

## Early History of Spacecraft and Rocketry

reliable third stage made possible deployment of a spacecraft with mass 5000 kg (11,000 lb) in low-Earth orbit, which thus enabled launching man in space. The improved rocket launcher and the spaceship to carry a cosmonaut were both named *Vostok* (*east* in Russian). Actually, a Soviet government decree of 22 May 1959 directed Korolev to develop an experimental spaceship (Vostok-1) to provide the foundation for further advancement toward a reconnaissance satellite Vostok-2 for image and signal intelligence and a spaceship Vostok-3 for manned spaceflight.

**Manned  
Spaceflight  
Enabled**

The space race between the United States and the Soviet Union to launch the first man to space had been on by that time. Korolev methodically pressed forward with testing the launcher and the spaceship for the Vostok program. The simplified spacecraft Vostok (Vostok-1KP) without life support systems was successfully launched on 15 May 1960. The next success came when a spacecraft with two dogs, Belka and Strelka, successfully reached orbit on 19 August 1960 and reentered the atmosphere the next day and safely landed. The Vostok-2 part of the program would eventually lead to the Soviet photoreconnaissance satellite Zenit-2.

*Vostok*

The rush to orbit man culminated on 12 April 1961, when the space launcher *Vostok* (8K72) put into orbit the spaceship *Vostok* (Vostok-3KA) with the first cosmonaut, an Air Force pilot Yuri A. Gagarin. The spaceship weighed 4725 kg (10,400 lb) that constituted 1.65% of the 287,000-kg (633,000-lb) rocket weight

**First Man  
in Space**

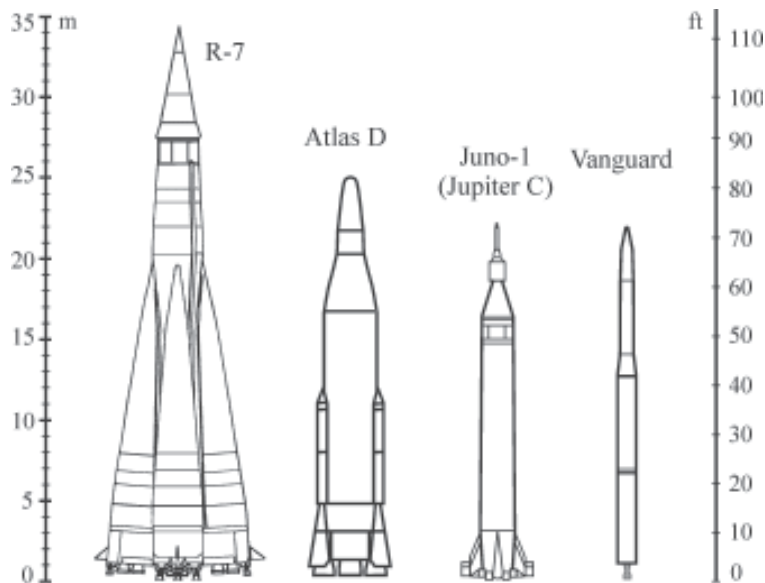


Fig.15.9. The first Soviet ICBM R-7 was significantly larger and heavier than the first American ICBM Atlas. The modified R-7 deployed the first artificial Earth satellite Sputnik and later launched the first cosmonaut Yuri Gagarin. The first American satellite Explorer I was put into orbit by the Juno-1, a variant of the Jupiter C modified for satellite launch. By the end of 1958, all three shown American rockets, Juno-1, Vanguard, and modified Atlas, launched satellites into Earth orbit. Figure courtesy of Mike Gruntman.

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