Virtual Learning

Unmanned Flight Safety and Operations

Space Stations - U.S. Skylab

April 21, 2020

Unmanned Flight Safety and Operations
Lesson: April 21, 2020

Objective/Learning Target:

Students will learn about the significance of the space station U.S. Skylab.

U.S. Skylab

Bell Work:

What was the purpose of putting a station in outer space?

U.S. Skylab

Let’s Get Started:

Watch Videos:

- Skylab, America's First Manned Space Station
- Skylab Crashes into Western Australia 1979

U.S. Skylab

The launch of Skylab on a modified Saturn V rocket from NASA's Kennedy Space Center in Fla. on May 14, 1973, was a new phase for America's space program. America’s goal: staying in space for longer periods and conducting complex scientific experiments in the unique space environment.

Skylab was the culmination of a lot of difficult work and preparation that began in the late 1960s at NASA's Marshall Space Flight Center in Huntsville, Ala. This was during a time when U.S. budgets were extremely tight, so NASA's leaders searched for an affordable way to build a space station. They came up with the idea of turning part of a Saturn V rocket into a space station, and the Skylab concept was born.

U.S. Skylab

Dr. Wernher von Braun and his team came up with the idea of using parts of an existing Saturn V rocket to make an laboratory in space. Turning a rocket into a lab was not easy, but it was a cheap way to build a space station because existing hardware could be used.

The Marshall Center developed and integrated most of the major components: the orbital workshop, where the astronauts lived and worked, an airlock module, which served as a doorway to space for extravehicular activities, and a multiple docking adapter so that the Apollo crew capsule could dock with the lab and drop off people and equipment.

U.S. Skylab

The Marshall team also built the Apollo telescope mount, which allowed telescopes to study the stars and the sun and a payload shroud for the delivery of Skylab equipment.

Astronauts trained to work in the space environment by practicing operations in Marshall's Neutral Buoyancy Simulator, an underwater training facility that simulated low gravity. Engineers and designers used the underwater simulator as they designed Skylab and later, when they had to rapidly develop a way to repair Skylab's sunshield, which was damaged during launch.

U.S. Skylab

With the launch of Skylab all of the detailed plans that turned a Saturn V rocket into a space station became a reality. Over the course of its human occupation from May 25, 1973 to February 8,1974, three crews, each with three crew members, visited Skylab and carried out 270 scientific and technical investigations that required 90 different pieces of experimental hardware.

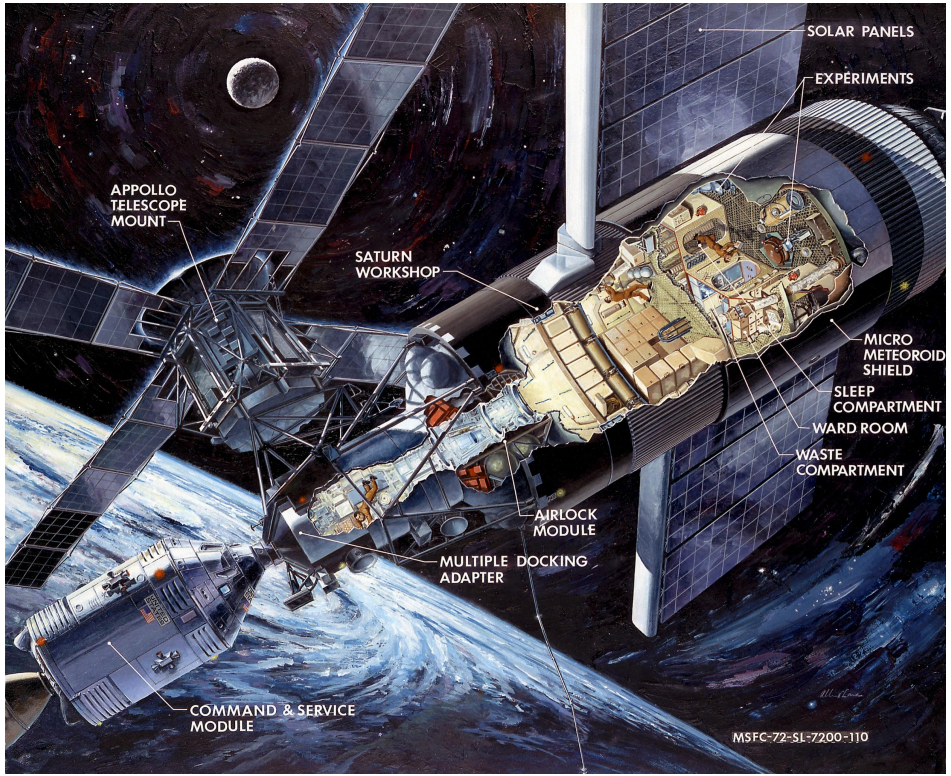
Research was in the fields of physics, astronomy, and biological. The three Skylab crews logged over 41 hours of extravehicular activity and a combined 171 days in orbit, travelling more than 70 million miles. The third Skylab crew lived in space for 84 days, which at the time was a record for the longest human stay in space.

U.S. Skylab

Skylab's missions of space exploration encompassed a wide array of achievements including new revolutions in our understanding of the Sun, the observation of the comet Kohoutek, and proof that human beings could live and work for extended periods in a microgravity environment.

Most importantly, the Skylab missions demonstrated that humankind's abilities are limited only by the bounds of our imaginations. The International Space Station and future voyages into deep space all owe a debt of gratitude to Skylab's missions devised more than 40 years ago.

U.S. Skylab


SOLAR PANELS
EXPERIMENTS
APPOLLO TELESCOPE MOUNT
SATURN WORKSHOP
MICRO METEOROID SHIELD
SLEEP COMPARTMENT
WARD ROOM
WASTE COMPARTMENT
AIRLOCK MODULE
MULTIPLE DOCKING ADAPTER
COMMAND & SERVICE MODULE
MSFC-72-SL-7200-110

U.S. Skylab

Research the web-spinning space spiders Anita and Arabella. Write a quality paragraph explaining what scientists learned from these spiders.