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Purpose of Experiment:

The purpose of this experiment is to examine the performance of ranging signals and algorithms for aiding in the navigation of high-altitude balloon platforms. Navigation algorithms developed in a laboratory environment have been tested with simulated signals. Open air testing of the system is needed to validate simulation results with real-world data.

The experiment will operate at the requested frequencies on a non-interference basis. The power level and duration of ranging signals is controlled via the communication link provided by the balloon platform. Two ground stations continuously monitor received power to ensure non-interference by terminating a broadcast or reducing transmit power.

An onboard GPS and disciplined oscillator combination is used as a time and frequency reference which allows for synchronized transmit of ranging signals. The ground stations also use a GPS and disciplined oscillator combination to record ranging signals for post processing analysis to determine time of flight data which is fed to navigation algorithms. The position results from the algorithms are then compared to truth data recorded from the onboard GPS.

