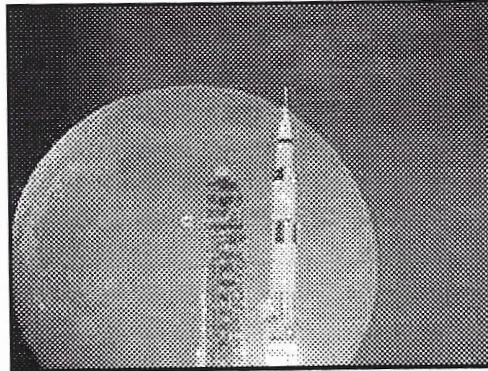


RACE TO THE MOON



(1)

The story behind the race to the moon cuts to the heart of the competition between two Cold War enemies to dominate the new realm of space. Looking back, July 20, 1969 was a triumph that had as much to do with problems in the Soviet space program as it did with the American know-how. Bob McDonald looked back at the space race for the Magazine.

Race to the Moon Links

Bob McDonald on
Living in Space

Canada's Stars in Space
From CBC News Online

To understand that moment 30 years ago when the Americans first walked on the moon you have to go back to the Second World War and Adolf Hitler. He believed that rockets were the best way to fire on another country from within the safety of your own border.

His chief designer, Werner von Braun did come up with the V-2 rocket but it could only hop across the English Channel.

They knew that with a little more power it could reach speeds high enough to achieve earth orbit

and conquer the ultimate military high ground.

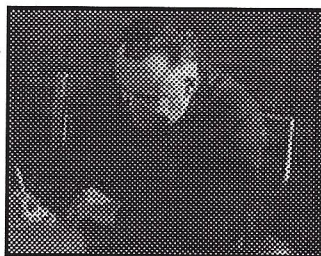
In fact, if Hitler hadn't been defeated by the war, Germany probably would have been the first country in space, maybe even the first country on the moon.

It was German technology divided between the Americans and the Soviets that spawned the space race.

The Soviets were quicker off the mark under Chief Designer Sergei Korolev. He set early goals for the German and Soviet engineers on his team.

Georgi Grechko was one of those young engineers on Korolev's team.

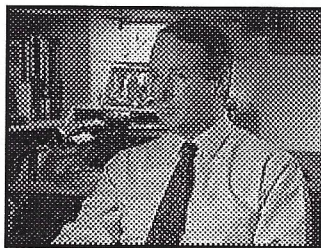
"He saw the secret of getting the most out of people. It wasn't simply to have an office full of engineers but rather to build a real team with the right stuff. That's why we were ahead of America in those early years," Grechko says.



Sergei Korolev

"Under Korolev's supervision our one-thousand strong staff worked like a smooth unit. We were like a coiled spring which could throw up whatever Korolev wanted. We never repeated anything. We never looked back. Under his leadership we always moved forward."

Dublin author Brian Harvey has written extensively about both the Soviet and the new Russian space program. He says that beyond the ability to inspire his workers



Brian Harvey

Korolev was able to make the Soviet bureaucracy work for the space program.

"What Korolev could do was he could bang heads together in different design institutes," Harvey

says. "He also struck up a very good relationship with the Soviet premier at the time, Nikita Krushchev.

"Korolev was interested in conquering planets and going to the moon. Krushchev was interested in projecting a soviet power and in building up the military of the Soviet Union. They had slightly different but in many respects overlapping agendas but they made a very powerful combination."

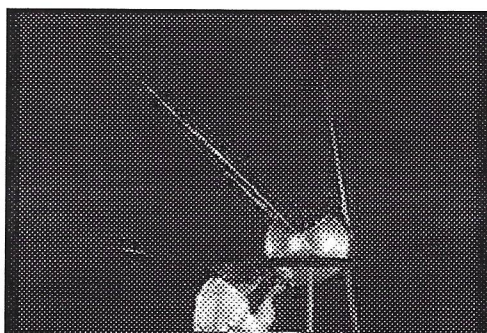
That powerful combination meant results.



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RACE TO THE MOON



Sputnik
(2)

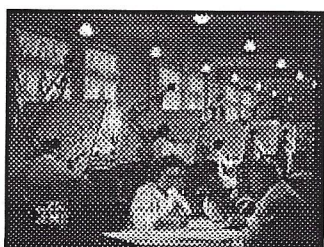
On October 4, 1957 the Soviets shook the Western World when Sputnik became the world's first artificial satellite.

