National Aeronautics and Space Administration

NASAfacts

Space Station Processing Facility

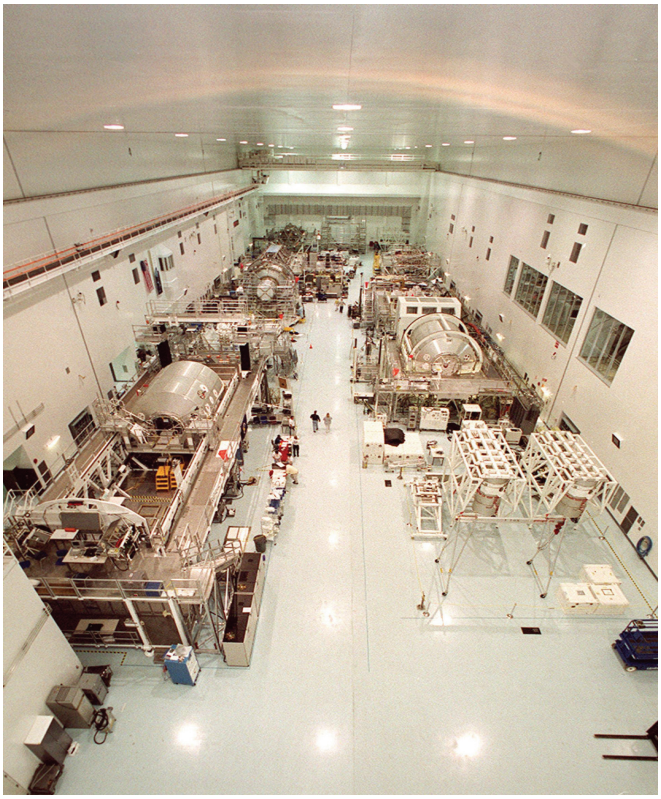
Before the components of the International Space Station (ISS) are flown into space, their last stop on Earth is KSC's Space Station Processing Facility (SSPF).

The SSPF is located in the KSC industrial area, just east of the Operations and Checkout Building. Groundbreaking for the facility was in March 1991 and the dedication was in June 1994. It was built specifically for processing ISS flight hardware.

The 457,000-square-foot, three-story building includes two processing bays, an airlock, operational control rooms, laboratories, logistics areas, office space and a cafeteria.

The processing areas, airlock and laboratories were designed to support nonhazardous station and shuttle payloads in 100,000-class clean work areas.

Upon its arrival at KSC, usually via a cargo plane landing at KSC's Shuttle Landing Facility, new hardware is checked for identification and damage, inventoried and transported to the appropriate location.



Inside the SSPF are equipment and several future payloads for shuttle missions to the ISS. At left, near the front, is the Integrated Electronics Assembly. Near the opposite end, under the large windows, is the multi-purpose logistics module Donatello. On the right, center, is the P3 truss. Behind it are the airlock and another MPLM, Raffaello. The large windows on the right wall give visitors on bus tours a look at operations during the day.

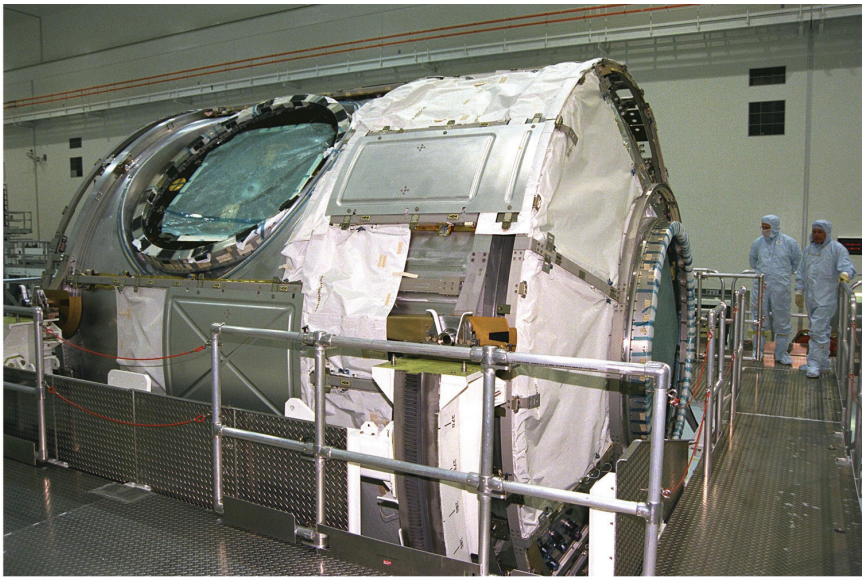
Most ISS payloads are delivered to the SSPF. Items requiring use of the airlock are unpacked either in the airlock or in the high bay if the airlock is in use. Other items are delivered to the hardware inspection area.

