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SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Enabling safe commercial spaceflight: vehicles and spaceports (3)

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COMPARISON BETWEEN THE US AND EUROPE OF OPERATIONAL AND REGULATORY SYSTEMS FOR SPACEPORTS WITH POLAR ORBIT ACCESS

Abstract

Recent announcements about major expansions in LEO telecom constellations as well as the continued expansion of remote sensing constellations have made high inclination orbits with altitudes between 600 km and 1,200 km the new "hot market" for LEO satellite launch services. Current market estimates range from 8,000 to 16,000 satellites that could be launched in the next ten years, with replenishment and upgrades to these constellations providing hundreds of additional satellite launches every year for the foreseeable future.

The first wave of announced spaceports in the US and internationally had suborbital space tourism as their primary target market. Only a few of these locations have access to over-water orbital launch azimuths, and even fewer locations have clear over-water launch azimuths for the high inclination orbits that are now becoming the most in demand. However, a few spaceport locations in the US and Europe do have this fortunate geographical advantage, and are now positioned to capture market share in the lucrative orbital access business in addition to suborbital flight traffic. In the US, the Hawaii Spaceport at Kona and the proposed Puerto Rico Spaceport at the former Roosevelt Roads NAS can access essentially all orbits from sun synchronous to equatorial. In Europe the proposed spaceports at Glasgow Prestwick in Scotland and at Nordholz Niedersachsen in northwest Germany have high inclination launch azimuths from SSO to 85 degrees launching to the north over the Atlantic west of Norway.

Rocketplane Global (RGL) is developing its SatLaunch 1 reusable spaceplane with a payload capacity of about 2,000 kg to a 1,000 km polar orbit. This system allows for a very low cost and high volume deployment service for LEO satellite constellation operations. RGL is now evaluating the potential launch sites discussed above as potential orbital access spaceports with operations beginning in 2021. Existing site infrastructure, available over-water launch ranges, and the development of a FAA AST compatible regulatory system to allow licensed launch activity are all part of the spaceport evaluation criteria. This paper will describe the available facilities and the regulatory systems at each of these four spaceport locations as well as secondary operating criteria such as the availability of aerospace contractor support, workforce, the cost of doing business, and financial incentives available to encourage economic growth and job creation.