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"The fact facing the Americans is that the pointer has swung sharply to the Russian side. Sputnik One is in the air," a TV reporter said at the time.

"With the first launching the race, the competition between America and the Soviet union began - who would be the first in space?" Grechko says.

"Now I can tell you a big secret. Our first Sputnik was supposed to be gigantic, weighing about a half a tonne, full of scientific equipment. When we began to test this gigantic, absolutely fabulous Sputnik, we discovered that one or another part of this equipment was constantly failing.



"At the same time the Americans were trying again to launch their satellite, their second attempt. So Korolev realized that while we were messing around

Soviet design team were messing around with all the scientific equipment the Americans would be the first to launch an artificial satellite. First in the world. That's forever. So we quickly began to build a second Sputnik.

"We even called it that: SS, that is, 'Simple Sputnik.' It was built for one thing and one thing only - to win this first stage of the space race."

The Soviets went on to launch bigger Sputniks. Sputnik 2 took the first dog, Laika, into space. It was a one-way trip. The world thought Laika died slowly as her air ran out but more likely she died a painful death when the insulation fell away from her spacecraft.

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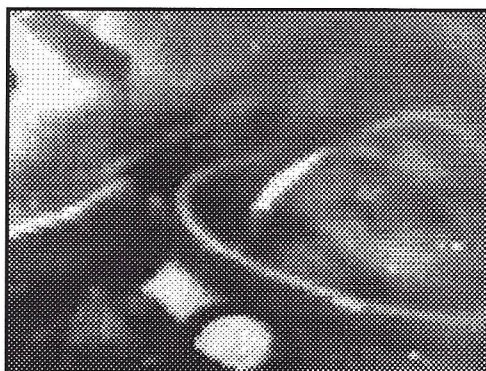
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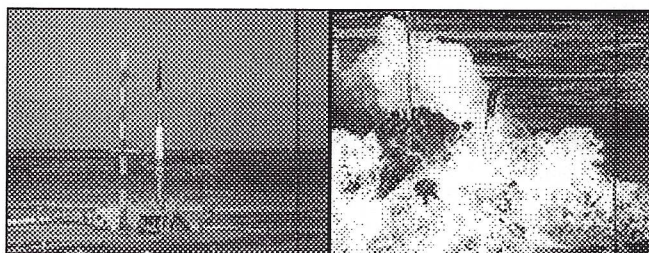
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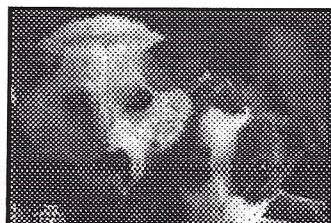
Yuri Gagarin
(3)

The Americans didn't have any public successes. They couldn't seem to get their own Vanguard series off the ground, exploding on the launching pad, earning it nicknames like Kaputnik, Flopnik, and Stayputnik.

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The Soviets successes kept coming. In 1959, they hit the moon with Lunik 2, and with Lunik 3 they took the first pictures of the far side of the moon, a region never before seen by human eyes.



Then they sent two dogs, Belka and Strelka, into orbit for an entire day. More important, they brought these dogs home safely

these dogs home safely although Belka suffered the first space sickness. Now it was only a matter of time before humans would leave the Earth.

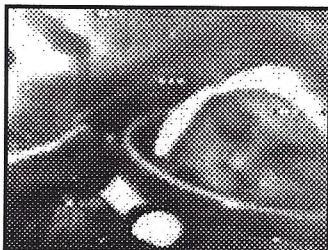
While Korolev's engineers worked on the capsules that would carry humans into orbit, 20 men from the airforce were chosen to form the first corps of cosmonauts.

Not only were they put through rigorous physical training, they were the first humans to prepare for the motions of space flight and the first to undergo psychological testing for their abilities to cope with the dangers, disorientation and isolation of space.

Finally Korolev selected the 27-year-old Yuri Gagarin to become the first man to orbit the Earth.

"We couldn't understand why," Grechko says.

"But then we got it. He was a typical Russian: simple, sincere, young, friendly, open. We didn't understand that. We thought he had to choose an academic or a wunderkind. But he thought, no the first has to be a simple, good Russian guy."



