

# Spacefaring Logistics Infrastructure Fact Sheet

## 1. Infrastructure phase: 2

2. Phase description: Establish low Earth orbit (LEO) space logistics depots

3. Capabilities deployed:

- Provide permanent facilities in LEO to serve as a destination for the Phase 1 Earth-to-orbit space access systems.
- Provide logistics support services for American government and private space enterprises.
- Provide a base of support for American space enterprises operating throughout the Earth-Moon system.

4. Systems deployed:

- Space tug: A modular logistics spaceship capable of material handling, payload transport, and passenger transport at the LEO space logistics depots and between lower Earth orbits and the depots; operates both manned and remotely controlled; launched using the Gen 1 aerospaceplane.
- Space construction station: A larger Skylab-like facility, launched using the Phase 1 Shuttle-derived spacelifter, used to assist in the assembly of large space facilities, satellites, and spaceships.
- Space logistics base: A large space facility at which satellite and spaceship assembly and servicing is performed; assembled from modules launched using the Shuttle-derived spacelifter and the reuse of spacelifter core propellant tanks.
- Space propellant station: Used to convert water into liquid hydrogen and liquid oxygen; to store these and other propellants and related fluids and gases used by spaceships; to refuel spaceships; based on the space construction station.
- Space habitat: A combination 100-person space hotel, office space, research laboratories used for short and long-term housing of operating personnel and spacefarers; assembled from modules launched by the spacelifter and from the reuse of spacelifter core propellant tanks; rotates to produce moderate artificial gravity.

5. Operational concept:

- Space logistics base, space habitat, and space propellant depot constitute the initial co-orbiting elements of a LEO space logistics depot.
- Two initial depots will be established: 28.5° and 51.6° inclination. Facilities are spaced 10-

20 nm apart along the orbit in a “string of pearls” arrangement.

- Placed into circular orbits at approximately 250-270 nm altitude, the ground tracks of the depots will repeat enabling near daily access from the primary American launch site at Kennedy Space Center.
- Requirements of frequent attitude and position control of the co-orbiting facilities, to maintain the circular orbit at the correct altitude, means that they do not operate in a micro-gravity environment, as does the International Space Station.
- Facilities and logistics spaceships will be owned by the Space Logistics Infrastructure Commission and operated by private logistics services and facilities companies. As an arm of the federal government, commission ownership extends U.S. sovereignty to these facilities.
- Government agencies and private organizations wishing to utilize the depot can lease facilities and work space or, with commission approval, locate new facilities at the depot, along the depot’s orbital path.

6. Deployment concept:

- As part of an integrated spacefaring logistics infrastructure architecture, the Phase 2 systems are designed to be deployed with and sustained by the Phase 1 transportation systems.
- The order of the systems listed is the order of their deployment. This enables the earlier systems—space tug and space construction station—to be used to build the later systems.

7. Acquisition concept:

- The Phase 2 systems will utilize Technology Readiness Level 6-9 technologies.
- The systems will be acquired and operated as federal infrastructure, utilizing government-backed bonds for development and acquisition funding and user fees for debt retirement and operational expenses.