After the payload arrives at the SSPF, workers spend the next several months physically integrating experiments and other payloads into the hardware.

Since none of the elements are physically connected before they meet on orbit, a digital pre-assembly is conducted during processing to discover any physical incompatibilities. Computer models of many physical interfaces are constructed, and these are brought together. Any conflicts that appear can then be safely resolved before the elements reach orbit.

During their stay in the SSPF, the elements are available to astronaut crew members for "hands-on" testing to prepare them for their individual missions. Multi-element testing provides an opportunity for engineers and technicians to modify or correct deficiencies while the hardware is accessible on the ground.

Once the hardware has satisfied all test requirements, it is carefully packed into the payload canister, a large container with an interior identical in size and dimensions to the shuttle's payload bay. The payload canister is then driven slowly to the space shuttle. Payloads can be installed horizontally in the Orbiter Processing Facility or vertically at the launch pad.

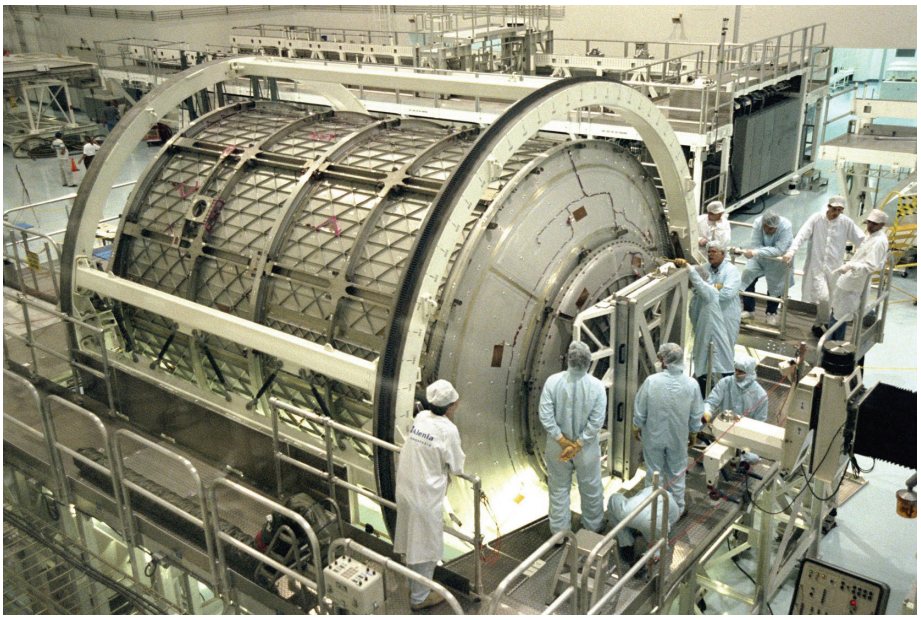


Node 1, Unity, awaits processing on a work stand in the SSPF.

The first U.S.-built component of the International Space Station, Node 1 (Unity), arrived at KSC in June 1997. It launched from Kennedy Dec. 4, 1998, on mission STS-88, the first U.S. mission dedicated to assembling the space station.

Since 1998, space shuttle missions have delivered nine elements: Unity, Z1 truss, P6 integrated truss, Destiny, Canadarm 2, the joint airlock, and the S0, S1 and P1 trusses. All have been processed in the SSPF.

Other modules that are a vital part of ISS assembly are the three multi-purpose logistics modules, which are flown to the station with critical supplies and then returned to KSC. The preparation and post-flight maintenance are conducted in the SSPF.



At left, technicians from Boeing and Alenia Aerospazio (the Italian space agency) look over the first multi-purpose logistics module (MPLM) for the International Space Station. The Italian-built MPLM is undergoing testing in the Space Station Processing Facility. The module, named Leonardo, is one of three from Alenia Aerospazio, and will be operated by NASA and supported by ASI, the Italian space agency. The MPLMs will be carried in the payload bay of a shuttle orbiter, and will provide storage and additional work space for up to two astronauts when docked to the ISS.

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