

MICROGRAVITY SCIENCES AND PROCESSES (A2)
Facilities and Operations of Microgravity Experiments (5)

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DRAGONLAB PAYLOAD CONSOLIDATION AND EXPORT CONTROL FRAMEWORKS

Abstract

The SpaceX Falcon 9 launch vehicle successfully completed its inaugural and second launch in 2010. During the second launch, the inaugural Dragon spacecraft successfully deployed, orbited Earth twice, re-entered the atmosphere, and was safely recovered. Additionally, 8 secondary payloads were deployed from 6 PPODs mounted to the second stage trunk. Although initial missions will be focused on logistical cargo services for the ISS, SpaceX is offering “DragonLab” as a commercial free-flyer specifically for in-space experimentation and technology demonstration.

Up to 6000 kg of pressurized and unpressurized payloads can be accommodated with recovery of pressurized payloads as a standard service. Power and data services are also provided to the payloads. DragonLab’s flexible capability and launch rate will make access to microgravity significantly more frequent, dependable and affordable than it has been historically. DragonLab will also be capable of carrying instruments and sensors into space for purposes of on-orbit testing, verification and accumulation of flight heritage. This presents a definitive means to close the infamous “TRL gap” between TRL 5 and TRL 9.

For SpaceX, DragonLab presents a significant logistical challenge: marketing the capability to many different customers in numerous, diverse fields of both science and technology development is one challenge; another is the efficient execution and management of a mission with several individual customers. The key to efficient and cost-effective implementation lies in appropriately consolidating resources to successfully market and complete individual payload technical and managerial responsibilities, such that the final result is a consolidated “rack” of experiments certified and ready for flight.

Compliance with U.S. Export Control laws presents an additional layer of complexity, as many potential customers are located outside of the U.S. SpaceX is in the process of identifying Brokers for DragonLab payloads for both domestic and international payloads. This paper will outline the optimal consolidation and management method that will be used on DragonLab and the motivation and rationale behind it. The contractual and export-control framework is described and the status of this exciting new program will be provided.