

SPACECRAFTS LAUNCHES

Pupaeva D. A., Tsigankova E.V.

Scientific supervisor - Associate professor Tsigankova E.V.

Siberian Federal University

A rocket launch is the first phase of the flight of a rocket. Launches for orbital spaceflights, or launches into interplanetary space, are usually from a fixed location on the ground, but may also be from a floating platform. It is not simple to get satellite to the necessary orbit where it will have executed all satellite targets.

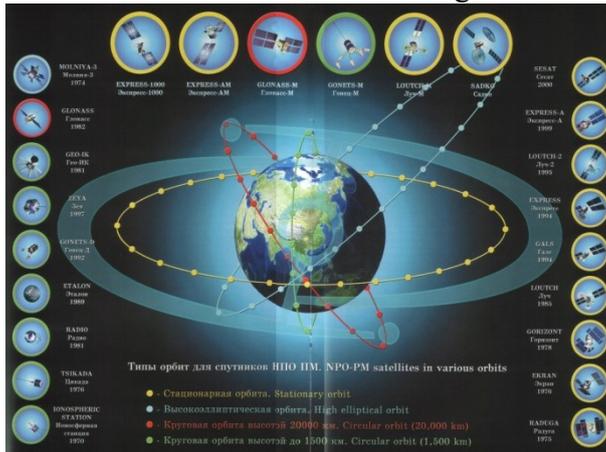


Figure 1. Various orbits.

Launches of suborbital flights (including missile launches), can also be from:

- a missile silo,
- a mobile launcher vehicle,
- a submarine,
- air launch:
- from a plane,
- from a balloon;
- a surface ship,
- an inclined rail.

Rocket launch technologies generally refers to the entire set of systems needed to successfully launch a vehicle, not just the vehicle itself, but also the firing control systems, ground control station, launch pad, and tracking stations needed for a successful launch and recovery.

A missile silo is an underground, vertical cylindrical container for the storage and launching of intercontinental ballistic missiles (ICBMs). They typically have the missile some distance under the surface, protected by a large "blast door" on top. The missile silo was first suggested in the 1950s in the United Kingdom, but soon, it was neglected, however, the idea of the underground rocket bunker was adopted by the USA.

A mobile launcher vehicle is a type of military vehicle on a multi-wheel-drive or crawler-tread chassis carrying one or more ground-to-ground or ground-to-air explosive missiles, along with the personnel and equipment needed to prepare, organize, and execute a launch of such missiles.

Purpose of mobility:

- going to a suitable launch location
- being less easy to locate by the enemy, hence less vulnerable

Next way to launch satellite or spacecraft is to launch it by means of submarine.

Ballistic missile submarines are larger than any other type of submarine, in order to accommodate submarine equipped to launch ballistic missiles such as the Russian R-29 or the American Trident. Although some early models had to surface to launch their missiles, modern vessels typically launch while submerged at keel depths of usually less than 50 meters. The primary mission of the ballistic missile is nuclear deterrence. Accordingly, the mission profile of a ballistic missile submarine concentrates on remaining undetected, rather than aggressively pursuing other vessels. Ballistic missile submarines are designed for stealth, to avoid detection at all costs. They use many sound-reducing design features, such as anechoic tiles on their hull surfaces, carefully designed propulsion systems, and machinery mounted on vibration-damping mounts.

Ballistic missile submarines equipped with nuclear warheads serve as the third leg of the nuclear triad. The invisibility and mobility of submarines offer both a reliable means of deterrence against an attack (by maintaining the threat of a second strike), and a surprise first-strike capability - particularly given the range of the weapons they carry.



Figure 2. Submarine launched ballistic missile

Air launching is the practice of dropping a parasite aircraft, rocket, or missile from a mothership. The parasite aircraft or missile is usually tucked under the wing of the larger mothership and then "dropped" from underneath the wing while in flight. It may also be stored within a bomb bay, beneath the main body or even on the back of the carrier aircraft, as in the case of the D-21 drone. After release, the dropped craft or missile will then fire its own engines or rockets and propel away from the mothership. Air launching provides several advantages over launching from the ground, giving the smaller craft an altitude and range boost, while saving it the weight of the fuel and equipment needed to take off on its own.

In contrast, captive carry is the practice of carrying one aircraft attached to another for an entire flight, without midair docking or release.

An air-launched ballistic missile is a ballistic missile launched from an aircraft. This class of missile never saw active use. The only known missile of this type, the AGM-48 Skybolt, intended to be launched from a B-52 Stratofortress bomber, was in development by the United States Air Force, with Great Britain as a customer. In 1962, with technical difficulties and costs mounting, the program was cancelled.

Satellites and spacecrafts are used for a large number of purposes today. Common types include military (spy) and civilian Earth observation satellites, communication satellites, navigation satellites, weather satellites, and research satellites. Any man even cannot image his life without its services. And, besides, space technology development is rightly estimated one of the leading-edge technology today.