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VIA IBFS

Jose P. Albuquerque
Chief, Satellite Division
International Bureau
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Re: Kinéis, IBFS File No. SAT-PDR-20191011-00113 (Call Sign S3054)

Dear Mr. Albuquerque:

Kinéis, by its counsel, hereby responds to your December 11, 2019 letter requesting additional information concerning the above-referenced Petition for Declaratory Ruling, which seeks U.S. market access for a non-voice, non-geostationary mobile-satellite service ("NVNG MSS") system in the 399.9-400.05 MHz, 400.15-401 MHz, 401-403 MHz, 156.7625-162.0375 MHz, and 2200.0-2290.0 MHz frequency bands.

1. *Please confirm or clarify the proposed scope of propulsion operations, and in particular please indicate whether propulsion will be used for orbit raising following deployment, orbit lowering for purposes of shortening orbital lifetime at end-of-life, and any other planned operations. If propulsion will be used for purposes of orbit-raising, please indicate the lowest initial altitude at which satellite operations might occur.*

The propulsion system will be used to raise the orbit of each satellite to the targeted mission altitude of 650 km starting from an injection orbit of 635 km. The orbital altitude may potentially be lowered by 15 km (*i.e.*, 635 km) due to launcher uncertainties on the semi major axis. Onboard propulsion will also be used to perform station keeping, and collision avoidance maneuvers throughout the mission lifetime. It could also be used to lower a satellite's orbit to reach the 25-years reentry altitude, should it be necessary; however, current analysis shows that such operations will not be necessary.

2. *Please indicate the anticipated time frame for finalizing the Orbital Debris Assessment Report.*

A preliminary revised version should be available by end 2020, the final version by the beginning of the Third Quarter of 2021.

3. *Please provide the accuracy with which orbital parameters will be maintained, as specified in 47 C.F.R. § 25.114(d)(14)(iii) and including eccentricity. We note the text at page 6 of the Preliminary Orbital Debris Assessment Report ("[a]n apogee at 673 km and perigee at an upper limit of 656 km were used") imply an eccentricity value, but it is unclear whether this figure is applicable to the 650 km orbital altitude used elsewhere in the application, which appears to be a mean or "nominal" value. Please clarify. Has the target mission altitude range been finalized?*

The operational orbit will be frozen, meaning that the eccentricity will be around 0.0012, leading to a difference between apogee and perigee around 16 km. The mission altitude of 650 km is indeed a mean value, and the corresponding apogee and perigee altitudes are respectively 658 km and 642 km.

The case presented in the Preliminary ODAR was referring to a worst-case injection at 650+15= 665 km and considering the same eccentricity. This approach yields the given values of 673 km for the apogee, and 656 km for the perigee.

The accuracy with which orbital parameters will be maintained has not been finalized, but is expected to be consistent with the following ranges:

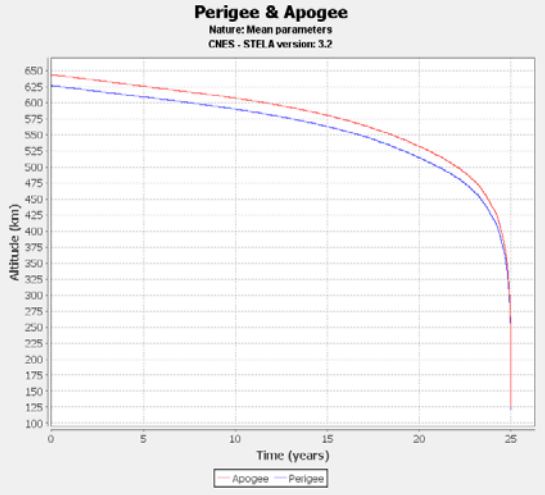
- The mission altitude range shall be controlled within +/- 10 km
- The inclination shall be controlled within +/- 0.5 deg
- The right ascension of the ascending node shall be controlled within +/- 0.1 deg

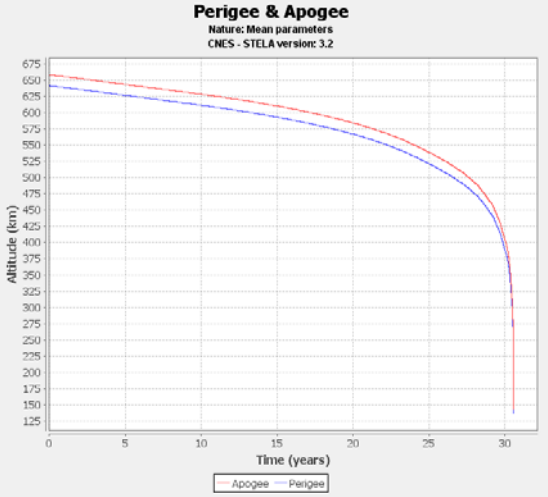
[Responses continue on the following page]

4. *Please provide an analysis of orbital lifetime and collision risk for a satellite that does not deploy solar arrays, antennas, or other deployable appendages. Please indicate the reliability of deployment for any deployable appendages that alter satellite cross-section, and the basis for that estimate of reliability.*

Mass = 26 kg:

Injection at 635 km	**Injection at 650 km**
reentry duration: 25.0 years	30.4 years





The reliability figures of the Kinéis satellite deployable devices are the following :

- Solar array deployment : 0.99952
- UHF/S band antenna deployment : 0.99922
- AIS antenna deployment : 0.99918

The estimation of reliability is computed based on the reliability of the different elements playing a role in the deployment operation. Each item's reliability is based on manufacturer data or heritage data.

5. *Please state whether you consider 55-60 a reasonable estimate for the number of satellites to be launched (25 initial satellites, 25 replacements satellites, plus 5-10 replacement satellites) for this constellation over a 15-year period. Please provide an estimate for the aggregate collision risk with objects 10 cm or larger for the number of satellites anticipated to be launched during the constellation's initial 15-year period of deployment and operation.*

Kinéis' best estimation is that 50 satellites will be deployed over a 15-year period with 25 satellites to be launched by end of 2022 followed by 25 satellites to be launched by 2030.

Preliminary analysis of aggregated collision risk with objects 10 cm or larger is ongoing and first results will be available by mid-February 2020. The results will then be updated for the final Orbital Debris Assessment Report.

6. *In the Schedule S and Technical Annex, Kinéis states that its system will utilize uplink frequencies in the 156.7625-162.0375 MHz frequency band to provide AIS, ASM, and VDES services. Please clarify whether Kinéis' operations in the 156.7625-162.0375 MHz frequency band will be on a receive basis only or if Kinéis will be transmitting these signals from its Earth stations or mobile radio chipset beacons.*

Kinéis confirms that operations in the 156.7625-162.0375 MHz frequency band will be on a receive basis only.

Should you have additional questions concerning the Kinéis application, please contact the undersigned.

Respectfully submitted,

s/ David S. Keir

David S. Keir
Counsel to Kinéis