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## Space Station

Long before his appointment as the first director of the Marshall Center in 1960, Wernher von Braun wrote in *Collier's* magazine about his dreams for a space station. "Development of the space station is as inevitable as the rising of the Sun. Man has already poked his nose into space and he is not likely to pull it back." Von Braun's plans for a large space station were published in a book the same year.

As the Space Station—a permanent, orbiting research facility—has evolved over the last 40 years, hundreds of Marshall employees and many Huntsville businesses have contributed to its success. It began with von Braun's space station ideas, inspired by fiction writers and scientists who had envisioned permanent outposts in space since the turn of the century.

In the classic 1952 *Collier's* article, von Braun wrote of a majestic 250-foot-wide wheel that would orbit 1,075 miles above Earth and rotate to provide artificial gravity, similar to the station visualized in the movie, *2001, A Space Odyssey*. "From this platform, a trip to the Moon itself will be just a step, as scientists reckon distance in space," von Braun wrote.

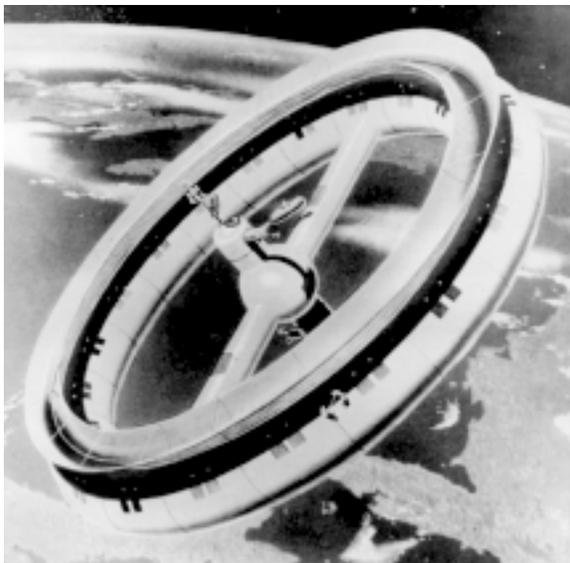
But America wanted to get to the Moon before the end of the 1960's, so von Braun led the Marshall team as they developed the massive rockets that helped the Nation achieve this goal. Even as the United States raced to the Moon, Marshall engineers—inspired by von Braun's ideas—continued to study space stations, including concepts using refurbished rocket stages. This led to a precursor of today's *International Space Station: Skylab*, a two-level workshop made from a converted Saturn rocket stage.

Building on their *Skylab* experience, Marshall engineers and scientists continued space station studies in the 1970's and 80's. Their designs were used to help create the *International Space Station*. Today, the Marshall Center's facilities and technical expertise are being used to support fabrication and testing of Space Station components.

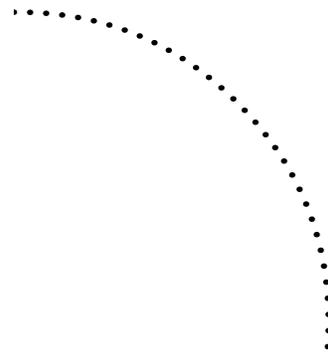
The Boeing Company, the prime Space Station contractor, built Unity, the first U.S.-built component, and the U.S. Laboratory modules in the same Marshall Center building where decades ago others assembled the Saturn V rocket. In addition to Boeing,

more than 30 Alabama businesses have contributed to the Space Station effort, providing millions of dollars of services and equipment. In late 1998, the Space Shuttle *Endeavour* carried Unity into orbit to begin Space Station assembly.

During the last 40 years, scientists have learned not only that humans can live in microgravity, but also that microgravity is itself a key area of scientific activity with benefits in the form of improved products and processes back on Earth. Marshall, NASA's lead center for Microgravity Science, is fostering the development of many *International Space Station* investigations. When the Station becomes operational, it will offer scientists the first opportunity to do experiments over extended periods in this unique environment.



*This space station concept was designed and drawn by Dr. Wernher von Braun in 1952 for an article about space travel in Collier's magazine.*



The Marshall Center's proven expertise with Spacelab—the reusable laboratory flown inside the Space Shuttle from 1981 to 1998—is being tapped to build Space Station experiment hardware and plan microgravity investigations. Marshall developed a multiple-user rack facility, which was tested aboard Spacelab and will be used for experiments inside the Space Station. In addition, Marshall is managing the development of special pallets that will be used for experiments mounted on the outside of Space Station.

One idea has not changed since von Braun's dream long ago: the goal of establishing a permanent presence in space. As von Braun wrote in his *Collier's* article more than 45 years ago, "If we do it (build a space station), we can not only preserve the peace but we can take a long step toward uniting mankind." The *International Space Station* is the result of 16 nations joining together on the largest, peacetime, multinational program ever attempted. In his 1969 blueprint for the future of the space program, von Braun wrote, "Exploration of space is the challenge of our day. If we continue to put our faith in it and pursue it, it will reward us handsomely."