If the earlier Soviet successes had alarmed the Americans, the blast off of Yuri Gagarin in April, 1961 shook them to the core.


U.S. President John F. Kennedy put Vice President Lyndon Johnson in charge of figuring out a plan to not just catch up to the Soviets but beat them. For Johnson getting a man on the moon was the only choice.

"He [Johnson] didn't want to go to sleep by the light of the communist moon," Harvey says.



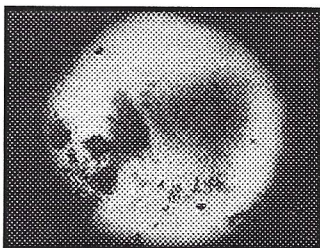
The new president went public with America's bold plan to catch up.

"We choose to go to

 "We choose to go to the moon in this decade and do the other things not because they are easy but because they are hard, because that goal will serve to organize and measure the best of our energies and skills."

John Kennedy

"It was, I suppose, the overall weight of all that the Soviet Union had achieved forced the Americans to think up a very very ambitious target," Harvey says. "After all, in 1961 Kennedy could have said let's fly around the moon, not even trying for a landing. So it's as if being left behind the Americans set themselves an extra lap to go in order to beat the Russians, so they choose the most difficult target, and I think Kennedy indeed was quite conscious of that."



First picture of the far side of the moon

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RACE TO THE MOON



Russian spacewalk
(4)

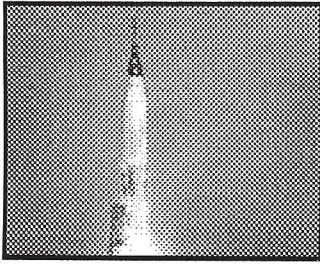
Even after Kennedy's announcement the Soviet firsts kept coming...two cosmonauts in orbit at the same time, the first woman in space and the first walk in space. The scientists on both sides had their own reasons for pushing the limits.

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"I now remember that whenever we would launch something into space, our American friends, not the politicians -- the politicians were involved in the competition -- but our friends, our colleagues were begging us: please launch something, that way the congress will give us more money," Grechko says.

"And we could launch something. At that time this didn't seem all that important but now the American congress doesn't provide too much money to space, and our government is stingy too."

Nothing was too good for the American space program in the decade of the moon race. Budgets were big. The new astronauts became instant public heroes.



American space mission would get there first galvanized them. What Americans did not know was that while they were moving ahead the Soviets were falling behind.

Throughout, first the Mercury program and then Gemini, the dream of a moon landing came closer to reality. The fear that the Soviet Union

"The Russian plan to send a man to the moon was not actually finalized until August, 1964," Harvey says. "That was the decision in principle to go the moon."

After that there was a lot of competition between the different design institutes as to which particular type of spacecraft should go, what type of rocket should be used and the actual mechanics of doing so.

There wasn't a final agreement on the method of going to the moon inside the Russian camp until February 1967, which was a full six years after the United States had settled on the Apollo and the Apollo lunar module design.

So the Russian found themselves by the mid to late 1960s very, very far behind the United States with really only two years to catch up.

In 1960, a military rocket had exploded at the Baikonur Cosmodrome after a fuel leak. It wasn't until years later that the extent of the catastrophe was

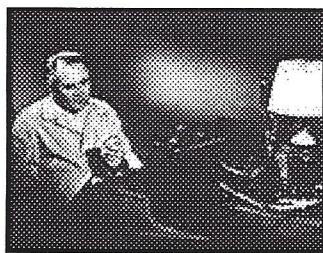


Baikonur disaster

known. More than 200 people were killed. Among the dead were the head of the rocket program as well as many key players in the space program.

Then Sergei Korolev, the man who had lead the Soviets in all their firsts, died from a botched

operation to treat his colon cancer.



Sergei Korolev

"The death of Korolev was a major body blow to the Soviet space program," Harvey says. "He died in January, 1966 just as the Russians were gearing up for the final

assault on the moon. He was the one person who could bring the different designers, the different design institutes together who had the political influence to make the different programs work."

While the Soviets were falling behind in their manned program their unmanned moon missions showed great promise. Luna 9 landed on the moon and sent back the first close-up pictures of the surface. Then Luna 10 was the first spacecraft to orbit the moon. These lunar successes fuelled the American drive to move quickly.

