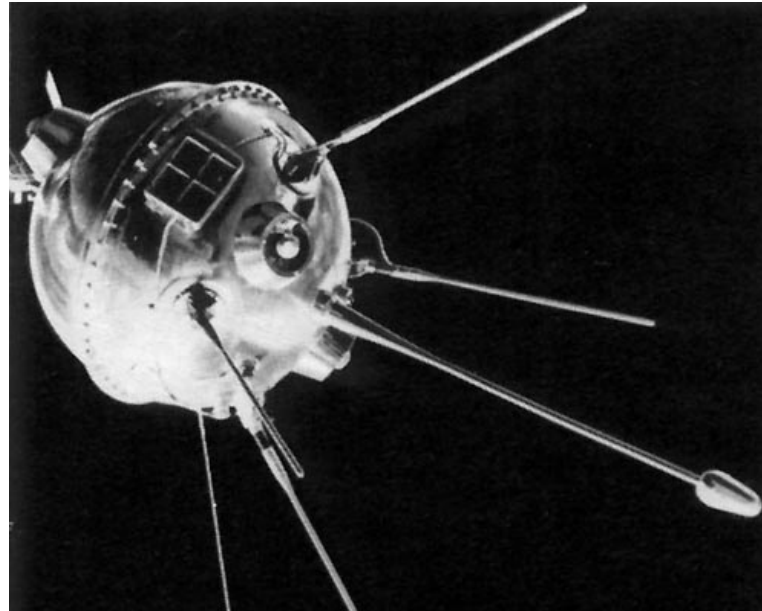


Image: National Space Science Data Center

Although it missed the Moon, Russia's Luna 1 was the first manmade object to escape the grip of Earth's gravity. It zoomed past the Moon at a distance of 6,400 km (3,977 miles) and eventually became the first spacecraft to go into orbit around our Sun.

The First U.S. Spacecraft to Break Out of Orbit

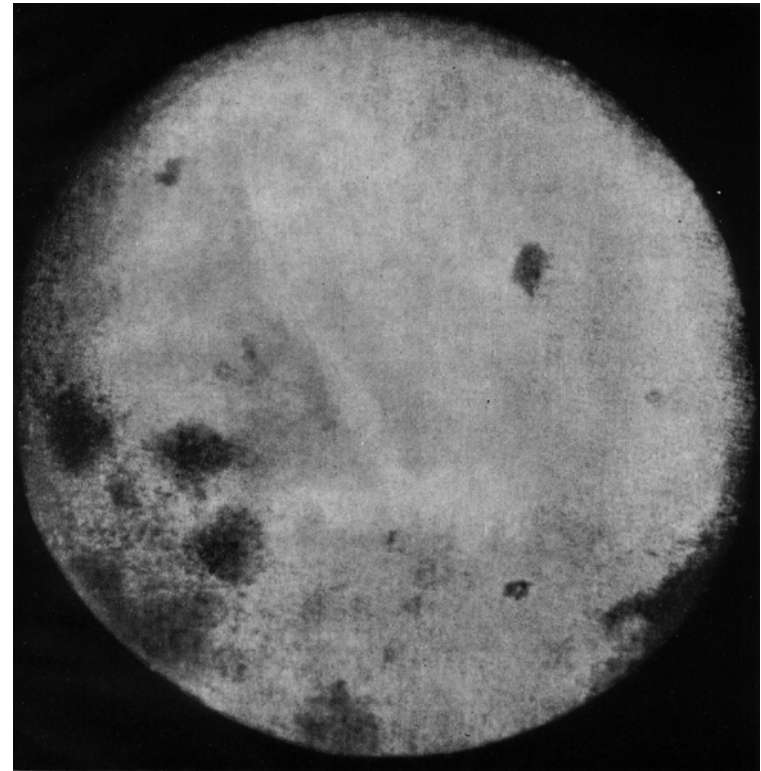
Cosmic Bullet: March 1959



Image: NASA

A booster rocket malfunction knocked the probe Pioneer 4 off course, so it didn't get close to the moon, but it was the first U.S. spacecraft to break out of Earth's orbit. It was painted with stripes to help stabilize its temperature. It sent back lots of information on radiation in space. Launched in March of 1959, it was last detected in an orbit around the Sun in 1969.

First Pictures of the Far Side of the Moon: 1959



Images: National Space Science Data Center

One side of the moon is permanently turned away from the Earth. On October 7, 1959, the Russian Luna 3 probe photographed this side for the first time. It was about 63,500 km. away.

Melba Roy: Human Computer



Image: NASA

Date: 01.01.1960

In 1960, calculators and personal computers had not yet been invented. Greater than these devices, though, was the human brain. Melba Roy was the head of a group of NASA mathematicians who became known as “computers”. Roy’s group tracked early satellites in Earth orbit. Her computations helped produce the orbital element timetables by which millions saw the satellites from Earth as they passed overhead.

