

Lunar Water Logistics – Engineering Brief

Enabling Large-Scale Mass Delivery for Shielding, Life Support, and Fuel
aegisstation.com/waterlogistics

1. Overview

Aegis Station requires **406,848 metric tons of water**—the equivalent of **163 Olympic swimming pools**—to complete its shielding and sustain long-duration operations. To deliver this mass efficiently, we deploy a **20-unit fleet** of reusable, uncrewed tankers lifting **15 tons per flight** from the lunar south pole to lunar orbit.

Target fill time: **~3.7 years**

Daily throughput: **300 tons/day**

Flight rate: **20 round trips/day**

All water is sourced via **lunar ISRU**. The system supports future reuse beyond shielding: fuel, reserves, depots.

2. System Configuration

Tanker Fleet

- **Quantity:** 20 reusable vehicles
- **Payload:** 15 metric tons of water
- **Turnaround:** One round trip per day
- **Design:** Pressure-fed, cryo-insulated, autonomous
- **Delivery Profile:** Vertical ascent to orbit, direct docking with Aegis

Station Interface

- **Docking ring** with 20 ports
- **Cryo transfer lines** to storage and shielding bladders
- **Thermal and structural management** for even fill
- **Sensor arrays** for flow rate, leak detection, pressurization

[diagram here: tanker interface layout with Aegis Station]

3. ISRU Operations

Site Location

- Lunar south pole: Shackleton/Cabeus region
- Water ice extraction from permanently shadowed craters

Process Flow:

1. Regolith excavation
2. Thermal ice separation (microwave/solar ovens)
3. Vapor collection and condensation
4. Purification and cryo storage
5. Automated loading into tankers

[diagram here: surface-side ISRU and loading loop]

4. Supporting Infrastructure

Surface

- Hardened launch pads
- Cryogenic fuel production
- Refueling lines and service gantries
- R.O.N. (Remote Operations Node) hubs
- Energy grid (solar + nuclear)

Orbit

- Tanker berths at Aegis Station
- Cryo handling systems
- Mass balancing and shielding fill routines
- Propellant and water handling segregation

5. Performance Metrics

Metric	Value
Daily Water Delivery	300 tons
Total Trips (Full Shield)	~27,123
Shield Fill Completion	~3.7 years
Water Mass Equivalent	163 Olympic pools
Cost per Delivered kg	~\$750

6. Extendability

- Fleet can scale to support **fuel production and exports**
 - Modular design supports cargo/fuel variants
 - ISRU system remains active for surplus use
 - Future support for orbital depots, Mars staging, and remote outposts
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7. Learn More

Visit aegisstation.com

Access technical drawings, logistics maps, and cross-system performance data.