55th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES (D5)
Quality and Safety, a challenge for all in Space (1)

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STARSHIP LOX USE FOR RADIATION MITIGATION (SLURM)

Abstract

Abstract Radiation protection for extended time in Space is a critical requirement. This project uses the LOX from the main tanks as a mass to provide a radiation barrier during transit, while the LOX can be returned to the main tanks before re-entry. This will help protect the astronauts (and sensitive electronics) while adding minimum weight to the base design. The ancillary systems will be required to pump, cool, circulate and return LOX to main tanks. The balance between radiation protection and lift-off mass is a critical issue and to totally stop all forms of radiation is impossible for a Spaceship with the current chemical propulsion. The objective is to have the design in-place so that after orbit is achieved, the LOX can be transferred to the radiation protection area and be monitored throughout the flight. Before re-entry, the LOX would be transferred to the main tanks for descent and not disturb the weight balance needed for the successful re-entry. The paper evaluates a range of alternatives . The use of LOX has been chosen as it has a higher density and higher volume in relationship to the Liquid Methane. Simple modifications are needed to enhance and protect the Starship, computers and its passengers. This does not need to change with the new SpaceX Torus design. The overall design of the Starship will stay intact.