Ham in Space

**Ham the Chimpanzee, first US citizen in space
January 31, 1961**



Ham being greeted by a Naval officer.

Ham flew into space on a Mercury Redstone rocket. He made the 16 minute suborbital flight safely.

First Earth Human in Space

Russian cosmonaut Yuri Gagarin

April 12, 1961



Image: NASA

Gagarin rode upon the spacecraft **Vostok I**. Its two sections had supplies for Gagarin such as water and oxygen, and the second was for him. Vostok orbited Earth at 27,400 km. per hour. Its flight lasted 108 minutes. A computer controlled its reentry. Gagarin did not land in the capsule, but instead ejected from the spacecraft and landed by parachute.

“Light the Candle”: *Freedom 7*

Alan Shepard, first American in Space

May 5, 1961



Image: NASA

Alan Shepard became the first American in space less than a month after Soviet Yuri Gagarin made his flight. A global TV audience watched the broadcast as the *Freedom 7* took Shepard into a 15 suborbital flight. Later, in 1971, Shepard would walk on the moon in an Apollo mission.

President Kennedy Challenges the Nation

“We choose to go to the moon!”

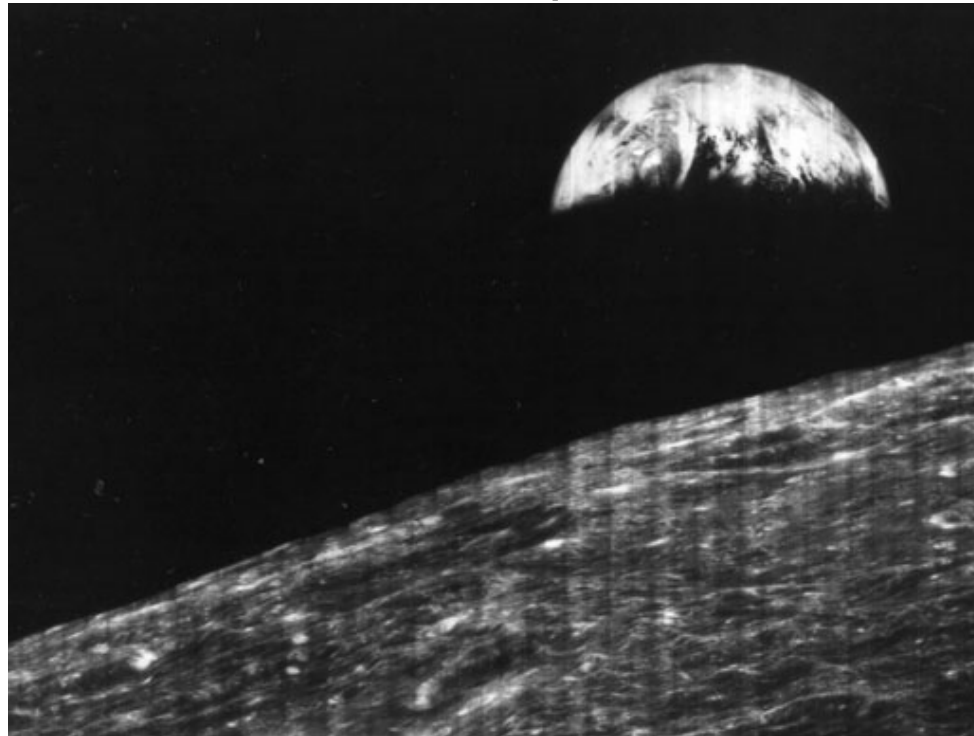


May 25, 1961

President John F. Kennedy in his historic message to a joint session of the Congress, on May 25, 1961 declared, "...I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth." This goal was achieved when astronaut Neil A. Armstrong became the first human to set foot upon the Moon at 10:56 p.m. EDT, July 20, 1969. President Kennedy was assassinated in 1963; he never saw the end of the program he set in motion.

First View of Earth From Moon

August 23, 1966



This view of a crescent earth as seen from a moon orbit was transmitted to Earth by the *United States Lunar Orbiter I* and received at the NASA tracking station at Robledo De Chavela near Madrid, Spain. This was photographed when the spacecraft was on its 16th orbit and just about to pass behind the Moon.

