Aegis-Class Rover

Surface Mobility for the Lunar Frontier

Mission Profile

The Aegis-Class Rover is a pressurized, self-contained lunar vehicle designed to support sustained operations on the Moon's surface. It serves as a mobile habitat, scientific platform, and logistics support unit—designed to function both independently and as part of a larger surface infrastructure.

This vehicle is built for the **"lunar gold rush"**—delivering prospectors, engineers, and autonomous systems safely and comfortably across vast distances of rugged, sun-blasted terrain.

Core Capabilities

Capability	Description
Crewed Operation	2–4 crew members standard; expandable with modular sections
Autonomy	Fully manual or autonomous; supports return-to-base and preplanned routing
Life Support	30–60 day mission duration; onboard CO_2 scrubbers, O_2 storage, thermal control
Righting System	Capable of self-righting after tip or roll via active landing arms or body roll
Pressurization	Fully sealed interior; external EVA access ports

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Vehicle Configuration

The Aegis-Class Rover consists of a **command module** at the front, followed by optional **passenger** and **cargo modules**, in a **modular EL-train-like configuration**. This enables custom missions with different combinations of:

- Forward crew cabin (always manned)
- Passenger segments (expandable up to 48 people per car)
- Cargo/fuel modules (fuel, tools, ISRU equipment, water tanks)
- Rear systems/propulsion module

Dimensions (Per Module Type)

Module Type	Length	Width	Height	Notes
Command Module	~10m	~3.5m	~3.5m	Crew controls, navigation, pilot berth
Passenger Car	~24m	~3.5m	~3.5m	Seats/berths for up to 24 crew
Cargo Module	~12–24m	~3.5m	~3.5m	Modular racking, tankage, or flatbed use
Systems Module	~6m	~3.5m	~3.5m	Fuel, power, cooling, comms, suspension

Each module uses standardized coupling and electrical/data ports.

Mobility & Terrain Performance

- **Chassis:** Rigid aluminum or carbon-alloy truss
- **Suspension:** Active terrain-following struts
- **Wheel System:** Regolith-rated wide-grip all-metal treads or inflatable hybrids
- **Range:** 100–500 km (mission-dependent, resuppliable)
- **Speed:** Up to 25 km/h (sprint), 10–15 km/h (cruise)

Supports short inclines, regolith dunes, rock fields, and crater rims.

Power System

- **Primary:** Solar arrays with battery packs (daylight operations)
- **Supplemental:** Replaceable fuel cells or radioisotope units for nighttime ops
- **Docking Recharge:** Optional connection to fixed outposts or lander buses

Redundant power system supports full onboard life support, mobility, communications, and computing for up to 60 days.

Mission Roles

The rover is designed to support multiple concurrent roles on the lunar surface:

- **Water mining site surveys**
- **Resource prospecting and sample return**
- **Transport of crew and cargo between outposts**
- **Mobile command post for construction ops**
- **Emergency shelter or evac unit**
- **Tanker tethering or ice haul vehicle**

It is a platform—not just a vehicle.

Aegis Rover + Station Ecosystem

The Aegis-Class Rover is not a standalone product. It is designed to interoperate with:

- **Aegis Station**: Refueling, repair, and mission coordination
- **Luna–Aegis Shuttle**: Cargo and personnel handoff
- **Lunar Tanker Fleet**: Support for tanker landing sites and maintenance
- **ISRU Nodes**: Water, fuel, and oxygen harvesting points

It is part of a closed loop logistics chain that spans orbit and surface.

Long-Term Vision

Aegis-Class Rovers may one day form caravans—moving prospectors between dig sites, scientists between labs, and even tourists between domes. They're tough, spacious, configurable, and made to be part of something bigger.