Narrative Exhibit

Dove 3 and Dove 4 are a pair of technically identical satellites with minor payload differences to be used as a technology development experiment. The satellites will be launched No Earlier Than October 2012 to Low Earth Orbit on the DNEPR launch vehicle. Dove 3 will be ejected from an ISIPOD 3U cubesat deployer into a planned elliptical orbit of 800 x 597 km at 97.8 degrees. Dove 4 will then be ejected from a separate 3U cubesat deployer into a planned circular orbit of 700 x 700 km at 97.8 degrees. The experiment will operate for a maximum duration of 24 months. A detailed orbital lifetime analysis can be found as separate attachments titled “Dove 3 Orbital Debris Assessment Report” and “Dove 4 Orbital Debris Assessment Report”.

The primary commanding uplinks for Dove 3 and Dove 4 will be using the MHX2420-FT in the 2401.6 to 2441.0 MHz band and a separate, redundant experimental receiver utilizing 100 kHz in the 2025 to 2110 MHz band, centered at 2056 MHz.

The primary high speed payload downlink will be using an experimental S-band transmitter centered at 2425 MHz and a redundant experimental X-band transmitter centered at 8225 MHz. Backup, medium speed payload downlink will be using the the MHX2420-FT in the 2401.6 to 2441.0 MHz band. Planned use of the MHX2420-FT is identical to the previous Dove 1 and Dove 2 applications, see file numbers 0740-EX-ST-2011 and 0100-EX-PL-2012, respectively.

Dove 3 and Dove 4 also use the 1616-1626 MHz band as a backup commanding and telemetry channel. Each satellite uses a commercial off-the-shelf Iridium modem manufactured by NAL Research (model # 9602-I) for low speed, two way links through the existing Iridium network. It should also be noted that the Iridium modem waits for network availability from the Iridium constellation before initiating any transmissions, and thus will only transmit if in view of an Iridium satellite with sufficient link margin. Cosmogia plans to coordinate these links with Iridium to mitigate any potential interference or power flux density issues from using the modem in low earth orbit. Planned use of the 1616-1626 Mhz band is identical to the previous Dove 2 application, see file number 0100-EX-PL-2012.

Earth Station Description

A more detailed description of both Earth-to-Space uplink channels will be included in a separate Earth station application, but are included in this narrative for completeness. Below is a general description of the proposed ground station system:

SRI - Stanford Research Institute Observation site
Latitude: 37.403084
Longitude: -122.174096
Altitude: 156.47 m

SRI's 18 meter dish will be used for both S-band links. In addition, Cosmogia will install a 2.4 meter portable X-band receive-only tracking antenna next to the 18 meter dish at 37.403931,- 122.176171. The Iridium link requires no additional ground station infrastructure.