

## **Orion Space**

**Experimental License Application: 0867-EX-CN-2021**

**Response to FCC Questions of June 14, 2022**

**Correspondence Reference Number: 70134**

### Background:

As the FCC has reviewed the pending experimental license application submitted by Orion Space Systems (f/k/a ASTRA), there have been a number of questions posed to the applicant seeking more information, clarification of information provided, or more details on the proposed operations. Orion Space submitted information to the FCC on February 8, 2022, March 18, 2022, and May 27, 2022.

On June 14, 2022, the FCC sent Correspondence Reference Number 70134 posing the following questions:

### *FCC Questions:*

Please address the following questions/concerns from IB: The Feb 8 response indicated that the deorbit process would be a multi-step process in 4 stages: Orbit lowering by thruster, followed by natural decay and then a repeat of these 2 steps. The May 27 response, however, appears to state the deorbit plan is to use continuous thrust. Please indicate which of these deorbit plans are correct, and if using the May 27 plan, please provide additional details on the specifics, to include but not limited to: duration of thrusts, expected altitude lowering per thrust, # of thrust maneuvers, altitude the maneuvers will begin and end at, etc.

### *Response:*

The May 27<sup>th</sup> plan utilized language in reference to the nature of the type of thruster being employed (ie a “continuous thrust” thruster – in this case an MPPT); there was no intention of abandoning a thrusting schedule, such as the one provided in Orion Space’s Feb 8<sup>th</sup> responses. RROCI will still deorbit according to a schedule, with MPPT thrust at specific intervals. Orion Space did not intend to suggest that the entire deorbit process would use constant thrusting, although review of the May 27 submission did leave room for such an interpretation.

### De-orbit Update:

Since the February responses were submitted, Orion Space has secured a different launch for this satellite, which will put the satellite into a different initial orbit, now 525 km, rather than 642 km. As such, Orion Space has run simulations, and the chart given in the February proposal has been updated to reflect the new altitude at which the satellite will be inserted. In running the new simulations, Orion Space took heed of the need to avoid thrust (and so simplify tracking for NASA) when RROCI’s deorbiting process passes through the orbit of the International Space Station. The

table below shows the three step deorbiting process, with two steps using thrust (Steps 1 and 3) and Step 2 using drag to decay RROCI's orbit.

Stage		Delta V	Engine	Duration (days)
Step 1	Thrust down from 525 km to 430 km	52.8	MPPT	16
Step 2	Natural coast arc from 430 km to 380 km	28.3	Drag	453
Step 3	Thrust from 380 km to Deorbit	179.4	MPPT	29

This still reflects the general approach as the February submission, but with updated thrust periods and improved protection for the ISS based upon the new insertion altitude.

#### Additional Updates:

Launch date: SpaceX has pushed the launch date for this rideshare rocket, Transporter 6, to November 7, 2022.

Orbital Apogee: SpaceX will release the rideshare satellites at an orbit of 525 km.

#### Further Clarification:

While reviewing the latest questions and the response required, Orion Space went back to review in detail the three submissions made to the FCC in 2022 in response to FCC correspondence. The response above, we believe, clarifies an apparent inconsistency between the February 8 and May 27 responses.

The March 18 submission provided a conjunction warning response plan, as requested by the FCC. On May 27, in response to further questions, Orion Space provided a more detailed conjunction warnings response plan, with some predicted timeframes for particular actions that would follow the receipt of a conjunction warning. To ensure that there is no confusion: the May 27 submission is the plan that Orion Space will follow. There do not appear to be any contradictions between the two submissions, and yet to ensure that there is no confusion, the May 27, 2022 should be considered definitive.

#### Conclusion:

If the FCC needs further details, please contact Anne Cortez, Esq. 520-360-0925 or [alc@conspecinternational.com](mailto:alc@conspecinternational.com), counsel for Orion Space as soon as possible.