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February 16, 2022

VIA ELS

Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, NE
Washington, DC 20554

Re: General Atomics
Response to FCC Questions, Ref No. 67146 (dated Jan. 27, 2022)
ELS File No. 1064-EX-CN-2020

Dear Ms. Dortch:

General Atomics supplements its pending application and provides the attached response to the email inquiries from the Federal Communications Commission.¹

Please feel free to contact the undersigned if you have any questions.

Very truly yours,

/s/Tony Lin

Tony Lin
Counsel to General Atomics

Attachment

¹ See Email from Doug Young, FCC, to Victor Gomez, General Atomics (Jan. 27, 2022).

General Atomics Responses to FCC Inquiries Regarding OTB-3 Mission

February 16, 2022

Provided below are responses to the FCC's email inquiries in the 1064-EX-CN-2020 application proceeding.¹ The FCC questions are reproduced below in bold.

1. Please provide the area-to-mass of the spacecraft without the dragsail.

The Area-to-Mass ratio without the dragsail is 0.0074 m²/kg.²

This ratio was calculated based on NASA-STD-8719.14C, which provides in Section 4.3.4.2.2.a(2)(b): "For complex debris shapes, determine the view, V, that yields the maximum cross-sectional area and denote the cross-sectional area as A_{\max} . Let A_1 and A_2 be the cross-sectional areas for the two viewing directions orthogonal to V. Then define the average cross-sectional area as $(A_{\max} + A_1 + A_2) / 2$."

Inputs:

Nadir deck +Z side is a square 0.525m x 0.525m = 0.275m²

+Y side is 0.525m x 0.676m + 0.795 m² (solar array panels) = 1.15 m²

+X side is 0.525m x 0.676m = 0.355 m²

The space vehicle's predicted mass is 120.5 kg.

Calculation:

A_{\max} = Area of +Y side = 1.15 m²

A_1 = Area of +X side = 0.355 m²

A_2 = Areas of +Z side = 0.275 m²

Area = $(A_{\max} + A_1 + A_2) / 2 = 0.89$ m²

Area-to-mass = Area/mass = 0.89 m²/120.5 kg = 0.0074 m²/kg

2. Please provide the highest insertion altitude that will allow the spacecraft to reenter by 25, and 30, years.

As computed by the NASA DAS software using the inputs above, the maximum, circular insertion altitudes that would allow for re-entry of OTB-3 in 25 and 30 years, respectively, are as follows:

Re-entry Years	Max. Altitude (km)
25	606
30	623

¹ See Email from Doug Young, FCC, to Victor Gomez, General Atomics (Jan. 27, 2022).

² This value differs from the one provided in the ODAR, which was based on an area-to-mass ratio calculation with the dragsail. As General Atomics explained in the ODAR, the Frangibolt release mechanism for the dragsail has a supplier-published minimum reliability of 0.99999. Accordingly, the FCC's off-nominal, hypothetical scenario presumed in the request for information is extremely unlikely to occur.