

What Makes Secondary Payload Launch Opportunities Attractive?

Joe Carroll, Tether Applications, Inc.
Presentation Abstract Submitted for
the 2012 Summer Cubesat Workshop

There are many obvious requirements on a launch opportunity for it to be useful and perhaps even attractive to secondary payload providers: a drop-off orbit useful to secondary payloads, usable margins in payload mass and envelope, suitable secondary payload support options and launch loads, and acceptable secondary payload launch costs and conditions.

There are also many characteristics that are less obvious, but also appear to make a large difference in the usability and attractiveness of a launch opportunity. Based on the author's experience with 3 Delta/GPS secondary payloads in 1993-94, and study of NASA's novice-friendly shuttle-based "GetAway Special" (GAS) program, these characteristics seem to include:

1. Frequently repeating launches of the same booster type on similar missions (ie, regular bus service)
2. The same primary payload owner (this seems more important than the same primary payload type)
3. No launch insurance (to avoid premium increases that secondaries would have to pay)
4. Preferably a mission paid for by a US government agency (this may be a big surprise)
5. Preferably a US launch opportunity for at least US payloads, to avoid ITAR complications

The paper discusses upcoming launch opportunities in the light of the above criteria, and suggests that unmanned resupply missions to ISS may offer the most frequent, useful, and attractive opportunities for a wide range of LEO secondary payloads, from cubesat to at least ESPA size.

What Makes Secondary Payload Launch Opportunities Attractive?

Joe Carroll, tether@cox.net, Tether Applications, Inc.
Presentation for 2012 Summer Cubesat Workshop

The obvious requirements

1. A secondary payload release orbit useful to secondary payloads
2. Usable margins in payload mass and envelope
3. Suitable secondary payload support options and launch loads
4. Acceptable secondary payload launch costs and conditions

Other less-obvious things to look for

1. Frequent launch of the same booster on similar missions (ie, regular bus service)
2. A US booster for at least US secondary payloads, to minimize ITAR issues
3. No launch insurance (to avoid premium increases secondaries would have to pay)
4. The same primary payload owner (preferably with a stable policy on secondaries)
5. Preferably a US government agency primary launch customer (this may be a surprise)

The candidate to beat: unmanned commercial resupply of ISS

- Most frequent launches to suitable orbits: ~4/year to LEO
- NASA manned program is the primary-payload customer
- Don't be afraid of "manned": the novice-friendly GAS program flew often!
- Falcon/Dragon missions may have tons of margin, deliverable to usable orbits

Will NASA support a novice-friendly program like the old Get Away Specials?