Paper ID: 82885
oral

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

Author: Mr. Daniel Andrews
National Aeronautics and Space Administration (NASA), United States

# VIPER ROVER: FLIGHT BUILD AND ENVIRONMENTAL TEST STATUS

**Abstract**

The NASA Artemis Program plans to return humans to the Moon to stay. Extended human stays on the Moon will require substantial resources to sustain human presence, requiring continuous supplies delivered from the Earth. However, if some of the resources were indigenously available, Earth logistical requirements could be substantially reduced by "living off the land" with in-situ lunar resources. Local volatiles could be processed into propellants and human life-supporting needs, reducing risk of maintaining a permanent human presence on the Moon.

LCROSS, LRO and other missions have confirmed the presence of lunar volatiles resources in polar regions, so the next step is to understand the physical distribution of those resources, as well as the scientific basis for how water got there, and why it is still there.

The Volatiles Investigating Polar Exploration Resource (VIPER) is a surface mobility scientific platform, designed to spend 100 days mapping and surveying four different Ice Stability Regions to understand the scientific nature and distribution of water and other volatiles. VIPER will also provide scientific mineralogical context of the lunar regolith, such as the presence of silicon and light metals in lunar regolith, providing a composite picture of resource availability and sustainment.

This paper will discuss VIPER's completion of the flight rover build, as well as current progress in environmental testing, preparedness for mission operations, and overall readying for launch integration with our CLPS partner.

VIPER is managed within NASA's Science Mission Directorate (SMD), utilizing the Commercial Lunar Payload Services (CLPS) lunar delivery model.