



SDA's Optical Inter-Satellite Link (OISL)

GA's Laser Interconnect & Networking Communications System (LINCS)

Mission Overview

The OISL-LINCS mission will demonstrate initial capabilities for a laser communication terminal and IR sensor payload. The LINCS mission will be executed by two identical 12U canister-deployed satellites: CTB-14 and CTB-15.

The purpose of the laser communications terminal is to allow the exchange of information between two orbiting satellites or between an orbiting satellite and a ground station (direct-to-earth). The information exchange includes data and imagery. The intent is to achieve high data rate information exchange with very low latency.

The purpose of the infrared sensor is to capture and store earth imagery for processing and dissemination. It is used as a source provider to the Laser Communications Terminal.

The anchor satellite (primary payload) will be delivered into orbit by a United Launch Alliance Atlas V 401 launch vehicle with the 4-m Extra Extended Payload Fairing XEPF with no solid rocket boosters, and a single Centaur engine. LINCS satellites will be inserted into an orbit at 550 km perigee and 550 Km apogee altitude on an inclination from the equator at 97.61 degrees.

Atmospheric drag will slow the satellite and reduce the altitude of the orbit, until de-orbiting occurs approximately 19 years after launch and will conclude the mission. The reentry figure was calculated using the smallest (un-deployed solar panels) area-to-mass ratio providing a worst-case reentry scenario. Under nominal mission conditions (fully deployed solar panels) the LINCS satellites will reenter the atmosphere in approximately 4 years after launch.

Launch vehicle and launch site: United Launch Alliance Atlas V 401 launch vehicle from Vandenberg AFB Proposed launch date: 2020

Mission duration: 1 year

Launch and deployment profile, including all parking, transfer, and operational orbits with apogee, perigee, and inclination:

The LINCS orbital elements are defined as follows:

Apogee: 550 km (+12Km, 3σ)

Perigee: 550 km (-11Km, 3σ)

Inclination: 97.61 deg (TBD deg, 3σ)

LINCS has no propulsion and therefore does not actively change orbits. There is no parking or transfer orbit. At this time, we know of no potential interaction or physical interference between LINCS and any other operational spacecraft.