Launch Pad Fire: Apollo 1

January 27, 1967

Commander Virgil "Gus" Grissom , Edward White , Roger Chaffee



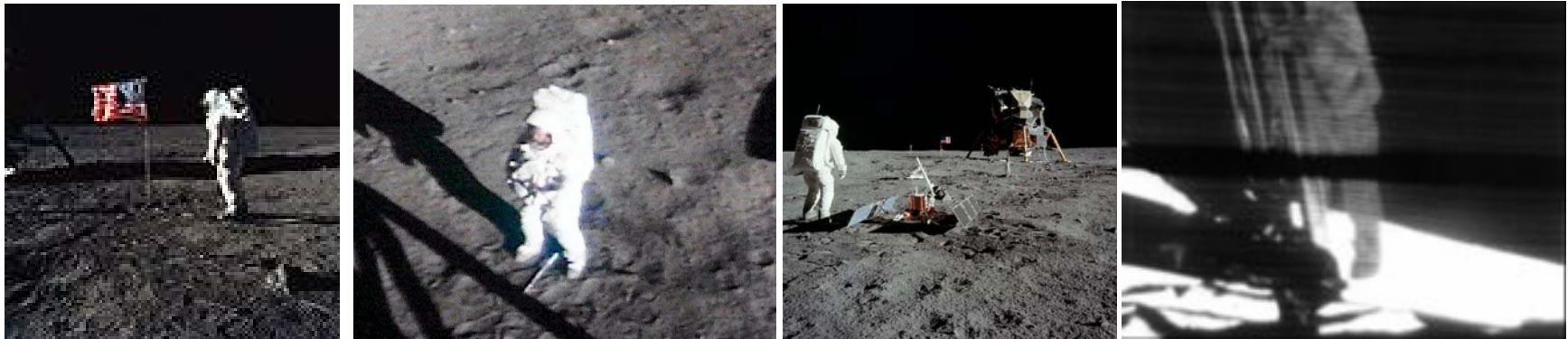
Although the start of the fire could never be determined, the astronauts' deaths were attributed to a wide range of lethal design hazards in the early Apollo command module. Among these were the use of an oxygen atmosphere for the test, wiring and plumbing flaws, inflammable materials in the cockpit, an inward-opening hatch that would not open in this kind of an emergency and the flight suits worn by the astronauts.

Man Steps on the Moon: Apollo 11

Launched from Earth: July 16, 1969

First steps on moon by Commander Neil Alden Armstrong: July 20, 1969

The Apollo 11 mission was the first manned mission to land on the Moon. It was the third human voyage to the moon. Command Module Pilot Michael Collins stayed behind in the command module while Commander Armstrong and Lunar Module Pilot “Buzz” Aldrin, Jr. landed in the “Eagle”.



The Challenger Accident : First Teacher in Space

January 28, 1986



The Challenger Astronauts



Explosion in the sky

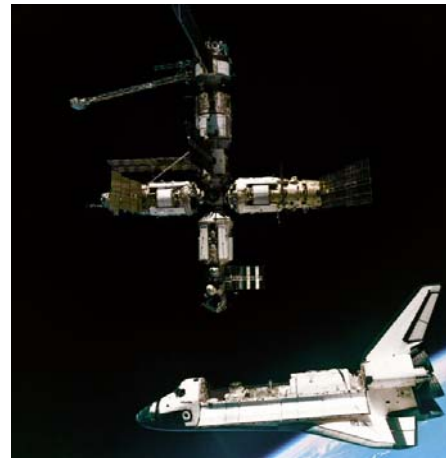


Arlington Cemetery Memorial

In 1986 America was shocked by the destruction of the space shuttle Challenger, and the death of its seven crew members. 73 seconds into its flight, the spacecraft disintegrated over the Atlantic Ocean. All seven astronauts, including the first teacher in space Christa McAuliffe, were killed. This accident put the shuttle program on hold for years, delaying the launch of the Hubble Telescope.

Russian Space Station Mir

Begun 1976 on Earth—first docking March 15, 1986



Under pressure to launch, Russia put the *Mir* in orbit without any Soyuz spacecraft or modules to launch to the station at first. Leonid Kizim and Vladimir Soloyyov first docked with the Mir Space Station on March 15, 1986. Starting in March 1995, seven US astronauts spent 28 months on Mir. During this time several serious emergencies occurred, including a small fire in February 1997 and a collision in June. Both times the station was evacuated. In June 1998, US Mir astronaut Andy Thomas left the station aboard the Space Shuttle Discovery. The Station was deliberately taken out of orbit and allowed to disintegrate on March 23, 2001.

