

Initial Acquisition

[Write a bit about the state of the spacecraft after deployment from the LV (sleep timers, spacecraft mode, etc...) Maybe include the site to get TLEs from, any info about state vectors that the launch provider may give us.]

The satellite will be acquired using a “point and stare” technique. Using state vectors provided by the launch provider/JspOC, the ground station antennas will be pointed at a patch of sky that the deployed satellite cluster will be predicted to pass through.

The antenna should be pointed approximate 15 minutes prior to the expected time of overpass and will remain pointed approximately 15 minutes after the expected time of overpass.

Ping commands will be sent at 5-second intervals during the entirety of the 30-minute period and raw IQ data will be recorded at the ground station and analyzed after the completion of the contact period for signs that the spacecraft responded.

Using the known times of contact attempt, the pointing direction and the IQ data, the space vehicle operator (SVO) and the orbital analyst (OA) should be able to determine the approximate orbit of the space vehicle. The ground station antenna will be directed to track across the the orbital path during subsequent contact opportunities to maximize the communication time with the space vehicle. Expect maximum contact time to be approximately 7 minutes.

UHF Antenna Deployment Verification

The deployment of the UHF antenna is an automated action. The antenna will be deployed at the expiration of an inhibit timer that will be activated upon separation from the launch vehicle.

Establishing a link between a ground station and the space vehicle will provide verification the UHF antenna has successfully deployed.

EPS Checkout

[During a link period, vehicle SOH telemetry should be downlinked and used to verify proper EPS system function (Solar panel voltages and currents, battery charge level, subsystem current draw.)]

The EPS subsystem shall be partially verified through the successful link between the a ground station and the space vehicle. A successful link indicates that the spacecraft has powered-on and the OBC and radio are functioning. This verifies that the EPS is successfully sending power to the OBC and radio.

State-of-Health telemetry will provide further insight into battery charge and supplied voltage and current to the space vehicles subsystems.

Solar Panel Deployment (Stratus only)

[Similar to EPS checkout]

[If manually deploying solar panels]

Before solar panel deployment, vehicle telemetry shall be retrieved and the solar panel voltages and currents shall be noted and compared with expectations for undeployed panels. The deployment command shall be sent. Approximately one orbit later, telemetry shall be retrieved and solar panel voltages and currents shall be examined and compared with the coinciding voltages and currents from before deployment. Thermal knife currents and temperatures (if applicable) shall also be examined beginning 5 minutes prior to deployment and continuing 15 minutes after deployment. The current

should approximately resemble a step function beginning at scheduled deployment time and lasting through the duration of the burn time.

[If solar panels are deployed via system timer]

Vehicle telemetry shall be retrieved from 5 minutes before scheduled solar panel deployment continuing 15 minutes after scheduled solar panel deployment. Solar panel voltages and currents shall be examined and an increase in solar panel deployment should be seen ~1 minute after deployment (assuming the panels are sun-pointing). Thermal knife currents and temperatures (if applicable) shall also be examined beginning 5 minutes prior to deployment and continuing 15 minutes after deployment. The current should approximately resemble a step function beginning at scheduled deployment time and lasting through the duration of the burn time.

ADC Checkout

The ADC system may be verified through commanded pointing and the receipt of vehicle state-of-health telemetry. While the solar panels are in a sun-pointing orientation, the ADC system shall be commanded to rotate the spacecraft 20 degrees (**TBR**) about the z-axis, hold for 15 minutes (**TBR**), then return to sun-pointing. Vehicle telemetry shall be retrieved from approximately 5 minutes prior to the event start, continuing to approximately 5 minutes after the event end.

PYL Checkout