

SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Commercial Space Flight Safety and Emerging Issues (1)

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ACCEPTABLE LEVELS OF SAFETY FOR THE COMMERCIAL SPACE FLIGHT INDUSTRY

Abstract

Within the space industry it is well understood that each space flight involves a high degree of safety risk. The catastrophic loss rates for orbital space flights are also well known from historical data and this can assist in deriving safety targets (or acceptable levels of safety) for future space operations i.e. as part of the Commercial Crew Transportation System Requirements. However for the nascent suborbital space flight domain there is no specific historical data and at present authorities in the United States are not dictating specific safety targets or safety objectives in order to let the industry grow; hence the approach is to evolve the regulatory standards as the industry matures. It is argued that when suborbital space flight operations commence, the safety risks will be declared as required to the authorities, the flight crew and spaceflight participants, but this still does not answer whether the vehicle is acceptably safe; indeed it will beg the question ‘how safe is safe enough?’ As well as detailing the methodologies for deriving safety targets and safety objectives the paper discusses perception of risk; both from the industry perspective and a societal perspective. This paper addresses the problematic issue and presents discussions concerning explicit and implicit safety targets and safety objectives in order to derive a rationalised approach for the emerging commercial space flight industry. The paper notes the differences between launch licensing and certification approaches and concludes that having an acceptable level of safety is essential, irrespective of regulatory approach. The authors of this paper contend that it is more appropriate for the authorities to have rationalised and explicit safety requirements and safety targets or safety objectives (depending on selected approach), together with effective guidelines, such that prospective design organisations and operators can strive for a recognised and acceptable level of safety in the commercial space flight industry.