

National Aeronautics and Space Administration

Headquarters

Washington, DC 20546-0001



January 10, 2020

Reply to Attn of:

Office of Safety and Mission Assurance

TO: Ms. Amy Kaminski, Program Executive, Earth Escape Explorer (CU-E3)
Mr. Jay J. Hollenbeck, Program Executive SLS and Secondary Payloads for
Artemis I and II

FROM: Alfredo E. Colón, NASA Orbital Debris Program Executive

SUBJECT: Evaluation of Earth Escape Explorer (CU-E3) Orbital Debris Assessment
Report (ODAR)

The Office of Safety and Mission Assurance (OSMA) evaluated the orbital debris assessment report (ODAR) for the Earth Escape Explorer (CU-E³) mission for compliance with NASA's orbital debris mitigation requirements in NASA-STD-8719.14B, Process for Limiting Orbital Debris. OSMA received this ODAR (CU-E3-MSFC-EOMP-001 Revision 1.2, dated May 10, 2019) in June 2019.

The 6U CU-E³ CubeSat will be launched on the Artemis 1 and deployed from the Secondary Payload Deployment System (SPDS) dispenser on the Interim Cryogenic Propulsion Stage. CU-E³ will be released directly into a heliocentric orbit and will end its mission in interplanetary space. It does not have a propulsion system. The mission complies with NASA's orbital debris mitigation requirements in NASA-STD-8719.14B. OSMA's evaluation report is enclosed with this memorandum.

A memorandum from the Space Technology Mission Directorate stating there are no changes to the CU-E³ spacecraft or its mission profile may be submitted in support of the Safety and Mission Support Review instead of an updated ODAR. The ODAR along with the memo may also serve as the initial end of mission plan (EOMP).

A handwritten signature in blue ink, appearing to read "AE Colón", written over a light blue horizontal line.

Alfredo E. Colón
NASA Orbital Debris Program Executive

Enclosure

cc:

/T. Wilcutt

/F. Groen

/D. Healey

/M. Forsbacka

/S. McMillian

/S. Tschen

/G. Lockwood

/C. Ryals

/M. Roman

/P. Teehan

Final Orbital Debris Assessment Report Evaluation: CU-E³ CubeSat Mission

(based upon ODAR version rev2, dated May 10, 2019)

Reqm't #	Launch Vehicle			Spacecraft		Comments
	Compliant	N/A	Not Compliant	Std. Non-Compliant	Compliant N/A Not Compliant	
4.3-1.a 25 year limit	☐	☒	☐	☐	☐ ☒ ☐	
4.3-1.b <100 object x year limit	☐	☒	☐	☐	☐ ☒ ☐	
4.3-2 GEO +/- 2000km	☐	☒	☐	☐	☐ ☒ ☐	
4.4-1 <0.001 Explosion Risk	☐	☒	☐	☐	☐ ☒ ☐	
4.4-2 Passivate Energy Sources	☐	☒	☐	☐	☐ ☒ ☐	
4.4-3 Limit BU Long term Risk	☐	☒	☐	☐	☐ ☒ ☐	
4.4-4 Limit BU Short term Risk	☐	☒	☐	☐	☐ ☒ ☐	
4.5-1 <001 10cm Impact Risk	☐	☒	☐	☐	☐ ☒ ☐	
4.5-2 Postmission Disposal Risk	☐	☐	☐	☐	☐ ☒ ☐	
4.6-1a-c Disposal Method	☐	☒	☐	☐	☐ ☒ ☐	
4.6-2 GEO Disposal	☐	☒	☐	☐	☐ ☒ ☐	
4.6-3 MEO Disposal	☐	☒	☐	☐	☐ ☒ ☐	
4.6-4 Disposal Reliability	☐	☒	☐	☐	☐ ☒ ☐	
4.7-1 Ground Population Risk	☐	☒	☐	☐	☐ ☒ ☐	
4.8-1 Tether Risk	☐	☐	☐	☐	☐ ☒ ☐	

Additional Comments:

The 6U CU-E3 CubeSat is a secondary payload onboard the EM-1 mission. CU-E3 will be released from the Secondary Payload Deployment System (SPDS) dispenser after the EM-1 lunar flyby directly into a heliocentric orbit and will end its mission in interplanetary space. CU-E3 is in full compliance with NS8719.14B since all requirements are not applicable to the mission.