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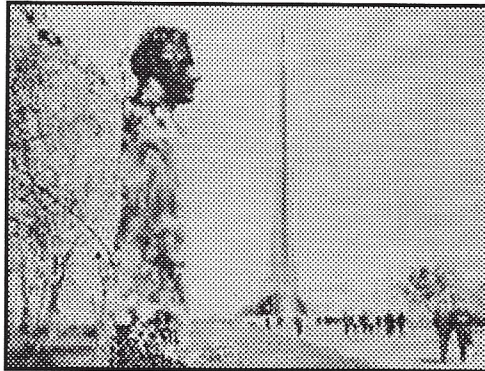
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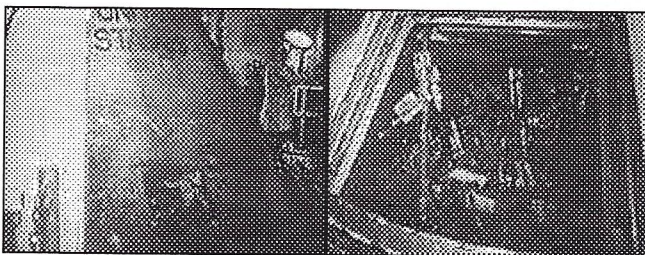
RACE TO THE MOON



Bust of Komarov
(5)

American confidence was shaken further when a test on the first Apollo spacecraft went fatally wrong when a fire swept through the Apollo One space capsule. The deaths of Gus Grissom, Ed Whyte and Roger Chaffee in 1967 reminded the public of how dangerous a mission to the moon really was.

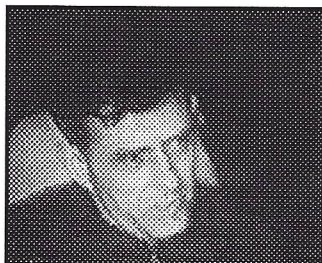
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But few knew that a Soviet cosmonaut, Vladimir Komarov, also died in the race to the moon just months after the American tragedy.

The Soyuz One held the Soviets hope for the manned moon race. But in the rush to get ahead they sent it into space with more than 200 faults left uncorrected.

"What they planned was to launch the Soyuz One spacecraft with one cosmonaut on board and then follow it a day later by another spacecraft with three men on board," Harvey says. "They would demonstrate earth orbit rendezvous and docking within one orbit so with one great space spectacular the Russians would be back in the space race and back in the moon race."



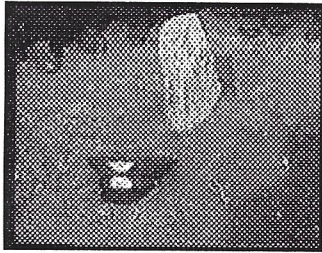
Vladimir Komarov

Instead, soon after lift off, Komarov had to try to bring a failing spacecraft back to Earth. He made corrections but he was out of luck when the parachute wouldn't open for re-entry. The

Soviets said he died in the routine test of a spacecraft...no mention of the moon race or Komarov's final words.



"Komarov is reported by those people who listened in to have cursed [Soviet Premier Leonid] Brezhnev for rushing the mission for the May Day anniversary in 1967, for the fact the flight was flown without it being properly tested," Harvey says. "It's reported that he named Brezhnev by name and indeed this may explain the fact that only a small memorial was erected to him at the spot where the spacecraft crashed and that was, if you like, his political masters showing their displeasure for the fact he complained the way he did."



Memorial at crash site

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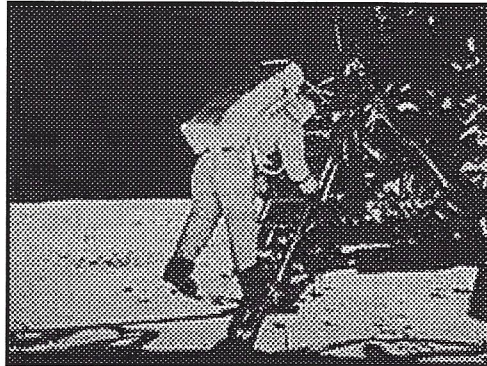
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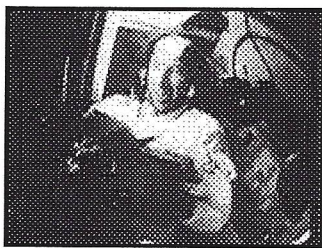
RACE TO THE MOON



American moon landing
(6)

Despite the deaths of American astronauts the Apollo team got back on track. Their Saturn 5 rocket, the largest object to ever lift off, proved it could carry an Apollo capsule to the moon.

