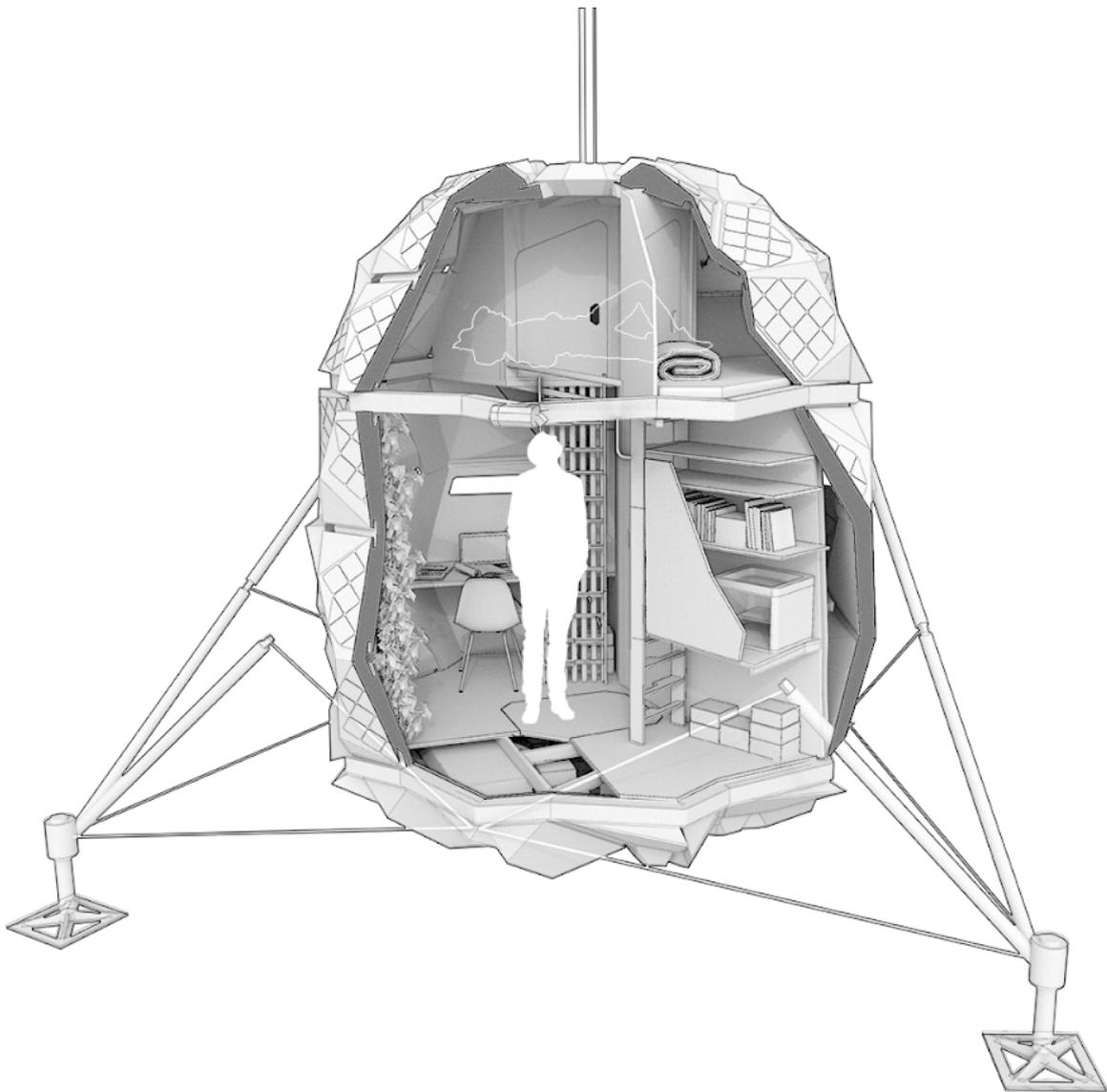


### **LUNARK Mission Research Parameters**

In September two young Danish Space Architects, Karl-Johan and Sebastian, will live for three months in the very first Moon Analog habitat in the Arctic, Greenland. They will simulate the biological stress and mental pressure astronauts experience during space missions. Especially the effects of Isolation and confinement in extreme environments.

The entire mission and habitat is a very controlled environment well suited for psychological and behavioral studies.



LUNARK habitat cross section.

**Crew size:** Two participants

**Karl-Johan Sørensen:**

**Gender:** Male

**Age:** 23

**Height:** 206 cm

**Weight:** 104 kg

No known medical issues

**Sebastian Aristotelis:**

**Gender:** Male

**Age:** 25

**Height:** 183 cm

**Weight:** 77 kg

No known medical issues

**Mission Duration:** 91 days

**Communication:** The two crewmembers will not be able to communicate to the outside world, except a daily radio check by the closest military base. Crewmembers will carry a satellite phone in case of emergencies.

**Diet:** The diet will be a combination of freeze dried food, and nutrient rich powder food. Dietary supplementation is being developed by Joey Savage. The crew will only have access to fresh food through a small vertical *green wall*, which will produce about 2 lettuce heads a week + a tablespoon of daily fresh algae from a small algae photobioreactor inside the habitat. Total caloric intake is still to be decided.

**Activity:** The two crew members will exercise 6 times a week for 45-60 min; workouts will consist of anaerobic exercise.

**Daily Schedule:** The flight plan and FAP (Field Activity Plan) is still to be developed - it will follow standards similar to those made for astronauts on ISS. With time reservations for experiment supervision, maintenance, free time, exercise, sleep and meals.

**Crew cabin:** The habitat is equipped with two individual sound insulated crew cabins, to strengthen the sense of privacy in the small habitat.

**Power:** Electricity will be available for experiments and hardware. Power needs can be discussed upon request. The Habitat power grid will be DC power supplied from batteries at 24V. AC needs or other voltages can be discussed if needed.

**Hardware Size:** We have reserved space in the habitat and storage for experiments, but keep in mind internal storage is limited. Please inform us about estimated weight and volume of any hardware/equipment in the research proposal.

**Hygiene:** The habitat is equipped with a toilet but no running water. Crew will have access to water through a manual pump system.

**Outside access:** The crew will be able to leave the habitat wearing a full suit and helmet, with no skin exposed to the elements (e.g. wind, water, snow or rain). Outside activity will be limited and will mostly consist of maintenance or field work.

**Available sensors and biometrics:**

- Temperature (wearable sensors on both participants, inside habitat and outside habitat)
- Heart Rate (both crew members)
- Humidity
- Air quality (inside habitat)
- Activity levels (wearable sensors on both crew members)
- Positional tracking of crew (when and where are the two crew members within the habitat)

Extra sensors can be integrated upon request by the LUNARK team.

**Transport of equipment:** Experiments must be self-funded, including hardware development, documentation, and transport of hardware to Copenhagen (Denmark). The hardware transfer between Copenhagen to the test site in Greenland will be organized by the LUNARK team. All operations, energy requirements and maintenance will be carried out by one of the two crew members.

**Location:** The location is around Dundas, 100km south of Thule in northern Greenland.

**LUNARK Timeline:**



**Dates to remember:**

- Deadline to submit **research proposal**: April 20th
- Deadline to receive experiment/**hardware in Copenhagen**: May 24th
- Deadline to send **experiment procedures**: June 15th