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Commercial Spaceflight Safety and Emerging Issues (1)

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A SPACEFARING PUBLIC: NORMALIZING A CULTURE OF SAFETY FOR COMMERCIAL  
HUMAN SPACEFLIGHT

**Abstract**

Human spaceflight has long been recognized as an inherently risky activity, raising safety concerns for both spaceflight occupants and the general public. Consequently, safety constitutes both an element of national space law and a driver for developing legislation and regulation in tandem with spaceflight activities. Licensing regimes and requirements in particular serve to protect public health, safety and property from the ultra-hazardous nature of spaceflight. Here, the launch operator bears a prominent role in implementing spaceflight safety, particularly as the number of commercial licensed and permitted launches increases and private companies like Virgin Galactic and Blue Origin commence human suborbital flight operations this year. However, given the inherent risks and uncertainty of spaceflight, legislative efforts focus on public safety with limited regulation and standardization for human spaceflight and spaceflight participants (SFPs). Current U.S. regulations deal with the risks of spaceflight by requiring reciprocal waivers of claims between the commercial parties and the U.S. government. Spaceflight participants must also now sign a personal liability waiver with the launch operator. No such requirement exists between SFPs embarking on the same flight, allowing for potential litigation where one SFP causes harm or injury to another. However, safety is not merely the responsibility of the launch operator and regulatory authorities. Commercial crewmembers, SFPs and the general public also play a contributory role in promoting spaceflight safety.

Moreover, under U.S. law, launch operators are broadly responsible for ensuring that SFPs do not jeopardize the safety and security of the flight crew or the public. But what does this mean in practice? This paper provides an interdisciplinary perspective in law, policy and safety to identify and address crucial aspects for commercial spaceflight safety, to include: 1) identifying relevant private parties that impact spaceflight safety; 2) surveying analogous safety practices, protocols and procedures that may be adapted from existing industries for commercial spaceflight; 3) highlighting applicable parameters for spaceflight education and instruction on spaceflight safety measures and responsibilities. For instance, how individual behaviors and indulgences may impact spaceflight safety on the ground and in the air (e.g. alcohol or recreational drugs); and 4) evaluating approaches for expanding a culture of safety between industry and prospective passengers, as well as educating members of the public at large. This analytical research aims to inform and normalize commercial spaceflight safety perspectives and best practices as spaceflight emerges as the next step in social human mobility.