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UTILITY AND APPLICATION OF XCOR'S COMMERCIAL REUSABLE SUBORBITAL VEHICLE
LYNX FOR SMALL SATELLITE LAUNCH

Abstract

XCOR Aerospace is building a reusable launch vehicle, named Lynx, capable of carrying multi-mission payloads into a suborbital trajectory. Lynx Mark I, currently in development, is a prototype that will be put into commercial service upon completion of its flight test regime in 2013. Lynx Mark II, the production version of the Lynx, will have higher performance than the Mark I. Lynx Mark III is a derivative vehicle specially designed to carry an external, top-mounted, dorsal pod that can hold upper stages capable of inserting a nano or micro-satellite into LEO; carry an oversized payload experiment, space telescope, or other remote sensing device; and advance TRL of on-orbit instrumentation in development.

Lynx Mark III is designed for on call, highly responsive, nano and micro-satellite launch and other commercial and government missions that benefit from enhanced operations enabled by a commercially developed suborbital manned vehicle. Breaking from traditional methods and paradigms for smaller satellite launch (e.g., dedicated small expendable launchers or ride-share arrangements with larger payloads on larger expendable launchers), Lynx Mark III will demonstrate launch responsiveness that is measure in days versus years, costs that are measured in the low hundreds of thousands per launch instead of tens of millions, and reliability and availability levels that approach two orders of magnitude improvement over today's systems. Mark III will demonstrate the ability of reusable commercial vehicles to meet future commercial and government needs for a highly responsive, highly reliable, lower cost approach to operationally responsive space launch.

This paper presents the Mark III development roadmap, a review of the technology and concept of operations, the background on future needs and requirements for reusable launch vehicles as these apply to small satellite launch, and examines the future of nano and micro-satellite capability once the Mark III launch capability is available for commercial and government use.