Sputnik's Fifty Year Legacy

By Wendy McCorry, Science Communicator

An important anniversary in the history of space exploration takes place this month. Fifty years ago, on 4th October 1957, the Soviet Union launched Sputnik 1, the first artificial satellite to successfully orbit the earth. This simple basketball-sized sphere was to change the course of history, and its launch is now widely regarded as heralding the dawn of the space age.

In 1952, the International Council of Scientific Unions declared that 1957-1958 would be named International Geophysical Year (IGY), to coincide with a predicted high point in solar activity. The council asked that artificial satellites be launched during this year in order to map the Earth's surface. In 1955, the US announced their intention to launch a satellite named Vanguard, possibly as early as November 1957, and they set about building and testing their equipment.

The Americans were taken by complete surprise however, when the Soviet Union unexpectedly launched their own satellite, Sputnik 1, from what is now the Baikonur Cosmodrome in Kazakhstan on 4th October, 1957. Sergei Korolev, the Soviet Union's head rocket engineer, had originally been working on a satellite named Object-D, which was due to be completed in 1957-8. Work on this satellite was being carried out by a number of different departments, and Korolev began to worry that the Soviet project was too ambitious and was not going to be ready in time to beat their US counterparts. With this in mind, he decided to postpone the complex Object-D project, and to concentrate instead on creating a simple, light and easy to construct satellite.

Image Credit: NASA

The Man with a Plan Sergei Korolev led the project to launch the first satellite

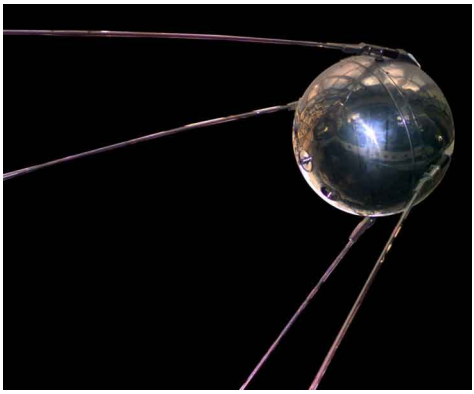


Image Credit: NASA

Celestial sphere Sputnik was a simple sphere with a set of whip antennae

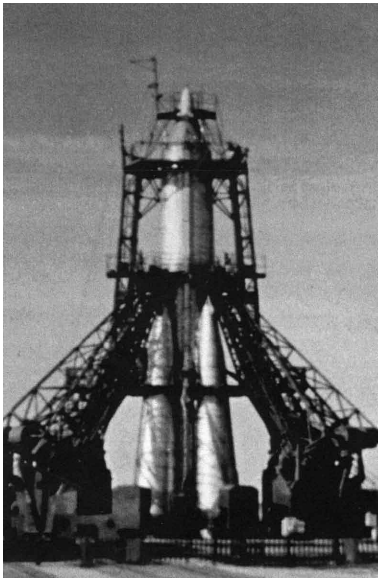
"The Americans were taken by surprise"

Sputnik (translated as 'fellow traveller') was a polished aluminium alloy sphere filled with pressurized nitrogen. It was 58 cm in diameter and weighed approximately 83.6 kg. The satellite had four whip-like antennae and contained two 1 watt radio transmitters which emitted a repeating beep, each lasting for 0.4 seconds. Three silver zinc batteries supplied power to the transmitters, along with a ventilation fan. Sputnik was

launched by a modified version of an R-7 rocket, a ballistic missile that would later be a major weapon in the Cold War (thankfully it was never to be fired in anger).

When news of Sputnik's launch was broadcast over the radio and television, millions of people throughout the world endeavoured to catch a glimpse of the tiny object travelling through the sky. Although many people reported to have seen Sputnik, what they probably witnessed was actually one of the larger rocket stages which also went into orbit. Amateur radio operators were also able to pick up the distinctive beeping sound of the satellite's signal.

Image Credit: NASA



Preparations for launch The image shows Sputnik 2's R-7 launch vehicle on the pad a few weeks after Sputnik 1's blast off. The two rockets were almost identical.

The American response to Sputnik was one of hysteria, with newspapers reporting that if the Soviets could launch a satellite into orbit, then surely they were also capable of launching several satellites equipped with nuclear bombs. Senator Mike Mansfield announced to the nation, "What is at stake is nothing less than our survival". A notable exception to the hysteria came from President Eisenhower, who did not publicly comment on the event until five days later, when

Image Credit: NASA

Sputnik 1 disassembled The transmitters and their batteries filled the tiny sphere.

he issued a statement congratulating the Soviets on their achievement.

The Soviet Union struck again in November with the launch of Sputnik 2, a heavier satellite which carried a passenger on board – a dog named Laika. Laika was the first living creature to orbit the Earth, and gave the Soviets another first in space history.

"Sputnik 2 carried a dog named Laika"

After the initial hysteria, the shock of being caught off guard by Sputnik sparked longer-term changes in American society, most significant of which was the establishment of NASA. In an effort to equip the nation for the technological challenges of the future, planetaria and science centres were opened; school curricula were changed to emphasize science and mathematics; and hundreds of millions of dollars went towards scholarships for science students and the purchase of scientific equipment for schools. America was gearing itself up for the US / Soviet 'Space Race' which was to continue for the next 12 years, culminating in 1969 when the US

Space Program successfully landed a man on the Moon.

So what became of Sputnik 1? Having completed around 1400 orbits of the Earth the tiny satellite is thought to have perished as it re-entered the Earth's atmosphere on January 4th 1958. Its mission may have lasted for only ninety-two days, but Sputnik has left behind an important legacy which continues to amaze and fascinate, even though the sound of its beeps have long since faded away.