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Author: Mr. Nikita Kazinskiy
JSC Agat, Russian Federation, KazinskiyNV@agat-roskosmos.ru

Mr. Sergey Borisov
JSC Agat, (*country is not specified*), borisovsa@agat-roskosmos.ru

SUBORBITAL SPACE FLIGHTS: SHOULD WE EXPECT A REVOLUTION IN LONG-HAUL AIR CARGOS?

Abstract

1. By the year 2030 the conventional sector of orbital launch services will continue to reduce both the total number of launches (an average of 4% per year from 2020 to 2030) and the average launch price. To ensure competitiveness, launch vehicle developers and launch service operators will reduce the cost of launch service through new design solutions and the use of reusable stages and other launch vehicle elements. 2. It is the need to maintain existing orbital constellations and the deployment of multi-satellite constellations (OneWeb, StarLink, Sphere), as well as providing manned flights to existing and promising orbital stations in low Earth orbit that are going to drive the demand in the conventional sector of orbital launch services. 3. By 2030, rapid growth is forecasted in the segment of suborbital space flights, which will be able to create significant competition for existing long-haul air cargo. A demand for suborbital tourism is forecasted to be “explosive” in case of successful development of existing technologies (current projects of Blue Origin, Virgin Galactic). 4. In case of successful space subtourism, rapid development of a subsegment of transport suborbital flights within the Earth is predicted (point-to-point flights similar to the SpaceX Starship project). A similar flight from New York to Shanghai can take only 39 minutes, such a flight from London to Dubai - 29 minutes. 5. Suborbital space flights within the Earth can be useful for passenger and ultrafast cargo transportations, occupying the vacant niche of supersonic airliners such as Concorde and TU-144. According to UBS (a Swiss multinational investment bank), today some 150 million people fly over 10 hours a year. If we assume that at least 5% of the passengers will use suborbital space transport systems, and the flight cost can be reduced to \$2,500, this will create a new business sector, making about \$20 billion a year. 6. Suborbital space transport systems should initially be created as reusable, which will require new design solutions, materials and testing methods. The creation of new technologies for suborbital flights can radically change the existing market for long-haul air cargos.