

ATO

Airship To Orbit

Cheap, Bulk, Safe Access to Space.
It's time to send out the fleet.



Photo from a JP Aerospace vehicle taken 4/3/2004.



JP AEROSPACE

America's *OTHER* Space Program

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The atmosphere as a ladder to space.

Balloons have carried people and machines to the edge of space for over seventy years. JP Aerospace is developing the technology to fly a balloon—or more accurately, their relative, the airship—directly to orbit.

Flying an airship directly from the ground to orbit is not practical. An airship large enough to reach orbit would not survive the winds near the surface of the Earth. Conversely, an airship that could fly from the ground to upper atmosphere would not be light enough to reach space. The resulting configuration is a three-part architecture for using lighter-than-air vehicles to reach space.

The first part is an atmospheric airship. It will travel from the surface of the Earth to 140,000 feet. The vehicle is operated by a crew of three and can be configured for cargo or passengers. This airship is a hybrid vehicle using a combination of buoyancy and aerodynamic lift to fly. It is driven by propellers designed to operate in near vacuum.

The second part of the architecture is a suborbital space station. This is a permanent, crewed facility parked at 140,000 feet. These facilities, called Dark Sky Stations (DSS), act as the way stations to space. The DSS is the destination of the atmospheric airship and the departure port for the orbital airship. Initially, the DSS will be the construction facility for the large orbital vehicle.

The third part of the architecture is an airship/dynamic vehicle that flies directly to orbit. In order to utilize the few molecules of gas at extreme altitudes, this craft is big. The initial test vehicle is 6,000 feet (over a mile) long. The airship uses buoyancy to climb to 200,000 feet. From there it uses electric propulsion to slowly accelerate. As it accelerates it dynamically climbs. Over several days it reaches orbital velocity.

Low cost bulk access to space

- Scaleable Technology.
- True reusability, multiple orbital flights before servicing.
- Large structures can be placed already assembled in orbit.

Brings safety and reliability to reaching space.

- Both the climb to orbit and reentry are slow controlled processes. No high reentry heating, no big fuel tanks to explode.

Opens up the solar system.

- Once in orbit, the airship is a spacecraft. With its solar/electric propulsion, it can now proceed to any destination in the solar system.

It is happening now.

This is not fanciful speculation. The project is now over two decades in development with over eighty real hardware test flights and countless development tests. It is being built completely with existing technology.

It's being built now.

The high altitude airship has been built and is awaiting test flights. Several Dark Sky Station platforms have been built and flown. Every piece of equipment for this system has been carried to 100,000 feet and tested in the environment. The first crewed DSS is scheduled to fly in eighteen months. The ion engine 120,000 foot flight test for the orbital airship will be flown in the next five months.

It's being paid for now.

This new way to space has not and will not require a massive pile of capital to accomplish. Each component has its own business application and funding source. It is a pay-as-you-go system. For example, funding the atmospheric airship was provided by the Department of Defense for use as a reconnaissance vehicle. The DSS has multiple customers in the telecommunications community.

When?

We are seven years from completion.

From the edge of space to orbit.

This 6,000 foot long vehicle never touches the ground. This airship flies from the upper atmospheric station to orbit. It uses electric propulsion to slowly over several days reach orbit.



Three Part Architecture to Orbit.

Transfer point at the edge of space.

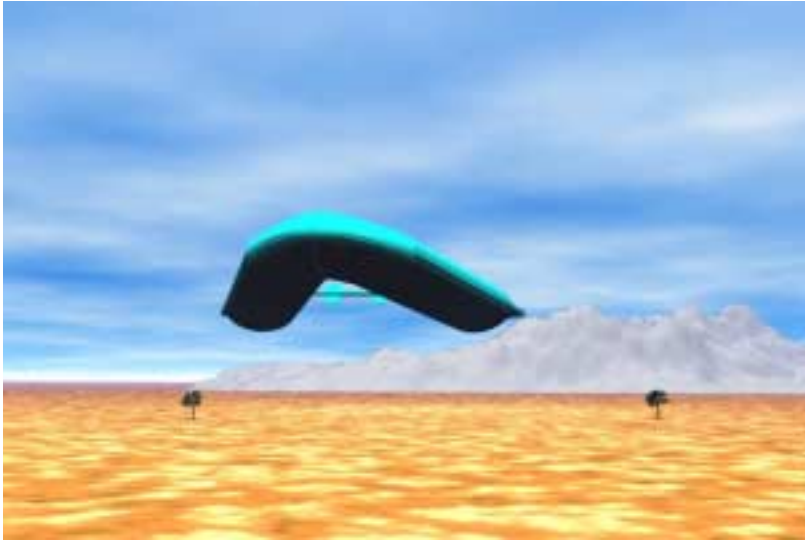
A two mile wide station parked at 140,000 feet is the new waystation to space. The station acts not only as a port for the orbital airship but also as a research center, construction site and tourist destination.



