

LEOP support of O3B-VS10 satellite Launch Vehicle injection from USN's Hawaii ground station

O3B-VS10 is the fourth satellite in a series of spacecraft to provide Internet services to less populated areas of the planet. The spacecraft will be launched from French Guiana on a Soyuz vehicle on December 18, 2014 at 18:37:00 UTC, with a launch window of 33 minutes. USN has been contracted to support the pre-injection burn of spacecraft during a single pass for a duration of 112 minutes. Mission profile for USN is shown in figure 1. USN will only receive telemetry and tracking information from the vehicle and will not uplink to the vehicle or spacecraft.

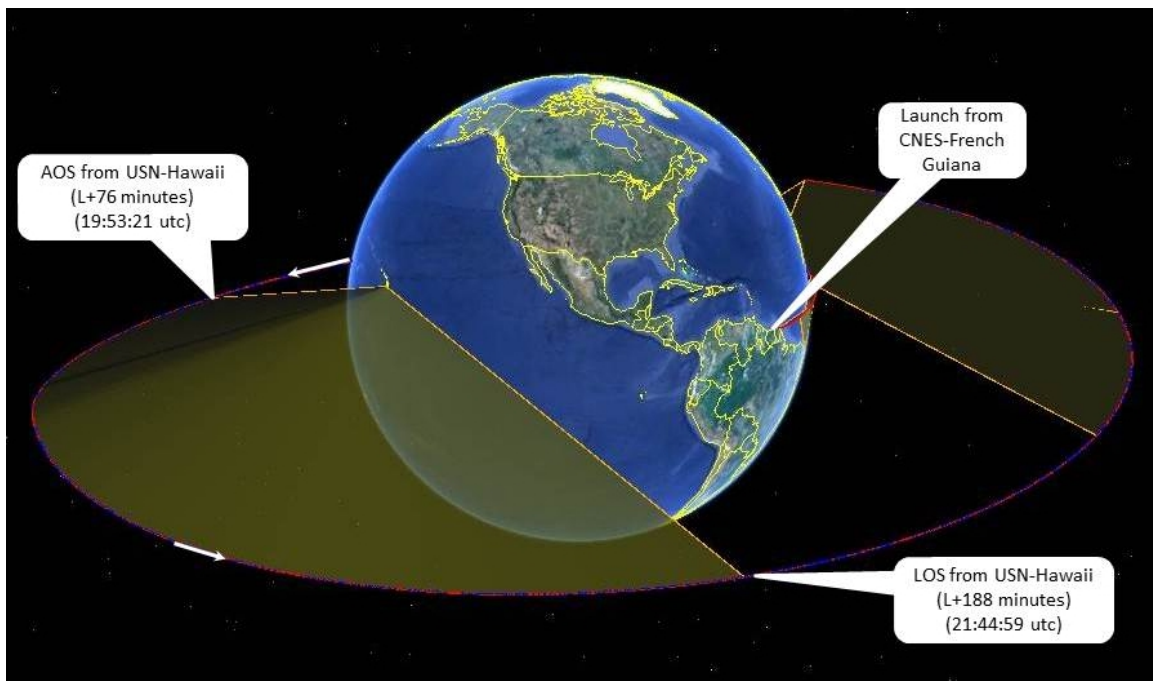


Figure 1 - O3B-VS10 Launch vehicle coverage from Hawaii

O3B-VS10 vehicle pass coverage

USN will track the launch vehicle from between the positions shown in table 1 below for a total duration of 112 minutes (also shown in figure 1 above). Table 1 assumes the launch takes place at the opening of the launch window (18:37:00 utc). The launch could delay up to 33 minutes and thus this time would be linearly added to table 1 if such delay occurs. The tracking frequency is shown in table 2. Data will be collected and forwarded to CNES in real-time.

| | Time | Spacecraft sub-earth Latitude | Spacecraft sub-earth Longitude | Spacecraft Altitude |
|-----------------------------|-------------|--------------------------------------|---------------------------------------|----------------------------|
| Acquisition of Signal (AOS) | 19:53:21utc | 2.5° South | 149.5° East | 5330 Km |
| Loss of Signal (LOS) | 21:44:59utc | 0.1° South | 92.9° West | 7839 Km |

Table 1 – Support times and positions

| | Downlink | Uplink |
|-------|-----------------|---------------|
| Soyuz | 2218.0 MHz | N/A |
| | | |

Table 2 – Radio Frequency