

Design and Construction of a Bi-Propellant Liquid Rocket

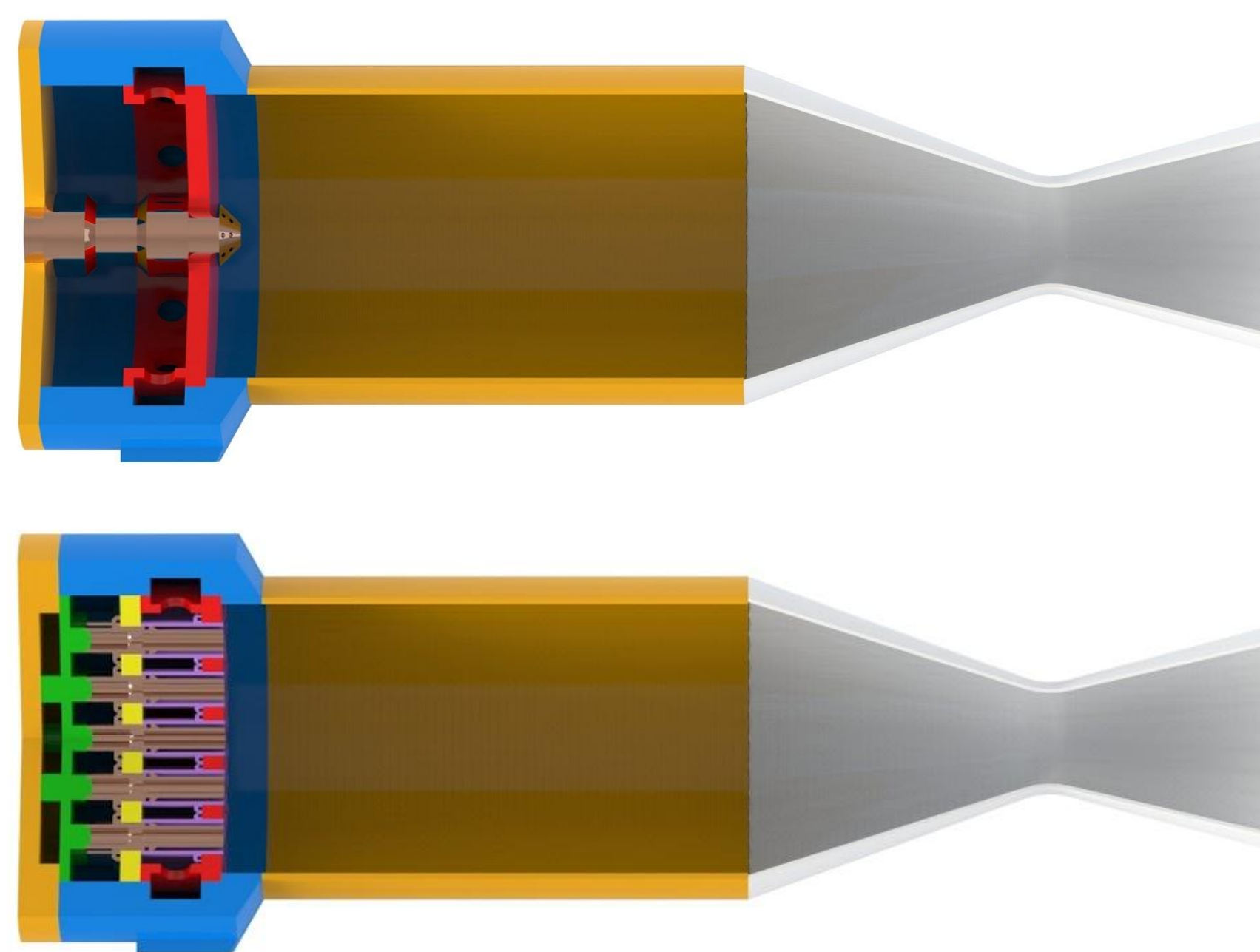
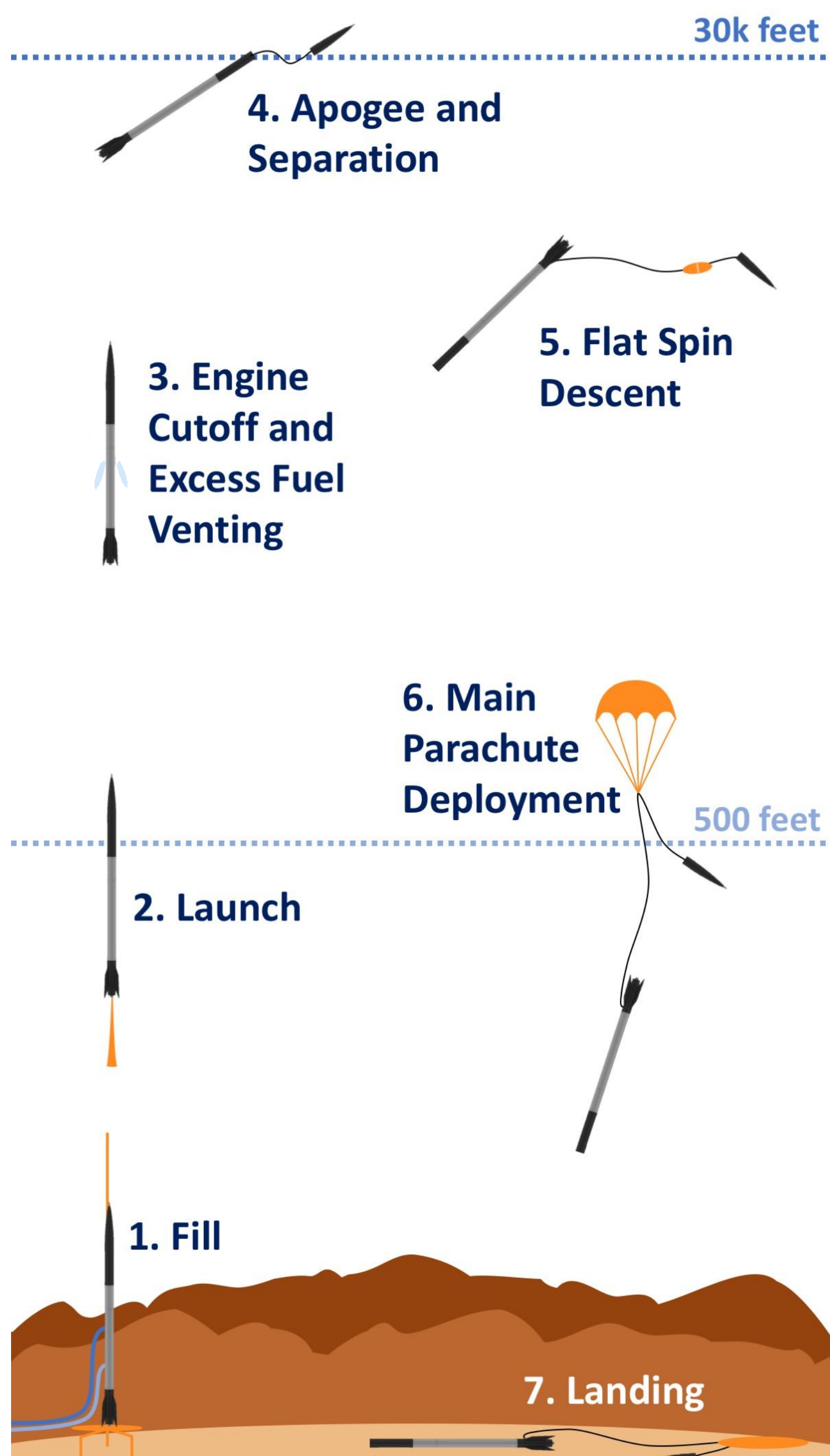
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Overview

The Rocket is a N₂O–Ethane, single stage liquid rocket. It is intended to compete in the 2018 Spaceport America Cup, Intercollegiate Rocket Engineering Competition 30,000 ft. student researched and developed hybrid/liquid category. The rocket, the payload, and supporting ground equipment will be built in-house and as cost effectively as possible.

Objectives

- Design, manufacture, and fly a bi-propellant rocket that reaches a target apogee of 30,000 feet and safely descends.
- Recover the rocket and the functional payload it will carry



Explanation

The rocket uses N₂O because it is self pressurizing, eliminating the need for a pressurant system in a System of Systems benefit. Testing will be done at an off-site facility, and the launch stand is being manufactured to also serve as a backup test stand.

Impact

While this rocket is still in development, it marks a leap forward in Space Hardware Club's rocket development. It also extends the opportunity for payload development to many local high schools and colleges, expanding STEM opportunities for underprivileged schools, and allows SHC to explore more complex scientific and engineering principles. It will be one of the few bipropellant rockets to be developed and launched by an undergraduate team.

Acknowledgements

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