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Apollo 8

With Apollo 8, Americans became the first humans to orbit the moon, a mission many considered the most daring and brave. But even that glory was tarnished

because months before that the first living creatures had already orbited the moon.

"The Russians sent a spacecraft looping around the far side of the moon," Harvey says. "This was Zond Five and it carried not only turtles and other animals on board but it also had a voice transmitter relaying voice sounds back to earth.

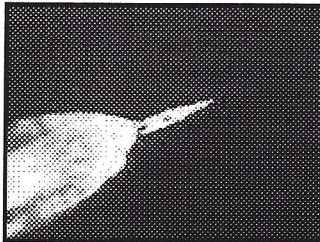
"When that cabin was successfully retrieved in the Indian Ocean at the end of September 1968, the American space agency, NASA, took the view

that this was a precursor to manned flight around the moon maybe before the Americans could do it themselves."

The Americans pushed on preparing their astronauts for the ultimate goal of landing a human on the moon. As their training for the Apollo 11 mission neared completion the Soviets grew desperate. Their own manned mission to the moon would never be ready in time to beat Apollo 11.

"So what they did was, they hurried their program for unmanned exploration and in particular the robotic probe which could land on the moon, scoop up some samples of moon rock, send it in a small cabin and fire that back to earth," Harvey says. "They made two attempts; in April, 1969 and one in June, 1969 to launch their own moon scooper. Both failed.

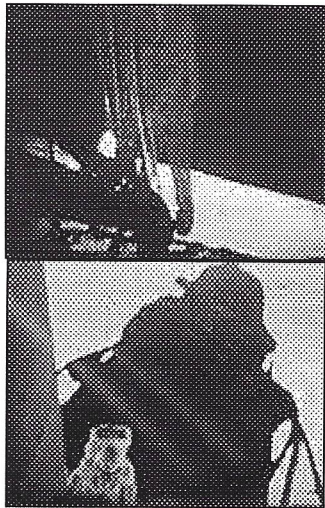
"Only three days before Apollo was launched from Cape Canaveral they made one last desperate attempt."



Apollo 11 liftoff

While the world watched the launch of Apollo 11 on July 16, 1969, the Soviet unmanned spacecraft was also quietly on its way to the moon.

"Luna 15 eventually made an attempt to land soon after Apollo 11 had reached the lunar surface. it crashed at 400 kilometres an hour while doing so," Harvey says. "Had it succeeded, had that landing been soft, had it scooped up moon rock, which would only have taken a couple of hours, Luna 15 could have sent a small sample of moon rock heading back toward earth literally hours before the Apollo 11 astronauts returned to earth."



It was the images of Apollo 11 landing on the Sea of Tranquility that were beamed back to Earth. No one saw the Soviets last chance to save face lying in a crumpled ruin in the Sea of Crisis.

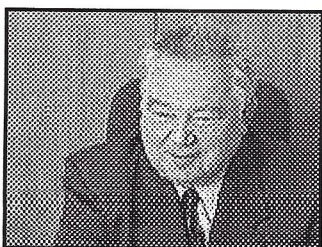
"It almost worked. It would have been very exciting had it done so," Harvey says. "But at the end of the day, I think they realized that nothing could compete with the fact of seeing two humans walking on the moon walking on the sea of tranquility."



Grechko in 1969

Georgi Grechko, by this time Cosmonaut 34, was scheduled to be part of the first Soviet lunar orbit.

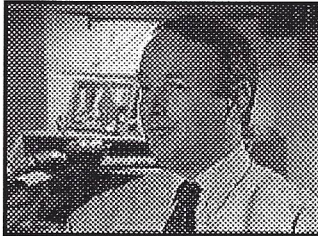
"At that point, as we say, politics once again got mixed up with technology," Grechko says. "I mean even though they had been to moon, we should have made our flight around the moon. This would have been a test for new technology, for new instruments.



