

## arms race

After World War II the Soviet Union resented the secrecy surrounding U.S. nuclear technology, while the United States believed the Soviet Union had reneged on its diplomatic agreements concerning postwar Europe. In this atmosphere of mutual recrimination, Truman pursued a policy that isolated the Soviets from America's nuclear program. Determined to challenge the United States on the world stage, the Soviet Union pooled its best scientists, who created their own atomic bomb in August 1949, well before American experts predicted the Soviets would have such capability.

The following year, Truman authorized a program to develop a more destructive hydrogen bomb to one-up the Soviets. A number of well-known scientists vocally opposed the development of the far-more powerful H-bomb, as it was known, including Albert Einstein and J. Robert Oppenheimer. Indeed, an advisory report by the Atomic Energy Commission (AEC) concluded the United States should not develop the H-bomb. Some of Truman's own advisers, most notably George F. Kennan, also disliked the prospect of thermonuclear weapons. Many of these opponents to the H-bomb hoped to halt the further development of nuclear weapons by both sides, proposing a nuclear freeze. Truman maintained, however, that he was forced to support the H-bomb program because of the threat that the Soviets would develop one first. The commitment to meeting and exceeding the Soviet Union's nuclear capabilities set the pattern for the coming decades.

On another front of the arms race, political and military advisers agreed on a policy of massive military build-up, as outlined in National Security Council document 68, known simply as NSC-68. This policy called for vast increases in defense spending to match the forces that the Soviet Union could muster. NSC-68 established a policy that meant massive federal subsidies would go to defense industries and fund a proliferation of nuclear weapons, thus contributing substantially to the arms race. By 1950, the U.S. arsenal already included more than 300 nuclear weapons.

During the 1950s, politicians and the media raised great concerns over the missile gap—the idea that the Soviet Union's nuclear missile capabilities far exceeded that of the United States. Credence was given to this idea by the Soviet Union's successful launching of the satellite Sputnik into outer space in 1957, an indication that the Soviet effort to conquer outer space had outpaced the U.S. space program.

In reality, no gap existed, but the fear of such a gap led to the construction of hundreds of additional missiles. By the end of Eisenhower's term in office in 1960, the U.S. nuclear arsenal included 30,000 megatons of nuclear capability, roughly the equivalent of 10 tons of TNT for every human being on the planet. Soviet capabilities at this time are unknown but were most likely also significant.

In addition, other major world powers developed their own nuclear capabilities during this period, most notably the French and the Chinese.

## **space exploration**

One of many components of the cold war, the U.S.-Soviet space race fired the imaginations of millions of people the world over with the age-old quest for exploration. By the 1950s, scientists and adventurers had covered every corner of the globe, but space, with its billions of unknown planets and stars, was a new frontier.

In the fall of 1957, the Soviet Union scored its first scientific coup against the Americans by launching a pair of satellites—Sputnik and Sputnik II—that orbited the Earth. The achievement in rocketry that allowed those successful launches suggested to many Americans that the Soviets possessed superior technology that might allow the Soviets to develop the rocket technology for weapons and eventually create military bases in space.

Tension in the United States over the launch of the Sputniks was extremely high and fed into the public's already intense fear of a nuclear war of catastrophic proportions. President Dwight D. Eisenhower, confident that the United States possessed superior missile power, established the National Aeronautics and Space Administration (NASA).

A space race between the Soviet Union and the United States immediately ensued. On January 31, 1958, the United States successfully launched its first satellite, Explorer 1, following a very public and humiliating failure on December 6, 1957. In October 1959, two years after Sputnik, the Soviet Union landed a probe on the moon. With the Soviets showing such dramatic progress, the U.S. space program jumped into high gear.

NASA established Project Mercury with the purpose of putting an American into orbit. NASA also constructed two major facilities (one in Houston, Texas and one in Cape Canaveral, Florida) that employed hundreds of top-level scientists and technicians who were vital to the space program's ultimate success.

Despite that new U.S. effort, the Soviets once again beat them to the punch by launching cosmonaut Yuri Gagarin into Earth's orbit in April 1961, the first person to accomplish such a feat. Within a month, the United States had responded by launching Alan Shepard into space on May 5, 1961, although he did not orbit the earth. Gus Grissom followed Shepard in a similar flight on July 21, 1961.

On February 20, 1962, John Glenn became the first American to orbit the Earth, doing so three times before returning safely to base.

The Gemini program's goals related directly to needs for a moon landing, including testing a space walk, docking two crafts in space, and spending longer durations in space.

NASA proceeded with the Apollo program in 1967, which promised to realize the ultimate goal of sending a man to the moon and returning him to Earth. Although NASA was encouraged by Gemini's successes, the Soviet Union's successful landing of a lunar probe pushed Americans to redouble their efforts.

After nearly a decade of labor on a moon landing, NASA launched the Apollo 11 mission on July 16, 1969. Days later, astronauts Aldrin and Neil Armstrong landed a lunar module, called Eagle, on the surface of the moon. Armstrong announced to the world, "The Eagle has landed." On July 20, 1969, Armstrong stepped out of the module and walked on the moon and said "That's one small step for man, one giant leap for mankind."