

To: Michael Miller
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From: Leann Nguyen
Date: June 23, 2017

Subject: Request for Info - File # 0353-EX-CN-2017

Message:

Below is IB comments, please provide all IB requests.

IB has reviewed the subject request and has the following comments/concerns:

ODAR:

We have several questions about ANDESITE cubesat deployment. The description of the mission is incomplete in a number of respects.

In the mission description, it is not clear how many satellites the mission involves.

It would also be good to know 1) the size of the satellites in the sensor swarm, 2) all the RF characteristics of each individual sensor, 3) how they are commanded to begin and end transmissions and 4) the frequencies (forward/reverse links) used between the sensors and the 6U satellite.

5) We also want to know if each sensor and 6U satellite can be turn-off via telecommand to ensure immediate cessation of their radio emissions.

6) Also, it is not clear how the dispersion of the sensor swarm satellites will be deployed and 7) how each sensors' orbit will be known.

8) The ODAR only mentions that the 6U satellite has altitude control but will the sensors be tumbling in space and therefore their transmissions will potentially point in all directions?

9) In the ODAR document, it is not clear if the orbital lifetime and collision probability is with respect to the identical sensors or only for the 6U satellite. The mass and surface area are different for the 6U satellite and each sensor. Please provide this information.

10) Moreover, in the ODAR document, Appendix A, related to the survivable components, the last column "Survivability" reference Table 4-6 but this table does not appear in the document. Please provide this table.

Per RR footnote 5.279A, the 432-438 MHz band is allocated to EESS (active) on a secondary basis; however, this mission is not in accordance with the EESS (active) allocation rather it is being used as an inter-satellite link. 11) Applicant will need to provide an EMC analysis to show that operations in the 432-433 MHz will not cause harmful interference to other incumbent operations in this band.

12) On the Cost Recovery letter, can Professor Semeter please confirm if he is duly authorize by Boston University to sign this cost recovery commitment on behalf of the University.

13) For the Globalstar modem frequencies listed in Form 442 and the SpaceCap API file, the frequency range for the L-band needs to be adjusted to the following: 1615-1617.5 MHz band.

Form 442:

14) We note that there are two discreet center frequencies 432 MHz and 433 MHz but it is not clear how these two discreet frequencies will be used in this mission. Also, the SpaceCap API only has one of the discreet frequencies so this will need to be reflected in the API for consistency purposes.

SpaceCap API file:

15) As to the inter-satellite link description of the Sensors versus the 6U satellite filing, it might be best to have two separate API's. One for the 6U satellite and the other for all 8 sensors. This would make it easier reference the associated space station pointing to a separate API filing instead of having all of them be reference in one filing. Please let us know if this is possible.

16/17) For the reception of Globalstar link, the frequency band show be adjusted to 2484-2495 MHz band per Globalstar explanation of the duplex modem. Also, the GlobalStar receive frequency needs adjustment to 1615-1617.5 MHz band.

18) Also, in both Globalstar beams, the associated space station needs to be what is file in the ITU which is HIBLEO-4 (original satellite fleet file under the USA/FCC) and HIBLEO-X (second generation satellite fleet file under the French Administration). However, the FCC will need to confirm if the French regulator will allow this type of operation.

19) As for the sensor, they should display the discreet frequency for the forward link and reverse link. Currently, the API list one frequency range 432.69-433.31 MHz but this contradict what is describe in Form 442.

20) In all the Beams/Group IDs, the RR No. 4.4 needs to be marked "Y" since this operation in not in accordance with the Radio Regulation.

21) Please check all the power spectral density calculation in the whole API file and update as appropriate. Please use the equation power spectral density equation = Power (dBW) – 10*Log10(bandwidth in Hertz).

22) Applicant please provide all the antenna patterns reference in the SpaceCap API file.

The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 30 days of June 23, 2017 may result in application dismissal pursuant to Section 5.67 and forfeiture of the filing fee pursuant to Section 1.1108.

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