# Target Spacecraft Overview

The target spacecraft’s purpose is to serve as a platform that the primary spacecraft can identify and calculate the relative distance and angle between the two spacecraft. There are several requirements that the secondary spacecraft has to meet in order for the mission to be successful that have been place on it by Boeing’s Advanced Space and Intelligence Systems (AS&IS) organization and Space Systems Research Lab (SSRL). The secondary spacecraft must have a minimum lifetime of two weeks. It shall conform to the 3U CubeSat Design Specification so it can integrate into a 6U dispenser with the primary spacecraft. The secondary spacecraft shall remain physically conjoined to the primary spacecraft prior to launch integration until at least one month after launch vehicle separation. The secondary will remain in a powered off state until separation. It will separate from the primary spacecraft upon command from the ground. There will be navigation aids on the secondary spacecraft as specified in the RCL-O-ADC1 ADC Overview document.

In order for the secondary spacecraft to accomplish its mission, it will need several subsystems to support it. As specified in the requirements the structure will be a 3U as specified in the CubeSat Design Specification. There will be LED navigation aids mounted on the external surface of the spacecraft for the primary spacecraft to calculate relative distance and angle between the two spacecraft. A power system will be needed to provide power to the navigation aids and other components on the spacecraft. The power system will consist of a battery pack large enough so the spacecraft can survive the mission requirement of two weeks as well as a voltage regulator to provide power to a radio receiver. The radio receiver will be on the secondary spacecraft so the navigation aids can be powered on and off. There will be a microcontroller to control the power system and the radio receiver. An attitude determination and control system will be needed to reduce the rotational rate so the primary spacecraft can image the secondary spacecraft easily. The secondary spacecraft shall also carry the necessary components to conjoin the primary and secondary spacecraft together.