

# NASA Facts

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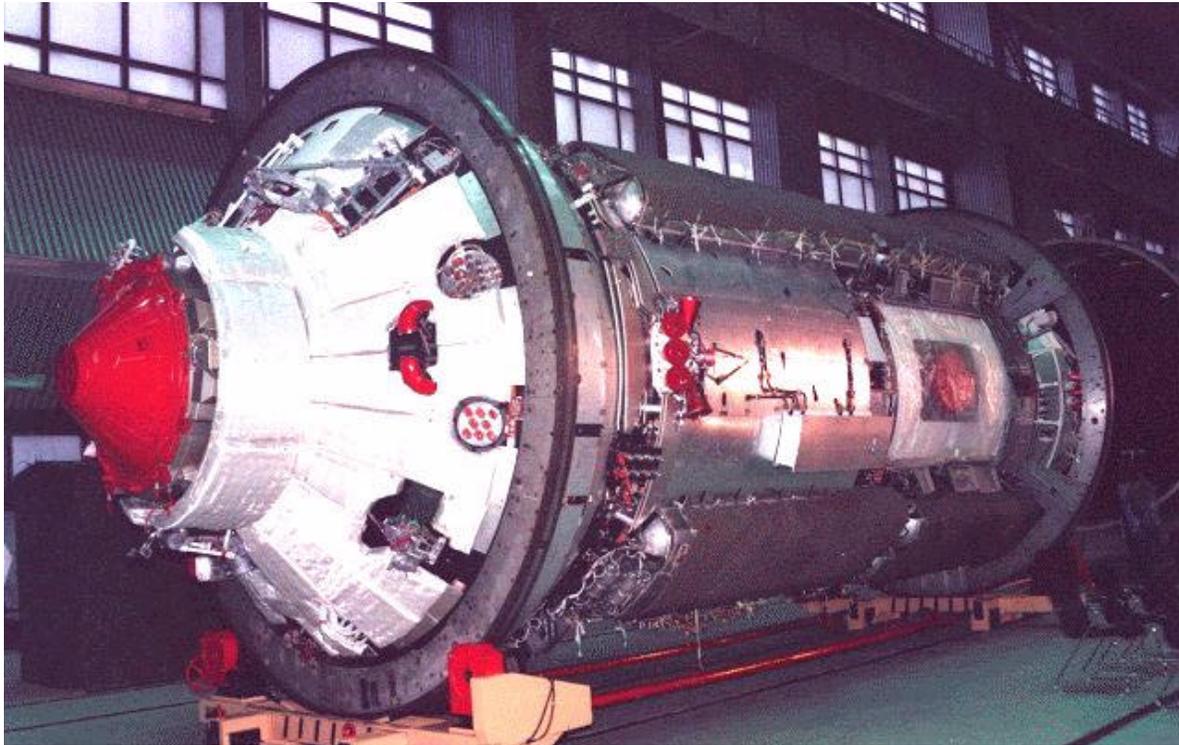
## **THE ZARYA CONTROL MODULE:** *The First International Space Station Component to Launch*

The Zarya control module, also known by the technical term Functional Cargo Block and the Russian acronym FGB, was the first component launched for the International Space Station and provides the station's initial propulsion and power. The 42,600-pound pressurized module was launched on a Russian Proton rocket from the Baikonur Cosmodrome, Kazakstan, on Nov. 20, 1998.

The U.S.-funded and Russian-built Zarya, which means Sunrise when translated to English, is a U.S. component of the station although it was built and launched by Russia. The module was built by the Khrunichev State Research and Production Space Center (KhSC) in Moscow under a subcontract to The Boeing Co. for NASA. Only weeks after Zarya reached orbit, the Space Shuttle Endeavour launched on Dec. 4, 1998, and rendezvoused with Zarya, attaching the U.S.-built Unity connecting module, sometimes technically referred to as Node 1. The Zarya module now provides orientation control, communications and electrical



*The Zarya control module seen from the Shuttle Endeavour in December 1998 prior to attachment to the Unity connecting module. Launched from Russia, Zarya provides early propulsion and power for the International Space Station.*



*The Zarya module in early 1998, before shipping from Moscow to the launch site*

power attached to the passive Unity module while the station awaits launch of the third component, a Russian-provided crew living quarters and early station core known as the Service Module, planned to be put in orbit in summer 1999. The Service Module will enhance or replace many functions of the Zarya. Later in the station's assembly sequence, the Zarya module will be used primarily for its storage capacity and external fuel tanks.

The Zarya module is 41.2 feet long and 13.5 feet wide at its widest point. It has an operational lifetime of at least 15 years. Its solar arrays and six nickel-cadmium batteries can provide an average of 3 kilowatts of electrical power. Using the Russian Kurs system, the Zarya will perform an automated and remotely piloted rendezvous and docking with the Service Module in orbit. Its docking port will accommodate Russian Soyuz piloted spacecraft and unpiloted Progress resupply spacecraft. Each of the two solar arrays is 35 feet long and 11 feet wide. The module's 16 fuel tanks combined can hold more than 6 tons of propellant. The attitude control system for the module includes 24 large steering jets and 12 small steering jets. Two large engines are available for reboosting the spacecraft and making major orbital changes.

Construction of the Zarya module began at KhSC in December 1994. It was shipped to the Baikonur Cosmodrome, Kazakhstan, launch site to begin launch preparations in January 1998. The three-stage Proton rocket launched the module into an approximately 250-mile high orbit, where astronaut Nancy Currie used the mechanical arm aboard the Shuttle Endeavour to capture the module on Dec. 6, 1998, on mission STS-88. Zarya was then attached to Unity to begin the orbital assembly of the International Space Station.

The module is named Zarya ("Sunrise") because its launch signaled the dawn of a new era of international cooperation in space exploration.