

To: Mary Rogers

From: Team 11: Benjamin Dirgo, Mark Majkrzak, Jason McCall, Matthew Mylan, Kate Prentice, Alen Younan

Date: December 13, 2013

Re: Project Proposal for Mary Rogers at Orbital Sciences Corporation

The purpose of this memo is to present the final proposal of the payload separation system, including the expected cost of building a prototype for testing. The goal is to make a P.S.S. that is less expensive than current models and provide less shock to the payload.

The final design will consist of a thin cylinder with four solenoids parallel and equally spaced along the inside edge that will pull inward when the correct altitude is attained (Figure 1). The keys attached to the solenoid will fit into a channel built into the payload adaptor. Push off springs on the underside of the payload cylinder will engage, thereby releasing the payload half of the adaptor into orbit.

The proposed P.S.S. is made up of easily obtainable materials that can be manufactured and machined with relative ease. The estimated cost of our design for raw materials is \$850 (Table 1); which could be lower in price when bought in bulk or when using different machining processes. The design costs a fraction of what current designs on the market charge. By designing a cheaper alternative, Orbital will save money when undergoing new missions, bringing the price of the final frontier down to a more reasonable budget.

Table 1 – Bill of Materials

Material	Quantity	Unit Cost
7075 Aluminum Key 3/8" x 3/8" x 24"	1	\$2.52
7075 Aluminum plate 24" x 48" x 1"	1	\$654.24
Solenoid	4	\$32.75
Nuts/ Bolts/ Misc.	TBD	\$50.00
Total Cost		\$837.76

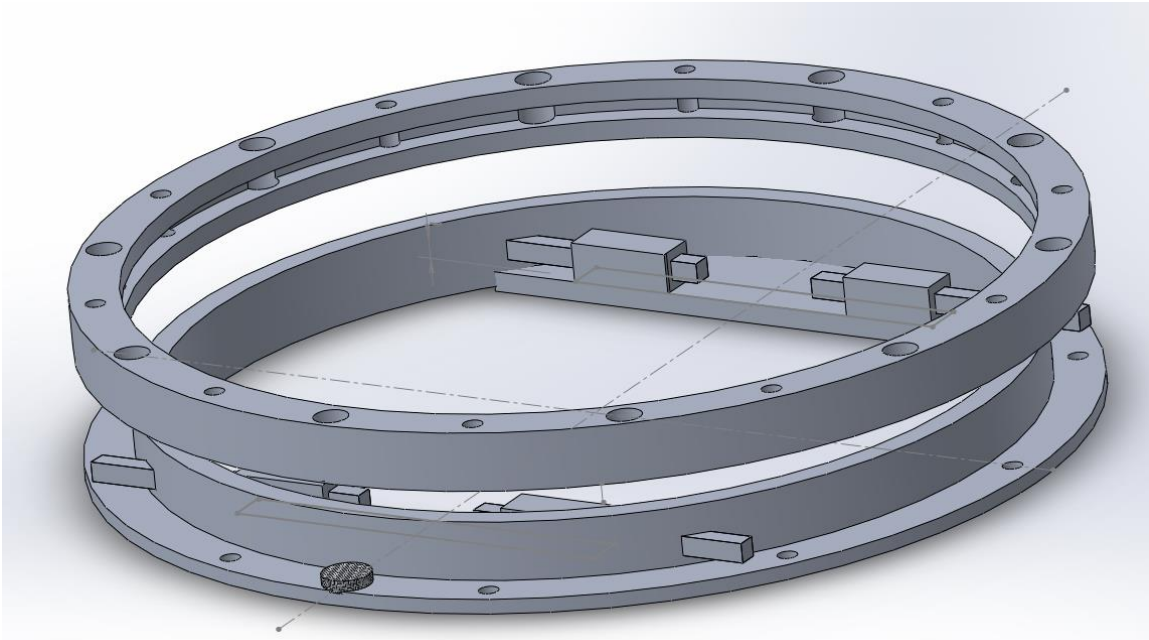


Figure 1 – Final Proposed Design; Payload Separation System