

Concept of Operations Relay Station, Backup

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Goals and Objectives of the System

This backup relay station is the first building block for our Lunar Colony. Given its importance, its capability is duplicated, hence this is the secondary or backup. This backup relay station has a continuous line-of-sight with the Earth and the planned location of the Lunar Colony. The primary relay station will be placed later directly at the planned location of the Lunar Colony. The following is solely for the backup relay station.

The Lunar Colony's relay station enables the transfer of energy and digital data from one location to another. Primarily, it is envisioned as a permanent, continuous, real time relay of data and energy between the Lunar Colony and Earth. Nevertheless, the transmit or receive locations can be on the Earth, on the Moon, in lunar orbit, in Earth orbit or transiting the inner solar system.

This relay station will be a lifeline for the Lunar Colony inhabitants. It must have the reliability and the capacity to meet the digital data flow needs of all the initial inhabitants.

Energy beaming is considered a necessary capability for the survival of the Lunar Colony. The Lunar Colony will need secure sources of energy. As well, energy delivery is expected to be an appreciable revenue generator in the future. As such, while this capability is not mature, it is considered to be a necessary technology and must be proven.

Assumptions, Policies and Constraints

This relay station is our first module in the Lunar Colony infrastructure. It's a support module in that it will support the lunar inhabitants however, no one will access it directly. It will only be utilized via electronic transmitters and receivers.

While its main role is to support, it does include value on its own. Values include its energy collection and transfer capability and its data storage and transfer capability. These assets will be used to generate revenue before inhabitants live on the Moon.

The Lunar Colony Fund acknowledges the existence of international, inter-governmental agreements regarding the Moon. However, we expect no impediments from them. Actually, we will be relying upon the full cooperation of national governments to achieve our goal.

One expectation for cooperation considers the existing space communication infrastructure. We expect to use Earth based space systems for digital data transmission and reception through a timeshare or lease arrangement. We assume that bandwidth will be available.

Last, we expect little to no changes in the conditions on the Moon and the CIS-lunar space. That is, the lunar surface, lunar orbit and transfer orbit remain virtually undisturbed by people and their devices.

Organizations, Activities and Interactions

The Lunar Colony Fund will own this relay station. Safeguards will ensure that the station cannot be accessed or used by non-approved people or devices. The Lunar Colony Fund will own the information data memory space but will potentially lease out the memory space. The Lunar Colony Fund will own the energy stored within the station. It may sell energy back to Earth or to other locations that have appropriate receivers. Once people are permanently living on the Moon, ownership will transfer to the inhabitants.

The relay station will include an optical viewer. The owner of the relay station can, at their discretion, sell time to use the viewer. Nevertheless, the controls of the optical viewer will remain with the owner at all times.

All onboard measurements, such as for the built in test, will be owned by the Lunar Colony Fund. They may distribute this data at their discretion.

Any foreground knowledge will be proprietary to the Lunar Colony Fund and used at their discretion. However, we expect to provide the knowledge as a common good for all humankind (e.g. via the Creative Commons).

Any background proprietary knowledge will remain with the originator. Licences will be obtained as necessary.

Responsibilities and Authorities Delegated

The Lunar Colony Fund is the sole authority for this project. Authorized members may delegate responsibility to others. Written declarations will define any delegations and the duration of the delegation.

Specific Operational Processes

The Lunar Colony Fund will be contracting the relay station as a turn-key capability. It will be emplaced upon the Moon and remain in place. The contractor is responsible for testing and confirming operational status of the relay station. Once this is proven, and the handover of documentation is complete, the relay station will be accepted for continuous operation.

Maintaining and Retiring the System

The relay station in many ways will act as a lifeline for the inhabitants on the Moon. It must be reliable. Given the difficulty in reaching the station, it should also require little maintenance. And, given the effort in emplacing the station, it must be durable. We envision a lifetime design for 100 years.

The relay station can be retired when the inhabitants of the Lunar Colony decide they have no further need for it. Once deemed retired, it can remain in place or can be harvested for parts and material. Given that the Moon does not have any life forms, no part of the relay station would be an environmental concern. However, upon retirement, it must be made safe so that future visitors will not come to harm.