Earth to the top of the atmosphere.

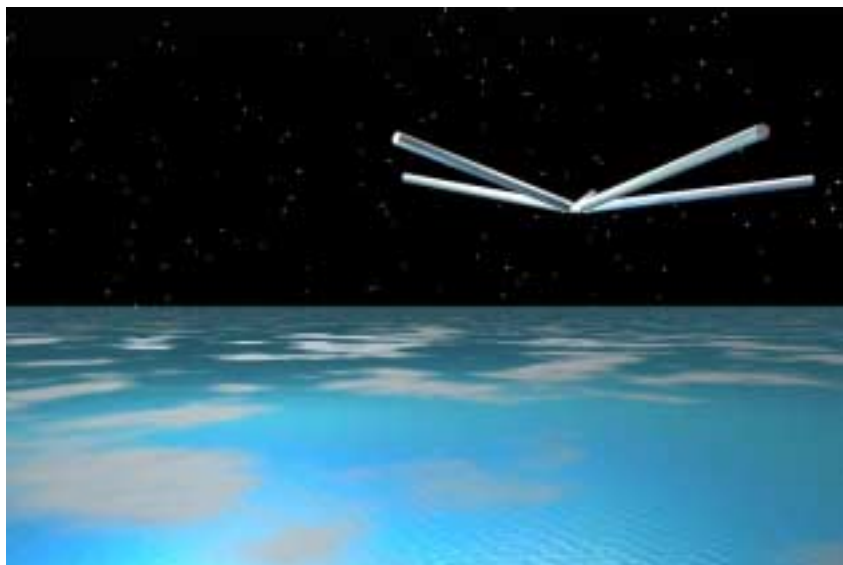
High Altitude airships fly from the ground to the station at 140,000 feet.



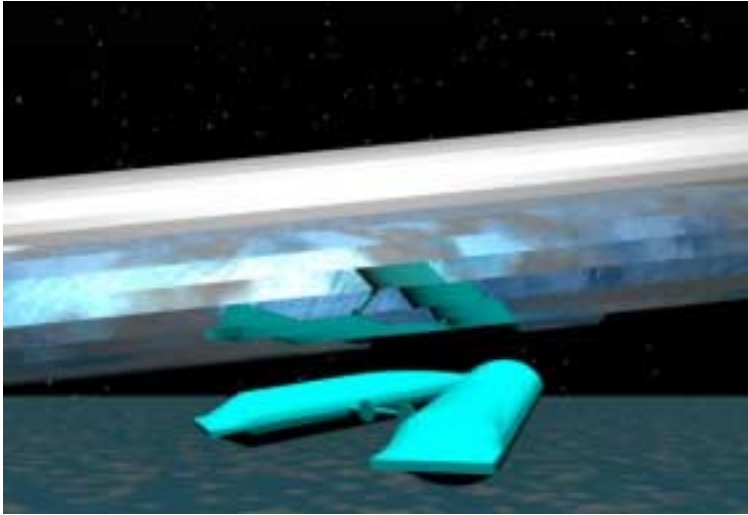


The Ascender Airship

The Ascender climbs vertically during most of its flight.

