**SOTERIA: SALVATION DELIVERED FROM LUNAR ORBIT.** J. S. Robertson¹, ¹Univ. of Southern California, Los Angeles, CA

**Introduction:** The NASA Gateway and Artemis reference missions have not yet articulated emergency or rescue mission strategies in any detail. Crew safety and assured crew return as well as mission success are top rung priorities. The Soteria concept architecture derives its name from the Greek goddess of safety and salvation, deliverance, and preservation from harm.

By locating the emergency supplies in lunar orbit, several benefits are achieved. A broader variety of emergency supplies can be provided, improving overall safety. Landed mass is much lower, which can reduce overall launch costs. For expeditions with crewed rovers, the rover can be much smaller and lighter, permitting the expedition to travel more quickly.

The Soteria concept accomplishes crew extraction by using a small ascent vehicle the scale of a CLPS lander. The ascent vehicle would be carried along with the surface expedition, so it is always available.

The proposed Soteria concept can be tailored for a range of lunar orbit, lunar surface and cislunar emergency missions as well. The cost of the Soteria system could be amortized over several sequential missions or over multiple simultaneous missions. Multiple stations can be used to reduce the average flight time.

As lunar exploration increases, and the cadence of crewed missions become more frequent, there will be larger numbers of people exposed to the risk of an anomaly, accident or emergency that will require external intervention ranging from crew support to crew extraction. Even if the individual probability of an emergency is lower due to improved technology and procedures, the overall rate of accidents is likely to go up when activity increases on the Moon.

The Soteria concept proposes an emergency and rescue architecture that would deliver supplies or extract crew from the lunar surface, should the need arise. By deploying Soteria ahead of lunar surface activity, crew safety for Artemis and commercial crews on the lunar surface is established. Traditional approaches have focused on abort as the primary way to mitigate emergencies, but there are alternate approaches that improve safety and mission flexibility. Leaving the lunar surface via an abort results in mission failure in many scenarios. A mission failure may be avoided if timely assistance can be rendered. In addition, some types of emergencies are not easily mitigated by an abort, such as a solar flare, critical medical event, or an anomaly encountered when a crew is not near an ascent vehicle.

The Soteria concept architecture proposes dispatching emergency supplies to the surface from a station in Low Lunar Orbit (LLO). Emergency supplies are delivered on an as-needed basis using a Commercial Lunar Payload Services (CLPS) derived lander. The lander can deliver supplies in one to three hours flight time, with modest delta-V required for an orbit plane change.