

## **Skylab - Executive Summary**

Skylab was the first American space station put into Earth's orbit for scientific purposes. Its main objective was to be a long-term, habitable laboratory to provide scientific data that could not be found from simple, Earth-bound readings or contemporary satellite technology. However, the entire program was marked with technical problems ranging from critical issues at launch and constant failures of the onboard systems to the lack of a definitive future plan. As a result, Skylab was perceived by many to be a failure. The idea that Skylab was a failure is an extremely contentious point. How was its success actually measured? Was it successful in its original scientific goals, or did it succeed in other unforeseen ways? Alternatively, was it a pure failure in all regards? The purpose of this analysis is to determine the various aspects of Skylab's history and design and relate them to its engineers and timeframe. Considering all the technology and engineering fostered by the project, this analysis supports the view that Skylab was a success due to the engineering team's unity in developing and managing its various problems as well as its influence on inspiring the next generation of space programs and engineers.

The history leading up to Skylab's development was the first major discussion point to be analyzed. The Cold War between the United States and the Soviet Union ushered in a new age of aerospace and space technology development. Yet this tension was not done for the betterment of humanity, the technology was primarily used for purposes of power and nationalistic pride. The resulting technology did lead to engineers developing new ideas for purely scientific research in space; in order to be completely separate from national militaristic intentions and be tied to the global scientific ones, these new ideas needed to have positive, visible impacts on humanity. The Skylab project was formed to meet these needs.

A detailed examination of Skylab's design shows how engineers took extra care to give the station a feeling of habitability. This approach contrasts the previous space capsules which were seen as harsh, unforgiving, and uncomfortable environments. The new mindset allowed for a new design philosophy to be taken by engineers – developing for the user in addition to the mission.

The disaster upon Skylab's launch highlights the critical role engineers played in technological development. The engineers worked tirelessly to produce multiple solutions for unforeseen and unknown problems that put the Skylab project at risk. Fortunately, NASA's engineering community were able to devise quick solutions, so Skylab could eventually become a scientific marvel.

The scientific experimentation done aboard Skylab demonstrates the humanist idea of better understanding the natural world for humanity in general. All the systems aboard were capable of performing scans of Earth that no other satellite at the time could do. In addition, various experiments were brought on board from international scientists and even school children, allowing for the general public to become interested.

Skylab is famous for its premature demise, as it came crashing back into earth after only three manned missions. The results of these missions, however, were enough to provide a massive amount of data for scientists and engineers to analyze.

Consequently, more space programs were launched that mimicked the ideals of scientific space experimentation originated from Skylab. These motivations eventually inspired politicians, engineers, and scientists from around the world to collaborate on an International Space Station, the largest space program undertaking in human history.

Although Skylab's chaotic life was prematurely cut short, the program made major contributions to human life on Earth and the evolution of humans as a spacefaring species. The collaboration of engineers to develop Skylab and troubleshoot issues indirectly allowed for more technology and systems to be put to use in commercial and everyday life. The program inspired many more space laboratory designs, which in turn inspired more people to take part in engineering and space sciences. The continued programming after the Apollo missions has led to a technological revolution today, where new commercial organizations such as SpaceX are on the forefront of aerospace design for global Manifest Destiny.