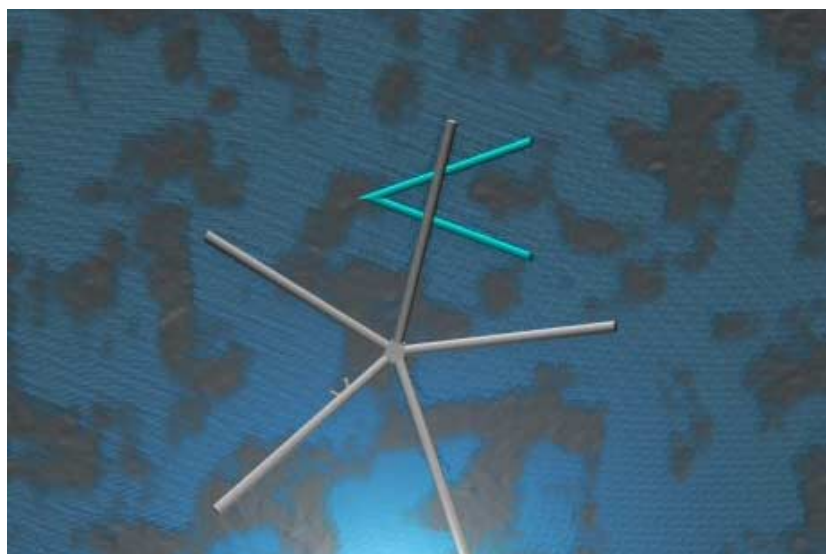
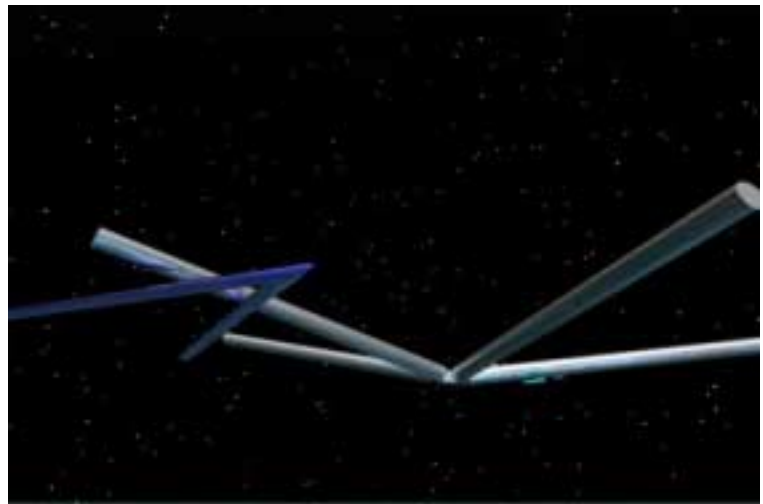


Dark Sky Station

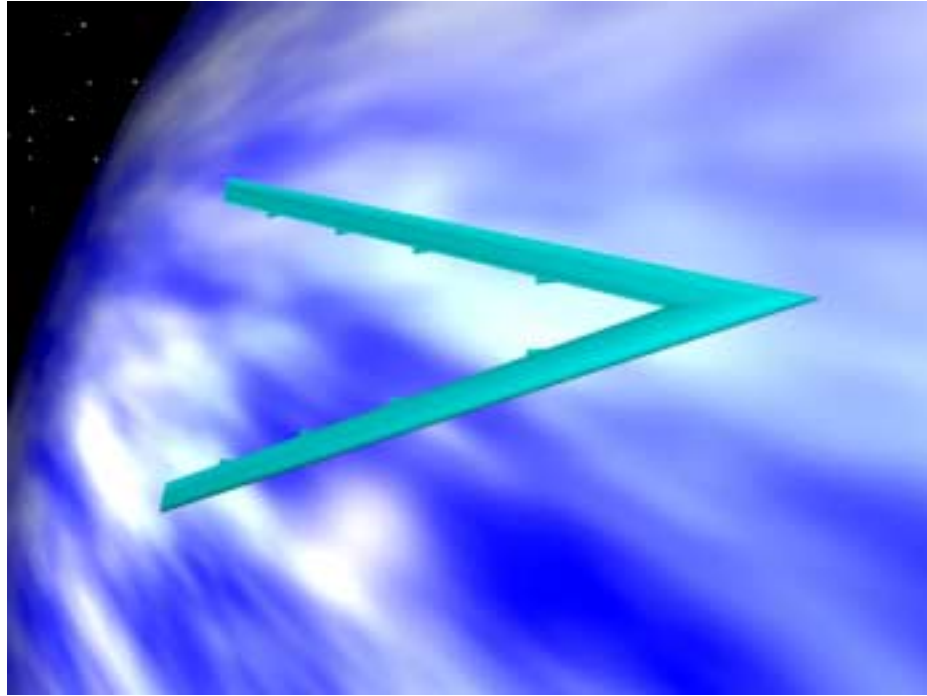


The Ascender docked with the Dark Sky Station at 140,000 feet.

