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LAUNCH OF THE ORBITAL EXPRESS VEHICLE FROM THE NORTH COAST OF SCOTLAND

Abstract

The UK is pursuing a goal of enabling the launch of small satellites to take place from UK soil. The government is creating the legal and regulatory framework to allow satellite launch – the Space Industry Bill is currently progressing through its Parliamentary approval cycle and should become law by means of an act of Parliament in 2018.

Several initiatives are in development with some supported by grants from the government supporting the RD of both the launch vehicle and the spaceport for several combinations of vehicle and spaceport. The aim is to have operational services in the early 2020s. General issues around this topic were described in the paper “Vertical Launch of Small Satellites from the UK – 2017 Update” [1] presented at the IAC in Adelaide, Australia.

This paper presents the progress made in one of the initiatives – the launch of the Orbital Express (OrbEx) vehicle from the Moine peninsula in Sutherland, Scotland. The paper will give a description of the OrbEx vehicle looking at the design, specification and production of the vehicle. The OrbEx vehicle is a completely new micro-launch vehicle currently in development. It exploits a novel, sustainable fuel strategy to create one of the lowest inert mass fractions of any space launch vehicle. It is targeted at polar and SSO orbits for payloads up to 220kg, dependant on the orbit.

The chosen launch site for the vehicle is the Sutherland spaceport which is planned to be built on the Moine peninsula, a largely uninhabited area on the north coast of the UK mainland. The proposed site is approximately 30km from the north west tip of Scotland, Cape Wrath. [1] showed that this site allows good access to both polar and SSO orbits. In addition, being on the mainland, allows relatively straightforward access to the spaceport for both the launch vehicle supplier and the payload providers. The paper will provide details on the spaceport’s plans to become operational in the timeframe required by the vehicle(s) it is offering to host.

The paper discusses both the development of the systems and their future operations taking account of the technical, commercial and legal requirements.