TO: Shareholders of the Jack Williamson Joint Public-Private Partnership (JP3)
FROM: Jill Andersson, CEO, JP3
DATE: January 3, 2064
RE: Phase 3 is ready to launch

We are excited to announce the launch of Phase 3 of the JP3 Terraforming Project, Ridley Scott MARS Colony. While there have been several delays due to funding concerns and logistical decision making, we are confident that the R. Scott MARS Colony is ready to proceed.

Phase 1 of the Jack Williamson Terraforming Project, The Sahara KANURI Colony, was the prototype for terraforming harsh climates. Set in the Sahara Desert, the KANURI Colony began development in 2035. Initially, the purpose was to combat climate change and food insecurities that existed throughout the Sahara and the Sahel. The Project, primarily run by a consortium of scientists with the backing of a small number of investors, soon became the example for how to work cooperatively with governments. This ensured proper funding, and therefore, success. Once investors and the United States Space Force realized its full potential, the project metamorphosed into a prototype for off-planet terraforming, specifically on the moon and Mars. When the USSF became heavily involved in the project, any funding concerns became something of the past. Of course, this also meant that the USSF gained principal control over the goals and management of the colonies.

There were several concerns and unforeseen consequences of terraforming displayed by the KANURI Colony. Environmentalists warned of an increase in locusts caused by the additional food sources, and a decrease in the size of the Amazon rainforest due to the lack of annual dust from the Harmattan. However, with scientists at the forefront of the project, informed decisions averted these potential catastrophes. Building the silica aerogel dome over a smaller region of the desert solved these concerns. This didn't mean that the KANURI colony was without its own unique challenges, however. Even with climate control, the increase in temperature resulted in the proliferation of several plant species and crops, including kudzu, beets, and bananas. It also caused a decrease in important food sources such as soy and corn. Even with modern developments in aquaculture and hydroponics, the lack of food diversity created unique nutritional and aesthetic deficits.

With the USSF at the forefront, development of Phase 2 and the SHACKLETON I Colony on the moon soon became a reality. By 2045, the SHACKLETON colony was thriving with over 500 volunteers from more than 20 nations. Similar to the KANURI colony, scientists and the USSF opted to paraterraform only the part of the moon around the Shackleton Crater. Using solar mirrors and a dome, the crater became a micro-climate where plants could grow and create a breathable atmosphere. The USSF employed astrobotanists to address the nutritional needs of so many colonists from a variety of cultures. Even so, nutritional gaps still existed. The bananas grew exponentially in the lower gravity environment while the soy crop continued to be plagued by low output. The colonists also reported experiencing issues associated with isolation and confinement, similar to the worldwide mental health crisis of 2020 caused by the COVID-19 pandemic.

Despite previous setbacks, scientists are confident that they have learned from these challenges and believe that the R. Scott MARS colony is destined for success.

Future Problem Solvers, J. Williamson JP3 requests your assistance as Phase 3 begins. Using your knowledge of the problem solving process, identify challenges faced by JP3 as they begin the task of terraforming R. Scott MARS I Colony. Determine an Underlying Problem and create solutions that will ensure the success of the R. Scott MARS I Colony.