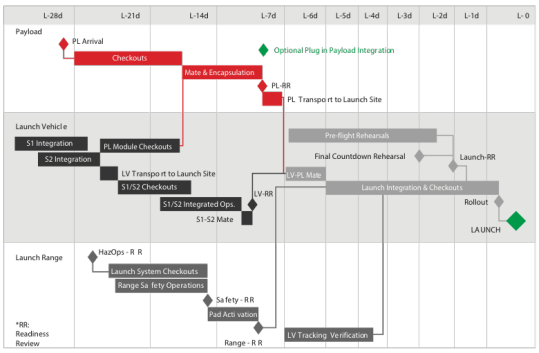
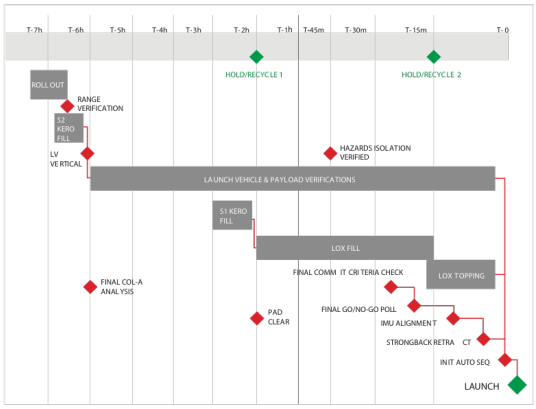


(a) Launch Range Operations Flow/Schedule



(b) Countdown Operations Flow

Figure 1: Launching Logistics RL

1 First Placement logistics

The objective of this section is to give first idea of the first placement logistics. Although some temporal data is provided, it is a qualitative explanation, only to clarify the order in which the different elements must be purchased, assembled, transported, etc. Rocket Lab provides two gantt diagrams on which their launching procedure is explained (figure 1) **CITAR LES IMATGES + LA FIGURA 1 HA D'ANAR DESPRES D'AQUEST TEXT PERO EL LATEX ES UNA BASURA**.

The constellation has 168 3U CubeSats distributed in 8 orbital planes. One of the conclusions stated in the section **POSAR NUMERO DE SECCIO:Launching system** is that the quickest way to deploy the whole constellation is by carrying out one launching per orbital plane, consequently, the first placement consists on 8 launchings and all the logistics around them. Rocket

Lab is capable of launching once a week, therefore, the first placement takes 8 weeks. Due to the magnitude of the mission, the whole rocket is filled with Astrea satellites, hence, there is no need to share it with other missions. Also, Rocket Lab offers an online booking procedure to reserve a date, however, The Payload User's Guide **CITAR PAYLOAD USER'S GUIDE** recommends contacting directly with them in case of filling several rockets with a mission instead of booking online.
Since the schedule of Rocket Lab is fixed, the logistics needed in order to deliver the payload on time are going to be explained starting from the launching day, going back in time until the first movements in Terrassa. The launching day is designed L henceforth, and all the other ones are referred to this one (eg. L-30d means 30 days before launching).

As seen in figure 1, Rocked Lab needs 28 days to prepare the payload, place it into the rocked and prepare the rocket itself. Thus, the CubeSats have to arrive at the Rocket Lab launching facilities the L-28d. The satellites are assembled in Terrassa, hence, they have to be brought to New Zealand. Due to the large amount of CubeSats, the chosen transport is sea transportation. The estimated time from Terrassa to New Zealand is 30 days. At this point, there is two options. First, the 168 satellites can be divided in groups of 21 (orbital planes) and sent separately to New Zealand so that every group arrives 28 days before its departure. The other option is to send all 168 CubeSats at the same time so that they arrive 28 days before the first launching. Each option has its pros and ints drawbacks. Option one does not need to store the satellites in Rocket Lab facilites, conversely, the logistics of carrying each group of satellites separately is complicated. Option two allows to assemble all the satellites and send them in one ship, however, once they arrive to their destination, they have to be stored somewhere until their departure day arrives.