Alaska – Low-cost Gateway to Space

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Abstract

With two space launch facilities including the Poker Flat Research Range (PFRR) owned by the University of Alaska Fairbanks (UAF) and operated by the Geophysical Institute; and the Pacific Spaceport Complex Alaska (PSCA) state owned and operated by the Alaska Aerospace Corporation (AAC), the State of Alaska is working hard to become the preferred low-cost option for access to space – either suborbital or orbital.

Poker Flat Research Range (PFRR)

PFRR, the largest land-based rocket range and the only one in the world owned by a university, has been the only high latitude US location for sounding rocket launches to study the upper atmosphere and aurora for more than 50 years. More than 1700 meteorological rockets and more than 350 sounding rockets have been launched by NASA and the DoD from PFRR, some to apogees above 1600 km. At Poker the principal investigator can choose payload parachute recovery or forego it to launch in a high arc well out into the Arctic Ocean. The Range, located 35 miles from the UAF campus includes 5 enclosed rail launchers and multiple science support buildings including a Science Operation Center (SOC) with a wide array of atmospheric and ionospheric sensors, and a Lidar Facility with three lasers capable of profiling through the upper mesosphere. PFRR is the home to NSF's Poker Flat Incoherent Scatter Radar (PFISR), the most sophisticated ISR in the US. Sounding rockets are launched from PFRR into 5 zones, depending on mission and wind, and investigators can hold for days or weeks until the desired upper atmospheric/auroral conditions are obtained. Its subarctic location and the combination of higher apogees (longer observing hang-time), the option for payload recovery, and extended hold provide significant advantages and cost savings for sounding rocket space research.

Pacific Spaceport Complex Alaska (PSCA)

The PSCA on Kodiak Island, Alaska has a 21-year launch history with civil, defense, and commercial customers for suborbital and orbital missions. This FAA-licensed spaceport is located on 3,700 acres of State of Alaska public land and includes six launch pads ranging from a 174-foot launch tower, several concrete flat pads, and gravel launch pads. Situated at Narrow Cape on the Gulf of Alaska, PSCA's launch azimuth fan from 110-220 degrees is the largest in the US and provides for complex missions over the vast northern Pacific Ocean. This location also has relatively moderate temperatures permitting year-round launch operations. PSCA's state-of-the-industry capabilities include two mission control centers with advanced range surveillance capabilities, fixed and mobile telemetry and range safety antennas, two payload processing clean rooms, climate controlled multiple rocket storage and processing facilities, meteorological department with x-band weather radar, liquid-propellant and rocket commodity storage, and customer engineering and support work areas. Operating without government subsidies and not on federal range, AAC's business model is lean, agile, and multi-user oriented, resulting in service-funded delivery and low-cost operations.

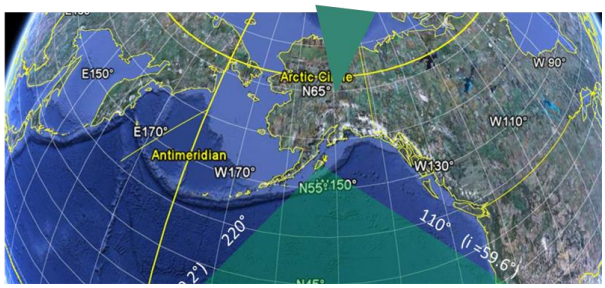

Figure: Suborbital launches to the north from PFRR and with both suborbital and orbital launches to the south form PSCA.