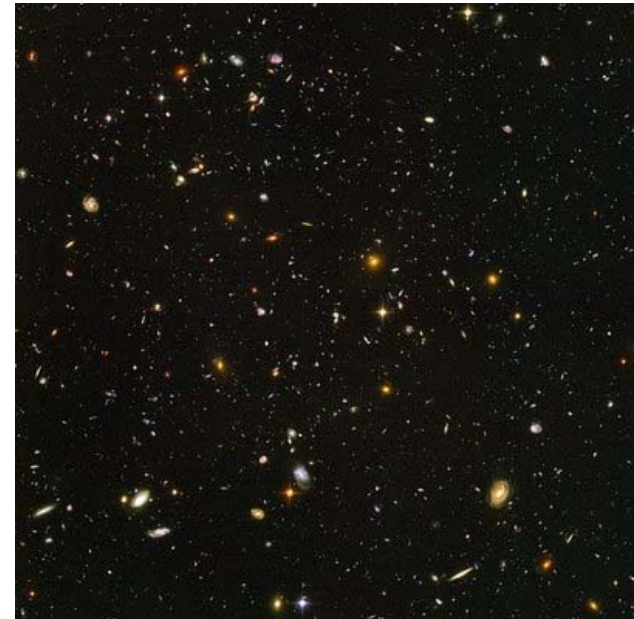


Ten Thousand Galaxies: The Hubble Space Telescope

April 25, 1990



The Hubble Space Telescope

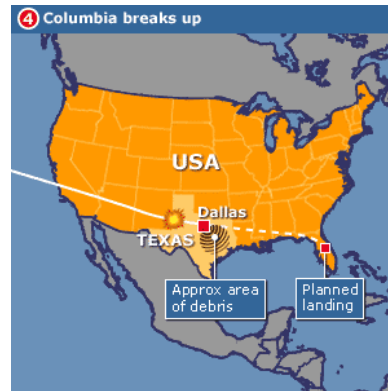


Ten thousand galaxies are photographed in 2004 by Hubble's Ultra Deep Space techniques

Since the 1940s, astronomers dreamed of a space telescope. Earth telescopes could not see clearly through the atmosphere. After many ups and downs, the telescope finally went into space on **April 25, 1990**. Its first pictures were blurry, and later it was given corrective lenses. The Hubble has sent back the most incredible pictures, and the Universe is far larger than we imagined.pS

Space Shuttle Columbia Tragedy

February 1, 2003

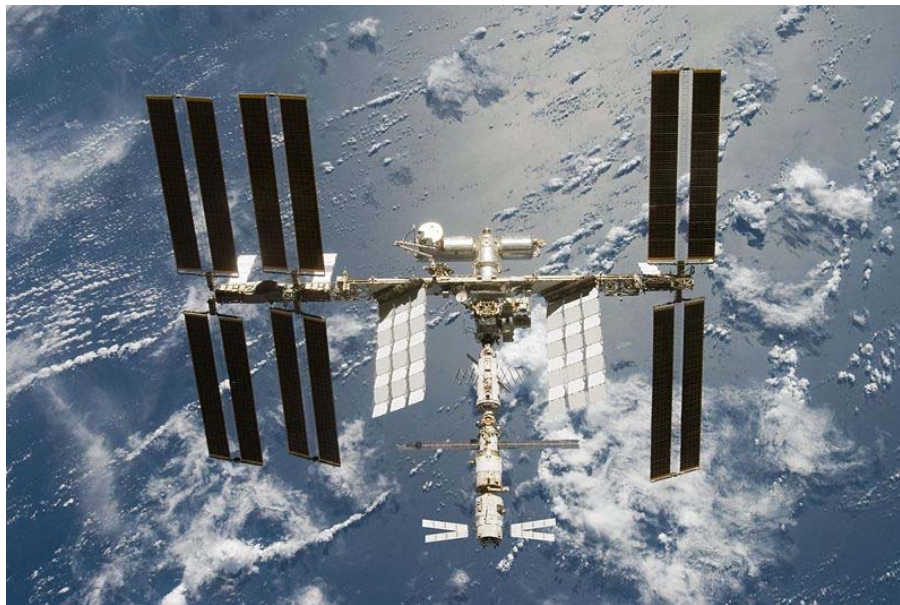


Commander Rick Husband, Pilot William McCool, Mission Specialist Kalpana Chawla (India), Mission Specialist Laurel Clark, Mission Specialist Michael Anderson, Mission Specialist David Brown, Payload Specialist Ilan Ramon (Israel)

The Space Shuttle **Columbia** completed a successful mission and was returning to Earth when it disintegrated over the United States. The wing had been slightly damaged by foam insulation during lift-off. The superheated gases of reentry caused a left wing plasma intrusion and the shuttle was torn apart. All seven astronauts were killed. Debris was scattered halfway across the United States. For weeks, civilians and officials hunted for pieces of the Columbia. The Columbia carried an Israeli astronaut as well as one from India.

International Space Station

In-orbit assembly began in 1998



The space station can be seen from Earth in a low Earth orbit. It is only 217 miles above the surface of the earth, and completes almost 16 orbits a day. It is a joint project among the space agencies of the United States, Russia, Japan, Canada and eleven other European countries. Brazil also participates, and China has expressed interest. Completion date is in 2010, and it has been continually staffed since November 2, 2000. It has been visited by astronauts from 16 countries, and entertained the first five “space tourists”.