"Okay, we had been first in everything, but this one time, we would have been second. But, no, our politicians decided it would have been

Georgi Grechko would have been
beneath the Soviet
Union, the country that had always been first, to
fly around the moon after the Americans had
already walked on it. We were upset. The ship
was ready, we were ready, everything was ready.
Everything had been checked out, but they shut
the program down."

"But the Soviets couldn't reconcile their losses
with their dreams for the moon that easily. They
came up with an ambitious plan to set up a lunar
base within a decade of the Apollo 11 landing...a
plan that died from a bureaucratic shuffle and a
sense the race was over.



Harvey

Both Russia and the
United States were
actively in a race for
who could impress the
world most," Harvey
says. "Krushchev after
all had said we in the
socialist countries can

catch up with and overtake the United States
because we've a better system of production, a
better system of distribution, we're a more
efficient type of society.

"The United States was out anxious to establish
its credentials as world leaders particularly in the
countries of Central America and Africa. I think
there was a sense by both leaders that the space
race was a test as to which country could act the
most efficiently could demonstrate its
technological prowess most. Going to the moon
in effect became that acid test."

Neil Armstrong's small step on the moon was
actually a toe across the finish line of the space
race. After that, the Soviets focused on space
stations, the Americans put all their efforts into a
shuttle and sending robots off to explore the
planets. the peak of the race had past.

Never had there been as much excitement and
never has the race been as intense as that race to
put a man on the moon.

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LINKS

Agencies

Russian Space Agency

Home page for the Russian Space Agency (RKA) which was formed after the breakup of the former Soviet Union and the dissolution of the Soviet space program. The RKA uses the technology and launch sites that belonged to the former Soviet space program

NASA mirror site

The Yuri Gagarin Cosmonauts Training Center

Home page for the Yuri Gagarin Cosmonaut Training Centre at the Baikonur Cosmodrome. English and Russian versions.

Conquers of Space, a gallery of Soviet and Russian cosmonauts.

NASA Watch

Site often critical of NASA.

Animal Astronauts-Laika

Web page for Laika, the dog launched into orbit by the Soviet Union.

History

Chronology of Manned Space Missions

Chronology of manned space missions, created by the University of Michigan. 1961-1993

Timeline of US and Soviet Manned Lunar Projects

Timeline of US and Russian manned moon projects, part of the Russian

[Space News site](#)

[History Timeline Main](#)

Chronology of the space race from the [Astronaut Connection](#) site.

[NASA Timeline](#)

NASA timeline of space activities from 1915 to present

[NASA Timeline](#)

NASA timeline of space activities from 1915 to present [NASA Historical](#)

[Subject Reference Guide](#)

NASA history site

[Space Race Exhibition](#)

An exhibition at the US National Air and Space Museum on the space race of the 1960s and 1970s.

[Apollo@30 - Countdown To History](#)

A series of history pages from the US-based [National Space Society](#)

[US Space Policy](#)

United States Space Policy (PO371) is a junior / senior level academic course developed at Colorado State University.

[Lecture notes on the race to the moon](#)

Encyclopedia

[Encyclopedia Astronautica](#)

Extensive site that covers the US, Russian, Chinese and other space programs. Extensive information on the space race and Russian space efforts.

Russia

[Sputnik Biographies--Sergei P. Korolev \(1906-1966\)](#)

NASA biography of Sergei P. Korolev (1906-1966), father of the Soviet rocket program

[Soviet/Russian Space program links](#)

Page of links on the Soviet and American space programs

[UKSEDS Space Links - Russia](#)

Long list of links on the Russian space program from UK Students for the Exploration and Development of Space.

[Space links index](#)

Media

[TIME and LIFE Space: The Race to the Moon](#)

Time-Life page on the race to the moon with links to other stories and sites,

[SpaceViews: The Online Publication of Space Exploration](#)

Online space news [Obituary for Alan Shephard](#)

[Racing to the Moon](#)

[Scientific American: Explorations: The Beep Heard Round The World: October](#)

6, 19

Article from Scientific American on the launch of Sputnik and the beginning of the space race.

"Announcement of the First Satellite" from Pravda,

Transcript of the Pravda report on the launch of Sputnik, as posted on the NASA site.

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Race to the Moon

