

## Moon and Mars habitation in lava tubes: The first explorers will be cave men again. Stefánsshellir test site in Iceland

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**4th Planet Logistics (4PL)** is establishing a lava tube test site for expeditions to the Moon and Mars. The cave, called Stefánsshellir, is situated in western Iceland, in the Hallmundarhraun lava field, (figure 1).

The project focuses on the development needed to establish facilities on the Moon and Mars, utilizing naturally occurring lava tubes which will serve as habitable zones for human exploration (figure 2). The cave will provide a development test site suitable for work with robots, materials, equipment and inflatable habitats with the aim of providing key data for future human missions to the Moon and Mars.



Figure 1: Inside Stefánsshellir lava tube, West Iceland. Credits  
Björn Hróarsson.

Lava tubes offer future explorers a way to greatly reduce the time, resources and effort needed to initially construct safe and practical habitats and other pressurized support facilities such as greenhouses and maintenance enclosures.

Lava tubes will protect these explorers from harmful radiation, extreme temperature changes and deadly meteorites. Besides that, vestigial or fossil life forms on Mars will most likely be found in caves.

Iceland has been selected for this development test site as it has many parallels to the Moon and Mars,

including a barren landscape, rocky soils, limited accessibility, and naturally stable lava tubes.

Thanks to an international team of experts in logistics, geology, engineering and expedition planning, as well as a broad network within the country and to the exclusive right to access a major lava tube, 4PL is also able to assist and support projects of various kinds and magnitude proposed by third parties.

Moreover, 4PL focuses on educational outreach programs supporting and developing different projects, including a [museum](#) exhibit in Húsavík, Iceland, with aims to produce additional exhibits in continental Europe.

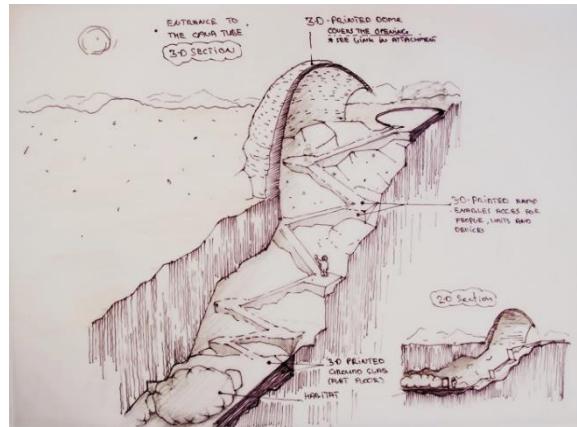


Figure 2: Drawing of a possible outlook of a lava tube habitat, by architect Dmitry Zhuikov, zaarchitects.com, advisory board of 4<sup>th</sup> Planet Logistics.

### Acknowledgements

The Exploration Museum in Húsavík, Iceland; 4<sup>th</sup> Planet Logistics advisory board; Landowners of Stefánsshellir (Ólafur Jes Kristófsson and Bryndís Jónsdóttir), Icelandic Speleological Society, Árni B. Stefánsson; Örygur H. Örygsson; Francesco Perini; Christa M. Feucht; Bernard Foing

### References

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