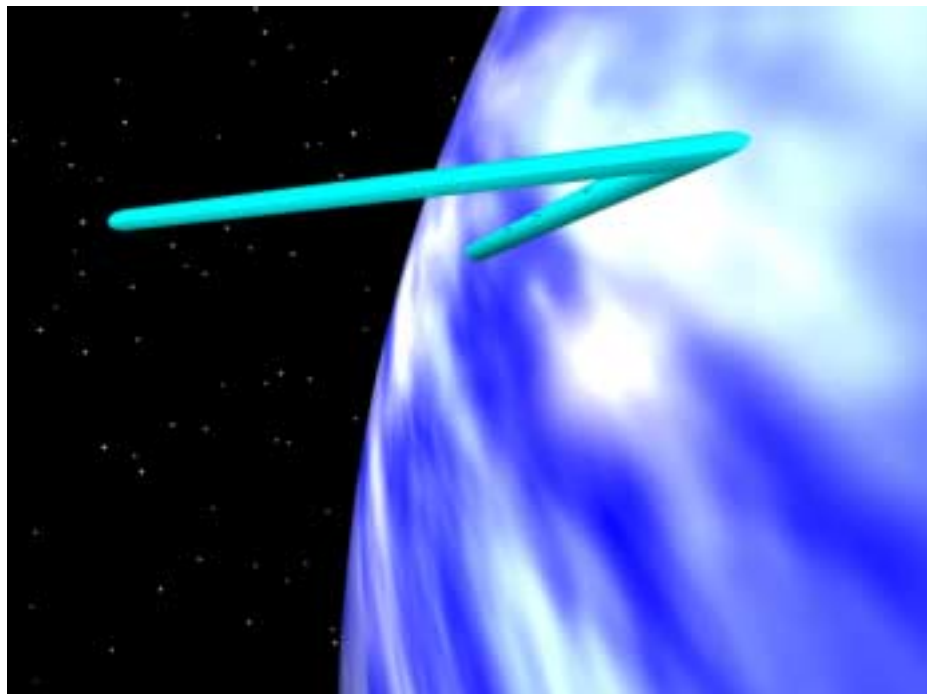
The large orbital airship also docked with the Dark Sky Station.



The DSS from above.



Five day climb to orbit.



Bulk cargo and passengers to orbit.

The Reality

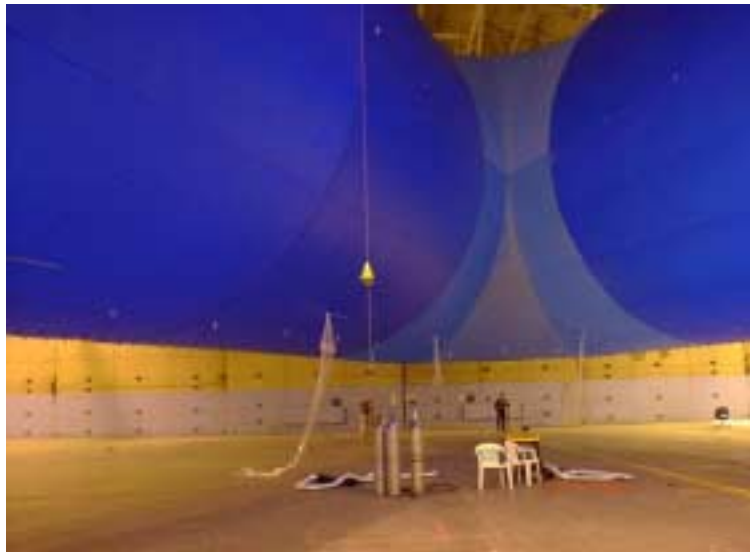


90 foot development Ascender airship.



High altitude propeller test flight.

175 foot long Ascender float test.





Small Dark Sky Station Flight Tests.





The edge of space is our backyard for testing and development.

